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1 B. Ed. Spl. Ed. (M. R. / H. I. / V. I)- ODL Programme AREA - A A-3 : LEARNING, TEACHING AND ASSESSMENT A COLLABORATIVE PROGRAMME OF NETAJI SUBHAS OPEN UNIVERSITY AND REHABILITATION COUNCIL OF INDIA
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Dr. Ashit Baran Aich Registrar(Actg.)

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

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Human Learning and Intelligence Structure : 1.1 Introduction 1.2 Objectives 1.3 Human learning, Meaning, definition and concept formation 1.3.1 Learning theories 1.3.1.1 Behaviourism 1.3.1.2 Edward Thorndike 1.3.1.3 B. F. Skinner 1.3.1.4 Cognitivism 1.3.1.5 Jean Piaget 1.3.1.6 Kohlberg 1.3.1.7 Social constructivism 1.3.1.8 Lev Vygotsky 1.3.1.9 Albert Bandura 1.4 Intelligence 1.4.1

Concept and Definition 1.4.2 Vernan's classification 1.4.3 Types of Intelligence 1.4.4 Theories of Intelligence 1.4.4.1 Charles Spearman—General Intelligence 1.4.4.2 Howard Cardner Multiple Intelligence 1.4.4.3 Robert sternberg Triarchic Theory of Intelligence 1.5 Creativity : Concept, Definition and Characteristics. 1.5.1 Motivation and intelligence 1.6 Implications for Classroom Teaching and Learning

10 1.7 References 1.8 “Check Your Progress” 1.9 Let Us Sum Up 1.1 Introduction This module highlights the concept of learning and intelligence. Through this module we would try to understand the basic concepts of learning, the frontier theories and its application in academics. Apart from learning the present module concentrates on another basic concept in Psychology, i.e., intelligence. We will discuss the definitions, characteristics, a brief history of intelligence measurement, followed by leading theories in intelligence. The module will further concentrate on another psychological construct very closely associated with intelligence, i.e., creativity. We will discuss the concept, nature and characteristics of creativity followed by implications of learning in academic settings. At the end of this module students are expected to have a clear understanding about learning and intelligence and its application in academics. 1.2 Objectives At the end of successful completion of the module students will be able to understand the following: – The concept and nature of learning. – The various perspectives and theories of learning principle, with a highlight to behavioristic theories, cognitive theories and social learning theories. – The concept and characteristics of intelligence. – Various intelligence theories with a highlight on Spearman’s two factor theory, Gardner’s multiple intelligence theory and Steinberg’s Triarchic intelligence theory. – The concept, definition and characteristics of creativity. It’s relationship with motivation and intelligence. – The Implications for Classroom Teaching and Learning.

11 1.3 Human learning: Meaning, definition and concept formation Learning can be defined as the process leading to relatively permanent behavioral change or potential behavioral change. In other words, as we learn, we alter the way we perceive our environment, the way we interpret the incoming stimuli, and therefore the way we interact, or behave. Learning is one of the most important activities in which humans engage. It is at the very core of the educational process, although most of what people learn occurs outside of school. For thousands of years, philosophers and psychologists have sought to understand the nature of learning, how it occurs, and how one person can influence the learning of another person through teaching and similar endeavors. Various theories of learning have been suggested, and these theories differ for a variety of reasons. Evolving Theories of Learning The modern psychological study of learning can be dated from the work of Hermann Ebbinghaus (1850-1909), whose well-known study of memory was published in 1885. Other early studies of learning were by Edward L. Thorndike (1874-1949), whose dissertation on problem solving was published in 1898, and Ivan Pavlov (1849- 1936), whose research on classical conditioning was begun in 1899 but first published in English in 1927. These theories focused on explaining the behavior of individuals and became known as behavioral theories. These theories use a stimulus- response framework to explain learning and dominated psychology and education for over half a century. Because behavioral theories focus on environmental factors such as reinforcement, feedback, and practice, they conceptualize learning as something that occurs from the outside in. Behavioral theories provide very good explanations for certain kinds of learning but poor explanations for other types of learning. Operant conditioning, for example, is better than other theories at explaining the rote acquisition of information, the learning of physical and mental skills, and the development of behaviors conducive to a productive classroom (i.e., classroom management). In these situations, the focus is on performing behavioral tasks rather than developing a learner’s cognitive structure or understanding. Although classical conditioning frequently is dismissed as irrelevant to human learning (Pavlov’s initial research paradigm involved dogs salivating), this type of learning provides by far the best explanation of how and why people, including students, respond emotionally to a wide variety of stimuli and situations. The many types of emotional reactions acquired through classical

12 conditioning include: anger toward or hatred for a particular person or group, phobias to a particular subject area or to school itself, and infatuation with another person. However, they are very poor at explaining how individuals come to understand complex ideas and phenomena. But environmental factors are not the only ones that influence learning. Serious consideration of other perspectives began to enter mainstream psychological thinking about learning during the 1960s. For example, people clearly learn by observing others, and a learner's belief about his or her ability to perform a task (i.e., self-efficacy) plays an important role in their learning. In 1963 Albert Bandura and R. H. Walters published the first formal statement of social-learning theory in their book, *Social Learning and Personality Development*. Social-learning theory has clear roots in behavioral theory but differs from these theories in significant ways. During the 1980s the theory became known as social-cognitive theory. Although essentially the same theory, the new name more accurately reflects the cognitive features of the theory and aids in differentiating it from behavioral theories of learning. During the 1970s and 1980s conceptions and definitions of learning began to change dramatically. Behavioral theories gave way to cognitive theories that focused on mental activities and the understanding of complex material. An information-processing metaphor replaced the stimulus-response framework of behavioral theories. These theories emphasized that learning occurred from the inside out rather than from the outside in. During the late 1970s John Flavell and Ann Brown each began to study metacognition—the learners' awareness of their own learning, an ability to reflect on their own thinking, and the capacity to monitor and manage their learning. During the mid 1980s the study of self-regulated learning began to emerge (Zimmerman & Schunk, 2001). Then, especially during the later 1980s and the 1990s, these cognitive theories were challenged by theories that emphasized the importance of social interactions and the sociocultural context of learning. The work of the Russian psychologist Lev Vygotsky (1896-1934) first became available in North America and along with the work of anthropologists such as Jean Lave began to have a major influence on theories of learning. Individuals were seen as initially participating in peripheral activities of a group (known as legitimate peripheral participation) before becoming fully integrated into group activities. Apprenticeship became a metaphor for the way people learn in natural settings. The notion that people learn by observing others, first articulated in social-cognitive theory, was expanded in a new context.

13 The Relationship between Theory and Practice The relationship between theories of learning and educational practices is complicated by several factors. One would think that instructional practices should be based on the best theories of learning available, but this relationship is not as straightforward as one might think. Schools and educational practices are far more likely to be based on philosophical beliefs than on empirical studies and theoretical understanding of learning. Schools are established according to different community and cultural beliefs about the world, the nature of humankind and children, locus of authority, and what should be learned. Schools also differ in their beliefs about teaching and learning, but the philosophical beliefs often come first. Every educational system and instructional program contains a theory of learning, although frequently this theory is implicit and goes unrecognized. These philosophical and theoretical differences are formidable. Many have endured for centuries, and the debate is unlikely to end anytime soon. For example, the "factory model" of schooling dominated education in the United States for many years. This model is based on production and management procedures successful during the industrial revolution. It stands in sharp contrast to the voices of Henry David Thoreau (1817- 1862), John Dewey (1859-1952), and others who advocated discovery, social reform, and freedom as the appropriate means of education. Both perspectives are clearly evident in modern-day discussions of education and instructional practices.

1.3.1 Learning theories

1.3.1.1 Behaviourism

Behaviorism (also called the behaviorist approach) was the primary paradigm in psychology between 1920 to 1950 and is based on a number of underlying assumptions regarding methodology and behavioral analysis: ~

Psychology should be seen as a science. Theories need to be supported by empirical data obtained through careful and controlled observation and measurement of behavior. Watson (1913) stated that "psychology as a behaviorist views it is a purely objective experimental branch of natural science. Its theoretical goal is ... prediction and control".

14 ~

Behaviorism

is primarily concerned with observable behavior, as opposed to internal events like thinking and emotion.

Observable (i.e. external) behavior can be objectively and scientifically measured. Internal events, such as thinking should be explained through behavioral terms (or eliminated altogether). ~

People have no free will - a person's environment determines their behaviour ~

When born our mind is 'tabula rasa' (a blank slate). ~

There is little difference between the learning that takes place in humans and that in other animals.

Therefore, research can be carried out on animals as well as humans ~

Behavior

is the result of stimulus - response (i.e.

all behavior, no matter how complex, can be reduced to a simple stimulus - response

association). Watson described the purpose of psychology as: "To predict, given the stimulus, what reaction will take place; or, given the reaction, state what the situation or stimulus is that has caused the reaction" (1930). ~

All behavior is learnt from the environment. We learn new behavior through classical or operant conditioning. Varieties of Behaviorism Historically, the most significant distinction between versions of behaviorism is that between Watson's original classical behaviorism, and forms of behaviorism later inspired by his work, known collectively as neobehaviorism.

In his book, Psychology

as the Behaviorist Views It Watson (1913) outlines the principles of all behaviorists:

Psychology as the behaviorist views it is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior. Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness. The behaviorist, in his efforts to get a unitary scheme of animal response, recognizes no dividing line between man and brute. The behavior of man, with all of its refinement and complexity, forms only a part of the behaviorist's total scheme of investigation.

15

The

History of Behaviorism ~ Pavlov (1897) published the results of an experiment on conditioning after originally studying digestion in dogs. ~ Watson (1913) launches the behavioral school of psychology (classical conditioning),

publishing an article, "Psychology as the Behaviorist Views It". ~ Watson and Rayner(1920) conditioned an orphan called Albert B (aka Little Albert) to fear a white rat. ~ Thorndike (1905) formalized the "Law of Effect". ~ Skinner (1936) wrote "The Behavior of Organisms" and introduced the concepts of operant conditioning and shaping. ~ Clark Hull's (1943) Principles of Behavior was published. ~ B.F. Skinner (1948) published Walden Two, in which he described a Utopian society founded upon behaviorist principles. ~

Bandura & Walters (1963) published

a book called the "Social Learning Theory and Personality development" which combines both cognitive and behavioral frameworks. ~

Journal of the Experimental Analysis of Behavior (begun in 1958). ~

B.F. Skinner (1971) published his book. Beyond Freedom and Dignity, where he argues that free will is an illusion. 1.3.1.2

Edward Thorndike Edward Thorndike is often referred to as the founder of modern educational psychology. He is perhaps best-known-for his famous puzzle box experiments with cats which led to the development of his law of effect. Thorndike's principle suggests that responses immediately followed by satisfaction will be more likely to occur in the future. The law of effect also suggests that behaviors followed by dissatisfaction or discomfort will become less likely to occur. Thorndike's principle also played an important role in the development of behaviorism and B.F. Skinner's operant conditioning. Whereas classical conditioning depends on developing associations between events, operant conditioning involves learning from the consequences of our behavior. Skinner wasn't the first psychologist to study learning by consequences. Indeed,

16 Skinner's theory of operant conditioning is built on the ideas of Edward Thorndike. Thorndike (1898) studied learning in animals (usually cats). He devised a classic experiment in which he used a puzzle box (see fig. 1) to empirically test the laws of learning. Fig D : Simplified graph of the result of the puzzle box experiment. He placed a cat in the puzzle box, which was encouraged to escape to reach a scrap of fish placed outside. Thorndike would put a cat into the box and time how long it took to escape. The cats experimented with different ways to escape the puzzle box and reach the fish. Eventually they would stumble upon the lever which opened the cage. When it had escaped it was put in again, and once more the time it took to escape was noted. In successive trials the cats would learn that pressing the lever would have favorable consequences and they would adopt this behavior, becoming increasingly quick at pressing the lever. Edward Thorndike put forward a "Law of Effect" which stated that any

behavior that is followed by pleasant consequences is likely to be repeated, and any behavior followed by unpleasant consequences is likely to be stopped. Law of Effect Thorndike termed this the "Law of Effect," which suggested that when satisfaction follows an association, it is more likely to be repeated. If an unfavorable outcome follows an action, then it becomes less likely to be repeated. There are two key aspects of the law of effect: 1. Behaviors immediately followed by favorable consequences are more likely to occur again. In our earlier example, being praised by a supervisor for showing

17 up early for work made it more likely that the behavior would be repeated. 2. Behaviors followed by unfavorable consequences are less likely to occur again. If you show up late for work and miss an important meeting, you will probably be less likely to show up late again in the future. Because you view the missed meeting as a negative outcome, the behavior is less likely to be repeated. The Law of Effect's Influence on Behaviorism Thorndike's discovery had a major influence on the development of behaviorism. B.F. Skinner based his theory of operant conditioning on the law of effect. Skinner even developed his own version of a puzzle box which he referred to as an operant conditioning chamber (also known as a Skinner box). In operant conditioning, behaviors that are reinforced are strengthened, while those that are punished are weakened. The law of effect clearly had a major influence on the development of behaviorism, which went on to become the dominant school of thought in psychology for much of the twentieth-century. 1.3.1.3 B. F. Skinner Operant conditioning developed by B.F Skinner, is a way of learning by means of rewards and punishments. This type of conditioning holds that a certain behavior and a consequence, either a reward or punishment, have a connection which brings about learning. Skinner believed that we do have such a thing as a mind, but that it is simply more productive to study observable behavior rather than internal mental events. Studies on classical conditioning resulted to the emergence of other theories that may explain behavior and learning, and one of these is Operant Conditioning. Operant conditioning tries to negate the belief that internal thoughts and mere motivations would bring about learning a behavior. As a behaviorist, Skinner thought that only external causes of behavior should be considered. The work of Skinner was rooted in a view that classical conditioning was far too simplistic to be a complete explanation of complex human behavior. He believed that the best way to understand behavior is to look at the causes of an action and its consequences. He called this approach operant conditioning. The term "operant" was used by Skinner in order to give us a good overview of his theory. By this term, he meant that this type of conditioning involves only external factors that affect behavior and its consequences. Operant Conditioning deals with operants - intentional actions that have an effect on the surrounding

18 environment. Skinner set out to identify the processes which made certain operant behaviours more or less likely to occur. Skinner's theory of operant conditioning was based on the work of Thorndike (1905). Edward Thorndike studied learning in animals using a puzzle box to propose the theory known as the 'Law of Effect'.

Skinner introduced a new term into the Law of Effect - Reinforcement. Behavior which is reinforced tends to be repeated (i.e. strengthened); behavior which is not reinforced tends to die out-or be extinguished (i.e. weakened).

Skinner (1948) studied operant conditioning

by conducting experiments using animals which he placed in a 'Skinner Box' which was similar to Thorndike's puzzle box.

B.F. Skinner (1938) coined the term operant conditioning; it means roughly changing of behavior by the use of reinforcement which is given after the desired response. Skinner identified three types of responses or operant that can follow behavior. ~ Neutral operants: responses from the environment that neither increase nor decrease the probability of a behavior being repeated. ~ Reinforcers: Responses from the environment that increase the probability of a behavior being repeated. Reinforcers can be either positive or negative.

19 ~ Punishers: Responses from the environment that decrease the likelihood of a behavior being repeated. Punishment weakens behavior. A. Reinforcement Reinforcement is a process of increasing the frequency or rate of a behavior by means of presenting a stimulus shortly after the display of behavior. The event that intensifies the likelihood of the behavior to be repeated is called a reinforcer. There are two types of reinforcer: 1. Positive reinforcers are favorable stimuli that are given after the display of behavior. Positive reinforcement strengthens the probability of a behavior by means of the addition of something. Example : You studied hard and got an A in your Math exam. Your mom rewards you by treating you to your favorite restaurant. After this, you study hard again and also got an A in your History exam. Your mom rewards you by going with you to see a movie you like. For your next examinations, you study hard once more. 2. Negative reinforcers, on the other hand, is the removal of the unfavorable stimuli after the display of behaviour. In negative reinforcement, the behavior or response is intensified by the removal of something. In both positive and negative reinforcements, behavior is increased. B. Punishment In contrast to reinforcement, punishment is a process wherein a stimulus is presented after the display of behavior and causes the decline in the likelihood of behavior to reoccur. There are two types of punishments: 1. Positive punishment is the addition of something which causes the decrease in repeating the behavior that was displayed. Negative punishment, also known as punishment by removal, occurs when a favorable event or outcome is removed after a behavior occurs. Example : A child teased his sister, making her cry so loud. The mother spanked him on his buttocks because of this. The child never teased his sister again. 2. Negative Punishment, on the other hand, is the removal of something which is favorable, in order to decrease the likelihood of the behavior to reoccur.

20 Example : A teenager is caught cheating in an examination. His parents then forbid him to use his car and also reduce his allowance. The teenager does not cheat in his present exams anymore. To have a better understanding of these concepts, here is a table which summarizes the characteristics of positive /negative reinforcement and positive /negative punishment:

Decreases likelihood of behavior	Increases likelihood of behavior	Addition	Positive punishment	Positive reinforcement
Removal	Negative punishment	Negative reinforcement		

C. Schedules of Reinforcement Imagine a rat in a "Skinner box". In operant conditioning if no food pellet is delivered immediately after the lever is pressed then after several attempts the rat stops pressing the lever (how long would someone continue to go to work if their employer stopped paying them?). The behavior has been extinguished. Behaviorists discovered that different patterns (or schedules) of reinforcement had different effects on the speed of learning and on extinction. Ferster and Skinner (1957) devised different ways of delivering reinforcement, and found that this had effects on. 1. The Response Rate - The rate at which the rat pressed the lever (i.e. how hard the rat worked). 2. The Extinction Rate - The rate at which lever pressing dies out (i.e. how soon the rat gave up).

21 Skinner found that the type of reinforcement which produces the slowest rate of extinction (i.e. people will go on repeating the behavior for the longest time without reinforcement) is variable-ratio reinforcement. The type of reinforcement which has the quickest rate of extinction is continuous reinforcement. a. Continuous Reinforcement An animal/human is positively reinforced every time a specific behaviour occurs, e.g. every time a lever is pressed a pellet is delivered and then food delivery is shut off. ~ Response rate is SLOW ~ Extinction rate is FAST b. Fixed Ratio Reinforcement Behavior is reinforced only after the behavior occurs a specified number of times. E.g. one reinforcement is given after every so many correct responses, e.g. after every 5th response. For example a child receives a star for every five words spelt correctly. ~ Response rate is FAST ~ Extinction rate is MEDIUM c. Fixed Interval Reinforcement One reinforcement is given after a fixed time interval providing at least one correct response has been made. An example is being paid by the hour. Another example would be every 15 minutes (half hour, hour, etc.) a pellet is delivered ('providing at least one lever press has been made) then food delivery is shut off.

22 ~ Response rate is MEDIUM ~ Extinction rate is MEDIUM d. Variable Ratio Reinforcement Behavior is reinforced after an unpredictable number of times. For examples gambling or fishing. ~ Response rate is FAST ~ Extinction rate is SLOW (very hard to extinguish because of unpredictability) e. Variable Interval Reinforcement Providing one correct response has been made, reinforcement is given after an unpredictable amount of time has passed, e.g. on average every 5 minutes. An example is a self-employed person being paid at unpredictable times. ~ Response rate is FAST ~ Extinction rate is SLOW D. Behavior Shaping A further important contribution made by Skinner (1951) is the notion of behaviour shaping through successive approximation. Skinner argues that the principles of operant conditioning can be used to produce extremely complex behaviour if rewards and punishments are delivered in such a way as to encourage move an organism closer and closer to the desired behaviour each time. In order to do this, the conditions (or contingencies) required to receive the reward should shift each time the organism moves a step closer to the desired behaviour. According to Skinner, most animal and human behaviour (including language) can be explained as a product of this type of successive approximation. E. Behavior Modification Behavior modification is a set of therapies / techniques based on operant conditioning (Skinner, 1938, 1953). The main principle comprises changing environmental events that are related to a person's behavior. For example, the reinforcement of desired behaviors and ignoring or punishing undesired ones. This is not as simple as it sounds — always reinforcing desired behavior, for example, is basically bribery.

23 There are different types of positive reinforcements. Primary reinforcement is when a reward strengthens a behavior by itself. Secondary reinforcement is when something strengthens a behavior because it leads to a primary reinforcer. Examples of behavior modification therapy include token economy and behavior shaping. Operant Conditioning in the Classroom In the conventional learning situation operant conditioning applies largely to issues of class and student management, rather than to learning content. It is very relevant to shaping skill performance. A simple way to shape behavior is to provide feedback on learner performance, e.g. compliments, approval, encouragement, and affirmation. A variable-ratio produces the highest response rate for students learning a new task, whereby initially reinforcement (e.g. praise) occurs at frequent intervals, and as the performance improves reinforcement occurs less frequently, until eventually only exceptional outcomes are reinforced. For example, if a teacher wanted to encourage students to answer questions in class they should praise them for every attempt (regardless of whether their answer is correct). Gradually the teacher will only praise the students when their answer is correct, and over time only exceptional answers will be praised. 1.3.1.4 Cognitivismn During the 1960s, discontent with the inadequacies of behaviourism another school of thought was developing besides the behavioural thinking, the cognitive aspects. The behaviourist perspective could not easily explain why people attempt to organise and make sense of the information they learn. One example includes remembering general meanings rather than word for word information. Among learning psychologists there emerged a growing realisation that mental events or cognition could no longer be ignored. Cognitivism is "the psychology of learning which emphasizes human cognition or intelligence as a special endowment enabling man to form hypotheses- and develop intellectually" and is also known as cognitive development. The underlying concepts of cognitivism involve how we think and gain knowledge. Cognitivism involves examining learning, memory, problem solving skills, and intelligence. Cognitive theorists may want to understand how problem solving changes throughout childhood, how cultural differences affect the way we view our own academic achievements,

24 language development, and much more. Cognitive psychologists share with behaviourists the belief that the study of learning should be objective and that learning theories should be developed from the results of empirical research. However, cognitivists disagree with the behaviourists in one critical aspect. By observing the responses that individuals make to different stimulus conditions, cognitivists believe that they can draw inferences about the nature of the internal cognitive processes that produce those responses. Many ideas and assumptions of cognitivism can be traced back to the early decades of the twentieth century. Of all theories, the theories of Jean Piaget of Switzerland are the ones that have provided psychology with very elaborated account of developmental changes in cognitive abilities. 1.3.1.5 Jean Piaget Piaget (1936)

was the first psychologist to make a systematic study of cognitive development. His contributions include a theory of child cognitive development, detailed observational studies of cognition in children, and a series of simple but ingenious tests to reveal different cognitive abilities.

Before Piaget's work, the common assumption in psychology was that children are merely less competent thinkers than adults. Piaget showed that young children think in strikingly different ways compared to adults. According to Piaget, children are born with a very basic mental structure (genetically inherited and evolved) on which all subsequent learning and knowledge is based. Jean Piaget (1896-1980)

was one of the most influential cognitive psychologist. He was a student of biology and zoology and learnt that survival requires adaptation. Therefore he viewed the development of human cognition, or intelligence, as the continual struggle of a very complex organism trying to adapt to a very complex environment. There Are Three Basic Components To Piaget's Cognitive Theory:

A. Schemas B. Adaptation

processes that enable the transition from one stage to another (equilibrium, assimilation). C. Stages of Development:

25 ~ sensorimotor ~ preoperational ~ concrete operational ~ formal operational

According to Piaget's theory, human development can be outlined in terms of functions and cognitive structures. The functions are inborn biological processes that are identical for everyone and stay unchanged throughout our lives. The purpose of these functions is to construct internal cognitive structures. The structures, in contrast, changes repeatedly as the child grows. A. Schemas Piaget & Cook (1952)

defined a schema as 'cohesive, repeatable action sequence possessing component actions that are tightly interconnected and governed by a core meaning'. In more simple terms Piaget called the schema the basic building block of intelligent behavior - a way of organizing knowledge. Indeed, it is useful to think of schemas as "units" of knowledge, each relating to one aspect of the world, including objects, actions and abstract (i.e. theoretical) Concepts.

The schemas Piaget described tend to be simpler than this - especially those used by infants. He described how - as a child gets older - his or her schemas become more numerous and elaborate. Piaget believed that newborn babies have a small number of innate schemas - even before they have had much opportunity to experience the world. These neonatal schemas are the cognitive structures underlying innate reflexes.

B. Adaptation Adaptation refers to the tendency of the organism to fit with its environment in ways that promote survival. It is composed of three terms; assimilation, accommodation and equilibration. Assimilation is the tendency to understand new experience in terms of existing knowledge. Whenever we come across something new, we try to make sense of it, built upon our existing cognitive structures. Accommodation occurs when the new information is too complex to be integrated into the existing structure - this means that, cognitive structures change in response to new experiences.

26

Equilibration is the force which moves development along. Piaget believed that cognitive development did not progress at a steady rate, but rather in leaps and bounds. Equilibrium occurs when a child's schemas can deal with most new information through assimilation. However, an unpleasant state of disequilibrium occurs when new information cannot be fitted into existing schemas (assimilation).

Once the new information is acquired the process of assimilation with the new schema will continue until the next time we need to make an adjustment to it. Example of Assimilation A 2 year old child sees a man who is bald on top of his head and has long frizzy hair on the sides. To his father's horror, the toddler shouts "Clown, clown" (Siegler, DeLoache. & Eisenberg, 2003). Example of Accommodation In the "clown" incident, the boy's father explained to his son that the man was not a clown and that even though his hair was like a clown's, wearing a funny costume and doing silly things to make people laugh. With this new knowledge, the boy was able to change his schema of "clown" and make this idea fit better to a standard concept of "clown".

27 C. Stages of Development Piaget

did many experiments on children's way of thinking and concluded that human beings go through several distinct stages of cognitive development. Each stage involves the acquisition of new skills and rest upon the successful completion of the preceding one. The first stage is the sensorimotor, (0-2year). Until about four months of age, the infant can not differentiate itself from the environment. Gradually the child learns to distinguish people from objects and that both have an existence independent of their immediate perception. This stage draws its name, sensorimotor, from that the child learns mainly by touching objects, manipulating them and physically exploring the environment. By the end of this stage the child understands that its environment has distinctive and stable properties. The next stage is called the operational (2years-7years). This is the stage when the child acquires a mastery of a language and becomes able to use words to represent objects and images in a symbolic fashion. Piaget terms this stage pre-operational because children are not yet able to use their developing mental capabilities systematically. At this stage children are egocentric, which means that the child has the tendency to interpret the world exclusively with its own position. The child does not understand, for an example, that others see things and objects from a different perspective from their own. During this phase of development the children have no general understanding of categories of thought that adults take for granted, ideas such as causality, speed, weight or number. The third stage is the concrete operational period (7years-11 years). During this period children master abstract, logical notions. They are able to handle ideas such as causality without much difficulty, and they are fit to carry out the mathematical operations of multiplying, dividing and subtracting. By this stage children are much less egocentric. The fourth stage is called the formal operational period (11years+). During adolescence, the developing child becomes able to comprehend highly abstract and hypothetical concepts. When faced with a problem, children at this stage should be able to review all possible ways of solving it and go through them theoretically in order to reach a solution.

28 According to Piaget, the first three stages of development are general, but not all adults come to the formal operational stage. The development of formal operational thought relies in part on the process of schooling. Adults of limited educational achievement tend to remain to think in more concrete terms and retain large traces of egocentrism. Classroom Implication of Piaget's Work The educational interest of Piaget's work lies firstly in this procedure he used to make educationists aware of the child's thought processes and the conditions under which intellectual structures are established at different ages. There are four principles that are most often cited in Piaget's theory regarding to education. The first is the importance of readiness. This principle follows from his emphasis on assimilation. Experience, educational or otherwise, does not simply happen to a child; rather it must always be assimilated to current cognitive structure. A new experience can only be of any value if the child can make sense of it. Teaching that is far away the child's level is unlikely to be useful. The second principle concerns the motivation for cognitive activity. Educational content that is either too advanced or too simple is unlikely to be interesting. The educational subject has to be slightly beyond the current level of the child so that it provides experience familiar enough to assimilate however challenging enough to provoke disequilibrium. The third is the awareness of what level the child has reached and the information of what it can be expected at that level and what not. Piaget's studies often identify steps and sequences through which particular content domains are mastered. It is therefore possible not only to determine where the child is but also to know the natural next steps for development. The final principle is more functional. It concerns Piaget's emphasis on intelligence as an action. In his view education should be build on the child's natural curiosity and natural tendency to act on the world in order to understand it. Knowledge is most meaningful when children construct it themselves rather than having it imposed upon them. The experience in acquiring a new knowledge through action allows two different kinds of knowledge to develop: the physical experience and the logico-mathematical experience. Physical experience produces knowledge of the properties of the objects

29 acted upon. Logico-mathematical experience results in knowledge, not of the objects, but of the actions themselves and their results. From physical experience, one would gain knowledge of the weight of objects; or the fact that, other things being equal, weight increases as volume increases, and so on. When speaking of logico-mathematical experience the point is that even the highest forms abstract reasoning have their origin in action. The aim for education, according to Piaget, is to make individuals who are critical, creative and inventive discoverers. So the major part of the child's learning relies on active experimentation and discovery. The active classroom has been associated with the term progressive teaching, where pupils are in active role, learning predominantly by discovery techniques, with emphasis on creative expression. Subject matter tends to be combined, with the teacher performing as a guide to educational experiences and encouraging cooperative work. External rewards and punishments are seen as being unimportant, and there is not so much concern with traditional academic standards and testing (Spencer, 1991). As a biologist Piaget tended to look at development more from the physical change and the readiness for each stage to develop any further. Another perspective in the cognitive movement was from those who saw the connection between the environment and the child development in a constructive way, and Jerome Bruner's ideas are those that are well known. Evaluation of Piaget's Theory

The influence of Piaget's ideas in developmental psychology has been enormous. He changed how people viewed the child's world and their methods of studying children. He was an inspiration to many who came after and took up his ideas. Piaget's ideas have generated a huge amount of research which has increased our understanding of cognitive development. His ideas have been of practical use in understanding and communicating with children, particularly in the field of education (

re: Discovery Learning). Some years ago, Jean Piaget's theory of cognitive development during childhood was regarded as the major paradigm in which to understand the complex procedure of mental progression through different levels of thinking and understanding. One of the most important contributions that Piaget made was to establish the fact that the cognitive processes of young children are not simply immature versions of that of an adult, but that they have their very own rules. Piaget's theory and in fact his

30 findings have been widely challenged later on. Never the less, Piaget's ideas still maintain a vital influence in both general psychology and contemporary education. 1.3.1.6 Kohlberg Lawrence Kohlberg (1966, 1969) suggested that children had made a cognitive judgement about their gender identity before they select same sex models for sex typed behaviors. Lawrence Kohlberg's Cognitive Development Theory : Despite the focus on cognition and internal self-regulation in Bandura's more recent work, many theorists argue that there are more fundamental cognitive processes that need to be taken into account when analysing children's gender development. In particular, researchers have suggested that children's concepts of themselves as male or female play a critical role in encouraging children to identify and endorse gender roles. This notion was first set out at the same time as the early social learning approaches to gender development. In Kohlberg's view, boys think "I am a boy, therefore I want to do boy things, therefore the opportunity to do boy things (and to gain approval for doing them) is rewarding". His emphasis, then, is on gender role development as being self-socialised; certainly, there is plenty of information about gender roles in the social environment, but it is the child who actively seeks out, organises, and then behaves in accordance with that information. This contrasts markedly with the view of the child as behaving in a gender-typed 'way simply because he or she is rewarded - or sees someone else being rewarded - for it. A major implication of this perspective is that children's appreciation of- and adherence to -gender roles is dependent on their gender identity, their sense of being male or female. Kohlberg, and other proponents of this approach, argued that children develop a sense of gender identity in a sequence of distinct stages, an idea that owes a great deal to Jean Piaget's influential work on cognitive development. Piaget had argued that children's logical thought could be seen to develop through a sequence of discrete stages, each qualitatively different from the others. Kohlberg connected this development with growth in children's sense of gender identity. The Kohlbergian sequence of gender identity development involves three stages. Kohlberg 's stages of gender development Stage 1: Gender labeling

31 Children can identify themselves and other people as girls or boys (mummies or daddies). However, gender is not seen as stable over time or across changes in superficial physical characteristics (e.g. length of hair, clothes). Stage 2: Gender stability Children recognise that gender is stable over time: boys will grow up to be daddies, and girls will grow up to be mummies. However, the unchanging nature of gender - that it remains the same regardless of changes in superficial appearance or activity choice - is not yet appreciated. Stage 3: Gender consistency Children have a full appreciation of the permanence of gender over time and across situations. By the age of around three years, in the gender labelling stage, children become able to label themselves and others as boys or girls accurately. It is not for another couple of years, however, that children are thought to enter the gender stability stage and appreciate that this classification would remain stable over time (i.e. a boy would grow up to be a daddy, and a girl would grow up to be a mummy). This understanding was thought to develop in parallel with classic Piagetian changes in children's appreciation of conservation (e.g. understanding that the volume of water in a beaker would remain the same after the water is poured into a beaker of different dimensions). Most importantly, Kohlberg argued that the "child's gender identity can provide a stable organizer of the child's psychosexual attitudes only when he is categorically certain of its unchangeability" (1966). Thus, the mature understanding of gender constancy was considered critically important for the gender-typing process. Kohlberg's cognitive-developmental theory left the opportunity to further research in cognitive development perspective of children. Evaluation The first issue with this theory is quite easy to get your head around; it is that the theory is descriptive rather than explanative. This means that the theory tells you what happens but not why. Another issue is that it may well be that children are at these stages earlier, but because of limits in their language skills they are not able to verbalise this. Therefore

32 it could be less of a theory of gender development and more a theory of the ability to talk about different concepts of gender. And a final evaluative comment is that it takes a very broad approach. Not all children have the same understanding of gender and it doesn't account for how gender changes over time. For example, 50 years ago childcare would be primarily the job of women, but nowadays it would seem odd if a father didn't get involved in childcare. 1.3.1.7

Social Constructivism Social constructivism maintains that human development is socially situated and knowledge is constructed through interaction with others. It is a sociological theory of knowledge that applies the general philosophical constructivism into the social. The concept has a long history in sociological and philosophical thought, but the term has been coined by Peter L. Berger and Thomas Luckmann with their book *The Social Construction of Reality*. Assumptions of Social Constructivism Social constructivism is based on specific assumptions about reality, knowledge, and learning. To understand and apply models of instruction that are rooted in the perspectives of social constructivists, it is important to know the premises that underlie them. Reality: Social constructivists believe that reality is constructed through human activity. Members of a society together invent the properties of the world (Kukla, 2000). For the social constructivist, reality cannot be discovered: it does not exist prior to its social invention. Knowledge: To social constructivists, knowledge is also a human product, and is socially and culturally constructed (Ernest, 1999; Gredler, 1997; Prawat & Floden, 1994). Individuals create meaning through their interactions with each other and with the environment they live in. Learning: Social constructivists view learning as a social process. It does not take place only within an individual, nor is it a passive development of behaviors that are shaped by external forces (McMahon, 1997). Meaningful learning occurs when individuals are engaged in social activities.

33 General Perspectives of Social Constructivism on

Learning 1.3.1.8 Lev Vygotsky The work of Lev Vygotsky (1896-1934) has become the foundation of much research and theory in cognitive development

over the past several decades, particularly of what has become known as Social Development Theory.

Vygotsky's theories stress the fundamental role of social interaction in the development of cognition Vygotsky (1978), as he believed strongly that community plays a central role in the process of "making meaning." Unlike Piaget's notion that children's development must necessarily

precede their learning, Vygotsky argued, "learning is a necessary and universal aspect of the process of developing culturally organized, specifically human psychological function" (1978). In other words, social learning tends to precede (i.e. come before)

development. Vygotsky has developed a sociocultural approach to cognitive development. He developed his theories at around the same time as Jean Piaget was starting to develop his ideas (1920's and 30's), but he died at the age of 38 and

so his theories are incomplete - although some of his writings are still

being translated from Russian. No single principle (such as Piaget's equilibration) can account for development. Individual development cannot be understood without reference to the social and cultural context within which it is embedded, Higher mental processes in the individual have their origin in

social processes. Vygotsky's theory differs from that of Piaget in a number of important ways: 1.

Vygotsky places more emphasis on culture affecting/shaping cognitive development - this contradicts Piaget's view of universal stages and content of development. (Vygotsky does not refer to stages in the way that Piaget does). (i) Hence Vygotsky assumes cognitive development varies across cultures, whereas Piaget states cognitive development is mostly universal across cultures. 2. Vygotsky places considerably more emphasis on social factors contributing to cognitive development (Piaget is criticized for underestimating this). (i) Vygotsky states cognitive development stems from social interactions from guided learning within the zone of proximal development as children and their partners co-construct knowledge. In contrast Piaget maintains that cognitive development stems largely from independent explorations in which children construct knowledge of their own.

34 (ii) For Vygotsky, the environment in which children grow up will influence how they think and what they think about. 3. Vygotsky places more (and different) emphasis on the role of language in cognitive development (again Piaget is criticized for lack of emphasis on this). For Vygotsky, cognitive development results from an internalization of language. According to Piaget, language depends on thought for its development (i.e. thought comes before language). For Vygotsky, thought and language are initially separate systems from the beginning of life, merging at around three years of age, producing verbal thought (inner speech). 4. According to Vygotsky adults are an important source of cognitive development. Adults transmit their culture's tools of intellectual adaptation that children internalize. In contrast Piaget emphasizes the importance of peers as peer interaction promotes social perspective taking. Effects of Culture : Tools of intellectual adaptation Like Piaget, Vygotsky claimed that infants are born with the basic materials/ abilities for intellectual development. Lev Vygotsky refers to Elementary Mental Functions - Attention, Sensation, Perception, Memory, Eventually, through interaction within the sociocultural environment, these are developed into more sophisticated and effective mental processes/strategies which he refers to as Higher Mental Functions. Vygotsky refers to tools of intellectual adaptation - these allow children to use the basic mental functions more effectively/adaptively, and these are culturally determined (e.g. memory mnemonics, mind maps). Vygotsky therefore sees cognitive functions, even those carried out alone, as affected by the beliefs, values and tools of intellectual adaptation of the culture in which a person develops and therefore socio-culturally determined. The tools of intellectual adaptation therefore vary from culture to culture - as in the memory example. In order to gain an understanding of Vygotsky's theories on cognitive development, one must understand two of the main principles of Vygotsky's work: the More Knowledgeable Other (MKO) and the Zone of Proximal Development (ZPD).

35 A. More Knowledgeable Other The more knowledgeable other (MKO) is somewhat self-explanatory; it refers to someone who has a better understanding or a higher ability level than the learner, with respect to a particular task, process, or concept. Although the implication is that the MKO is a teacher or an older adult, this is not necessarily the case. Many times, a child's peers or an adult's children may be the individuals with more knowledge or experience. For example, who is more likely to know more about the newest teenage music groups, how to win at the most recent PlayStation game, or how to correctly perform the newest dance craze - a child or their parents? In fact, the MKO need not be a person at all. Some companies, to support employees in their learning process, are now using electronic performance support systems. Electronic tutors have also been used in educational settings to facilitate and guide students through the learning process. The key to MKOs is that they must have (or be programmed with) more knowledge about the topic being learned than the learner does. B. Zone of Proximal Development The concept of the More Knowledgeable Other is integrally related to the second important principle of Vygotsky's work, the Zone of Proximal Development. This is an important concept that relates to the difference between what a child can achieve independently and what a child can achieve with guidance and encouragement from a skilled partner. For example, the child could not solve the jigsaw puzzle (in the example above) by itself and would have taken a long time to do so (if at all), but was able to solve

36 it following interaction with the father, and has developed competence at this skill that will be applied to future jigsaws. Vygotsky (1978) sees the Zone of Proximal Development as the area where the most sensitive instruction or guidance should be given - allowing the child to develop skills they will then use on their own - developing higher mental functions. Vygotsky also views interaction with peers as an effective way of developing skills and strategies. He suggests that teachers use cooperative learning exercises where less competent children develop with help from more skillful peers - within the zone of proximal development. Evidence for Vygotsky and the ZPD Freund (1990) conducted a study in which children had to decide which items of furniture should be placed in particular areas of a dolls house. Some children were allowed to play with their mother in a similar situation before they attempted it alone (zone of proximal development) whilst others were allowed to work on this by themselves (Piaget's discovery learning). Freund found that those who had previously worked with their mother (ZPD) showed greatest improvement compared with their first attempt at the task. The conclusion being that guided learning within the ZPD led to greater understanding/performance than working alone (discovery learning). Vygotsky and Language Vygotsky believed that language develops from social interactions, for communication purposes. Vygotsky viewed language as man's greatest tool, a means for communicating with the outside world. According to Vygotsky (1962) language plays 2 critical roles in cognitive development :

37 1: It is the main means by which adults transmit information to children. 2: Language itself becomes a very powerful tool of intellectual adaptation. Vygotsky (1987) differentiates between three forms of language: social speech which is external communication used to talk to others (typical from the age of two); private speech (typical from the age of three) which is directed to the self and serves an intellectual function; and finally private speech goes underground, diminishing in audibility as it takes on a self-regulating function and is transformed into silent inner speech (typical from the age of seven). Perhaps the main criticism of Vygotsky's work concerns the assumption that it is relevant to all cultures. Rogoff (1990) dismisses the idea that Vygotsky's ideas are culturally universal and instead states the concept of scaffolding - which is heavily dependent on verbal instruction - may not be equally useful in all cultures for all types of learning. Indeed, in some instances observation and practice may be more effective ways of learning certain skills. 1.3.1.9

Albert

Bandura The social learning theory proposed by Albert Bandura has become perhaps the most influential theory of learning and development. While rooted in many of the basic concepts of traditional learning theory, Bandura believed that direct reinforcement could not account for all types of learning. While the behavioral theories of learning suggested that all learning was the result of associations formed by conditioning, reinforcement, and punishment, Bandura's social learning theory proposed that learning can also occur simply by observing the actions of others. His theory added a social element, arguing that people can learn new information and behaviors by watching other people. Known as observational learning (or modeling), this type of learning can be used to explain a wide variety of behaviors.

Bandura explained: "Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action." Albert Bandura, Social Learning Theory, 1977.

38 Albert Bandura combines both behavioral and cognitive philosophies to form this theory of modeling, or observational learning. He sees the human personality as an interaction between the environment and a person's psychological processes. Bandura says that humans are able to control their behavior through a process known as self regulation. This process involves three steps: 1) Self observation Humans look at themselves and their behavior and keep track of their actions. 2) Judgment Humans compare these observations with standards. These standards can be rules set by society, or standards that the individual sets for him or herself. 3) Self responderif, after judging himself or herself, the person does well in comparison with the set standards, he or she will give him or her- self a rewarding self-response. If the person does poorly he or she then administers a punishing self-response to him or herself, Self regulation has been incorporated into self control therapy which has been very successful in dealing with problems such as smoking. Dealing with modeling is his study with Bobo Dwed a video to children in which an adult beat vided the children into three groups, and each The first video showed the adult being rewarded for his behavior, the second video showed the adult being punished for his behavior, and the third video showed no consequences for the behavior. He then studied the differences between how male children and female children reacted to this video in regard to whether they imitated the observed behavior or not. The results are shown to the left. This graph represents the number of imitative responses by males and females after observing one of the three different

39 videos. The results show that males in all cases imitated the viewed behavior more so than females. In social learning theory Albert Bandura (1977) agrees with the behaviourist learning theories of classical conditioning and operant conditioning. However, he adds two important ideas: A. Mediating processes occur between stimuli & responses. B. Behavior is learned from the environment through the process of observational learning. A. Mediation Processes SLT is often described as the 'bridge' between traditional learning theory (ie. behaviourism) and the cognitive approach. This is because it focuses on how mental (cognitive) factors are involved in learning. Unlike Skinner, Bandura (1977) believes that humans are active information processors and think about the relationship between their behavior and its consequences. Observational learning could not occur unless cognitive processes were at work. These mental factors mediate (i.e. intervene) in the learning process to determine whether a new response is acquired. Therefore, individuals do not automatically observe the behaviour of a model and imitate it. There is some thought prior to imitation and this consideration is called mediational processes. This occurs between observing the behaviour (stimulus) and imitating it or not (response).

40 There are four mediational processes proposed by Bandura: ~ Attention: The extent to which we are exposed/notice the behaviour. For a behaviour to be imitated it has to grab our attention. We observe many behaviours on a daily basis and many of these are not noteworthy. Attention is therefore extremely important in whether a behaviour has an influence in others imitating it. ~ Retention : How well the behaviour is remembered. The behaviour may be noticed, but is it not always remembered which obviously prevents imitation. It is important therefore that a memory of the behaviour is formed to be performed later by the observer. Much of social learning is not immediate so this process is especially vital in those cases. Even if the behaviour is reproduced shortly after seeing it, there needs to be a memory to refer to. ~ Reproduction : This is the ability to perform the behavior that the model has just demonstrated. We see much behaviour on a daily basis that we would like to be able to imitate but that this not always possible. We are limited by our physical ability and for that reason, even if we wish to reproduce the behaviour, we cannot. This influences our decisions whether to try and imitate it or not. Imagine the scenario of a 90-year-old-lady who struggles to walk watching Dancing on Ice. She may appreciate that the skill is a desirable one, but she will not attempt to imitate it because she physically cannot do it. ~ Motivation : The will to perform the behaviour. The rewards and punishment that follow a behaviour will be considered by the observer. If the perceived rewards outweighs the perceived costs (if there are any) then the behaviour will be more likely to be imitated by the observer. If the vicarious reinforcement is not seen to be important enough to the observer then they will not imitate the behaviour. B. Observational Learning Children observe the people around them behaving in various ways. This is illustrated during the famous Bo bo doll experiment (Bandura, 1961). Individuals that are observed are called models. In society, children are surrounded by many influential models, such as parents within the family, characters on children's TV, friends within their peer group and teachers at school. These models provide examples of behavior to observe and imitate, e.g. masculine and feminine, pro and anti-social etc.

41 Children pay attention to some of these people (models) and encode their behavior. At a later time they may imitate (i.e. copy) the behavior they have observed. They may do this regardless of whether the behavior is 'gender appropriate' or not, but there are a number of processes that make it more likely that a child will reproduce the behavior that its society deems appropriate for its sex. First, the child is more likely to attend to and imitate those people it perceives as similar to itself. Consequently, it is more likely to imitate behavior modeled by people of the same sex. Second, the people around the child will respond to the behavior it imitates with either reinforcement or punishment. If a child imitates a model's behavior and the consequences are rewarding, the child is likely to continue performing the behavior. If parent sees a little girl consoling her teddy bear and says "what a kind girl you are", this is rewarding for the child and makes it more likely that she will repeat the behavior. Her behavior has been reinforced (i.e. strengthened). Reinforcement can be external or internal and can be positive or negative. If a child wants approval from parents or peers, this approval is an external reinforcement, but feeling happy about being approved of is an internal reinforcement. A child will behave in a way which it believes will earn approval because it desires approval. Positive (or negative) reinforcement will have little impact if the reinforcement offered externally does not match with an individual's needs. Reinforcement can be positive or negative, but the important factor is that it will usually lead to a change in a person's behavior. Third, the child will also take into account of what happens to other people when deciding whether or not to copy someone's actions. A person learns by observing the consequences of another person's (i.e. models) behaviour e.g. a younger sister observing an older sister being rewarded for a particular behaviour is more likely to repeat that behaviour herself. This is known as vicarious reinforcement. This relates to attachment to specific models that possess qualities seen as rewarding. Children will have a number of models with whom they identify. These may be people in their immediate world, such as parents or older siblings, or could be fantasy characters or people in the media. The motivation to identify with a particular model is that they have a quality which the individual would like to possess.

42 Identification occurs with another person (the model) and involves taking on (or adopting) observed behaviors, values, beliefs and attitudes of the person with whom you are identifying. The term identification as used by Social Learning Theory is similar to the Freudian term related to the Oedipus complex. For example, they both involve internalizing or adopting another person's behavior. However, during the Oedipus complex the child can only identify with the same sex parent, whereas with Social Learning Theory the person (child or adult) can potentially identify with any other person. Identification is different to imitation as it may involve a number of behaviors being adopted, whereas imitation usually involves copying a single behavior. Critical Evaluation The social learning approach takes thought processes into account and acknowledges the role that they play in deciding if a behaviour is to be imitated or not. As such, SLT provides a more comprehensive explanation of human learning by recognising the role of mediational processes. In addition to influencing other psychologists, Bandura's social learning theory has had important implication in the field of education. Today, both teachers and parents recognize the importance of modeling appropriate behaviors. Other classroom strategies such as encouraging children and building self-efficacy are also rooted in social learning theory. 1.4 Intelligence 1.4.1 Concept and Definition Intelligence has been an important and controversial topic throughout psychology's history. Despite the substantial interest in the subject, there is still considerable disagreement about what exactly constitutes intelligence. In addition to questions of exactly how to define intelligence, the debate continues today about whether accurate measurements are even possible.

At various points throughout recent history, researchers have proposed some different definitions of intelligence. While these definitions can vary considerably from one theorist to the next, current conceptualizations tend to suggest that intelligence involves the ability to:

43 Learn. The acquisition, retention, and use of knowledge is an important component of intelligence. Recognize problems. To put knowledge to use, people must first be able to identify possible problems in the environment that need to be addressed. Solve problems. People must then be able to take what they have learned to come up with a useful solution to a problem they have noticed in the world around them. Intelligence involves some different mental abilities including logic, reasoning, problem-solving and planning.

While the subject of intelligence is one of the largest and most heavily researched, it is also one of the topics that generate the greatest controversy. Intelligence, the dictionary says, is "The capacity to acquire and apply knowledge." A number of definitions have been evolved by psychologists according to their own concept of the term intelligence. Being dissatisfied by the number of definitions and their interpretation, Boring defined "Intelligence is what intelligence tests test." All the definitions have been systematized by Vernon and Freeman. Let us examine the classification of the definitions of intelligence done by these psychologists. Vernon classified all the definitions under three broad categories such as biological, psychological and operational. Freeman, though, classified all definitions of intelligence into three categories but his approach differs from Vernon.

1.4.2 Vernon's Classification

1) Biological approach. This category of definitions emphasizes the adaptive nature of human beings. Man is one kind of organism among a million on earth who adapts to his environment. If we interpret psychology as a biological science then there is little doubt that we must also interpret intelligence as adaptation to environment. Any other view of intelligence is superficial. This is the most far reaching and general view of intelligence. According to Vernon, this idea of intelligence is the most fundamental of all. Intelligence according to this approach is the capacity to adapt relatively in new situations of life. But if we critically examine the biological concept of intelligence we find that many great men to whom one could hardly deny an assessment of exceptional intelligence (Pascal, Kafka and numerous academic experts) have been spectacularly ill-adapted in their social and physical environment. The biological concept of intelligence is not of great use from practical point of view in the study of individual differences within a culture.

44 (2) Psychological approach. The second category of definitions, according to Vernon, is psychological. Few of the definitions advanced by experts contained a clear commitment about the relative effects of hereditary and environmental influences in the development of intelligence. C. Burt, an English psychologist, defined intelligence as innate general cognitive ability. Since scores on existing intelligence tests have often been shown to be susceptible to environmental influences, a consequence of this definition is that intelligence as defined differs from intelligence as measured by tests.

(3) Operational approach. The third category of definitions of intelligence is operational. Operational definitions are important to understand the concept of intelligence in clear and definite terms. Scientific terms are defined not in isolation, as in a dictionary but by stating the observable conditions under which a sentence containing the term is true or false, instead of defining the word by itself. Such definitions are called for they frequently state what must be done in order to make certain observations. For instance, in order to determine a child's I.Q., we must first administer a test of specific kind. Then we observe his performance, on the test and finally make certain calculations and decisions. All of these conditions define the meaning of I.Q. as it appears in the sentence. Ramu has an I.Q. of 115. It would certainly be of great advantage to have an operational definition of intelligence that everyone would accept for scientific work and would distinguish it from vague popular conceptions of the term.

Freeman's Classification

(1) Adjustment or adaptation ability. The definitions of this category lay emphasis on the adjustment ability of an individual to his environment. The individual is thought intelligent in proportion to his ability to adjust to new situations and problems of life. The person who is intelligent has no difficulty in the adjustment. He adjusts in an effective way and can vary his behaviour according to the situation. A person who is less intelligent is rigid and has less responses to make in the process of social interaction. The definition, given by Stern, comes under this category. He defined intelligence as a general capacity of an individual, consciously to adjust his thinking to new environment.

(2) Ability to learn. The definitions of this category emphasize the importance of an individual's ability to learn. Learning ability is an index of one's intelligence. Buckingham says, "Intelligence is the learning ability."

45 (3) Ability to carry on abstract thinking. This category of definitions lays more emphasis on the effective use of concepts and symbols in dealing with situations,

especially, presenting a problem to be solved through the use of verbal and numerical symbols. Terman, defining intelligence, says, "

An individual is intelligent in proportion as he is able to carry on abstract thinking."

Two comprehensive definitions: D.

Wechsler "

Intelligence

is

the aggregate or global capacity of the

individual

to act purposefully, to think rationally and to deal effectively with his environment.”

Stoddard (1943) presented comprehensive description “

Intelligence is

the ability to

undertake activities that are characterized by (1) difficulty, (2) complexity, (3) abstraction, (4) economy, (5) adaptiveness to a

goal, (6) social value and (7)

the emergence of originals, and to maintain such activities under conditions that demand a concentration of energy and a resistance to emotional forces.” 1.4.3

Types of Intelligence E.L. Thorndike has classified intelligence into three categories which are as follows : (a) Concrete intelligence. (b) Abstract intelligence. (c) Social intelligence. (a) Concrete Intelligence. Concrete intelligence means intelligence in relation to concrete materials. It is the ability of an individual to comprehend actual situations and react to them adequately. The concrete intelligence is evident from various activities of daily life. This kind of intelligence is measured by performance tests and picture tests in which the individual has to manipulate concrete materials. (b) Abstract intelligence. It is the ability to respond to words, numbers and letters etc. All tests of intelligence which require manipulation of symbols are tests of abstract intelligence. Abstract intelligence is required in the ordinary academic subjects in schools, such as reading, writing and history and so on. The highest level of abstract intelligence is manifested in the thought of philosophers and in ease of mathematical formula. (c) Social intelligence. Social intelligence means ability of an individual to react to social situations of daily life. Social intelligence would not include the 46 feelings or emotions aroused in us by other, but merely our ability to understand others and to react in such a way towards them that the ends desired should be attained. High social intelligence is possessed by those who are able to handle people well. Adequate adjustment in social situations is the index of social intelligence. Measuring Intelligence The term “intelligence quotient,” or IQ, was first coined in the early twentieth century by a German psychologist named William Stern. Psychologist Alfred Binet developed the very first intelligence tests to help the French government identify schoolchildren who needed extra academic assistance. Binet was the first to introduce the concept of mental age or a set of abilities that children of a certain age possess. Since that time, intelligence testing has emerged as a widely used tool that has led to the development of many other tests of skill and aptitude. Eventually, Binet and colleague Theodore Simon came up with a test that not only distinguished between fast and slow learners but also between children of different age groups as well (Binet & Simon, 1916). They noticed that the fast learners seemed to give answers to questions that older children might give, whereas the slow learners gave answers that were more typical of a younger child. Binet decided that the key element to be tested was a child’s mental age, or the average age at which children could successfully answer a particular level of questions. STANFORD BINET AND Q Terman (1916), a researcher at Stanford University, adopted German psychologist William Stern’s method for comparing mental age and chronological age (number of years since birth) for use with the translated and revised Binet test. Stern’s (1912) formula was to divide the mental age (MA) by the chronological age (CA) and multiply the result by 100 to get rid of any decimal points. The resulting score is called an intelligence (quotient, or IQ. A quotient is a number that results from dividing one number by another.) $IQ = \frac{MA}{CA} \times 100$ Today, the Stanford-Binet Intelligence Scales, Fifth Edition (SB5) (Roid, 2003) is often used by educators to make decisions about the placement of students into special educational programs. Most children are given this test at around the second grade, or age 7 or 8. See Table 8.3 for descriptions of some items from the SB5. THE WECHSLER TESTS David Wechsler (1981, 1989, 1991) was the first to devise a series of tests designed for specific age groups (also given to an individual,

47 not just groups, as is the Stanford-Binet test). Originally dissatisfied with the fact that the Stanford-Binet was designed for children but being administered to adults, he developed an IQ test specifically for adults. He later designed tests specifically for older school-age children and preschool children as well as for those in the early grades. The Wechsler Adult Intelligence Scale (WAIS-IV), Wechsler Intelligence Scale for Children (WISC-IV), and the Wechsler Preschool and Primary Scale of Intelligence (WPPSI-III) are the three versions of this test, and are now used more frequently than the Stanford-Binet. These tests differ from the Stanford-Binet in that they each have a verbal and a performance (nonverbal) scale, as well as providing an overall score of intelligence. The verbal component scale tests vocabulary, comprehension, and general knowledge, whereas the performance component scale tests such skills as arranging blocks to match a pattern, identifying missing parts in pictures, and putting pictures representing a story in order.

1.4.4 Theories of Intelligence

Different researchers have proposed a variety of theories to explain the nature of intelligence. The following are some of the major theories of intelligence that have emerged during the last 100 years. Theories of intelligence, as is the case with most scientific theories, have evolved through a succession of models. Four of the most influential paradigms have been psychological measurement, also known as psychometrics; cognitive psychology, which concerns itself with the processes by which the mind functions; cognitivism and contextualism, a combined approach that studies the interaction between the environment and mental processes; and biological science, which considers the neural bases of intelligence.

1.4.4.1 Charles Spearman - General Intelligence

One of the earliest of the psychometric theories came from the British psychologist Charles E. Spearman (1863-1945), who published his first major article on intelligence in 1904. He noticed what may seem obvious now—that people who did well on one mental-ability test tended to do well on others, while people who performed poorly on one of them also tended to perform poorly on others. To identify the underlying sources of these performance differences, Spearman devised factor analysis, a statistical technique that examines patterns of individual differences in test scores. He concluded that just two kinds of factors underlie all individual differences in test scores. The

48 first and more important factor, which he labeled the “general factor,” *g*, pervades performance on all tasks requiring intelligence. In other words, regardless of the task, if it requires intelligence, it requires *g*. The second factor is specifically related to each particular test. For example, when someone takes a test of arithmetical reasoning, his performance on the test requires a general factor that is common to all tests (*g*) and a specific factor that is related to whatever mental operations are required for mathematical reasoning as distinct from other kinds of thinking. But what, exactly, is *g*? After all, giving something a name is not the same as understanding what it is. Spearman did not know exactly what the general factor was, but he proposed in 1927 that it might be something like “mental energy.” As time progressed, Spearman increasingly argued that *g* was not, from a psychological point of view, a single ability but composed of two very different abilities which normally worked closely together. These he called “eductive” ability and “reproductive” ability. The former term comes from the Latin root “educere” - which means to “draw out” and thus refers to the ability to make meaning out of confusion. He claimed that to understand these different abilities “in their trenchant contrast, their ubiquitous cooperation, and their genetic interlinkage” would, for the study of “individual differences - and even cognition itself - be “the very beginning of wisdom.” Despite Spearman arguing that *g* was what emerged from a large battery of tests, i.e., that it was not measured perfectly by any single test, the fact that *g*-theory suggested that much of ability could be captured in a single factor, and his suggestion that “the eduction of relations and correlates” underlay this general factor led to the quest for tests of this general ability. Raven’s Progressive Matrices might be regarded as one of these although Raven himself clearly stated that his tests should not be regarded as “intelligence” tests.

49

1.4.4.2 Howard Gardner Multiple Intelligences

One of the more recent ideas to emerge is Howard Gardner’s theory of multiple intelligences. Instead of focusing on the analysis of test scores, Gardner proposed that numerical expressions of human intelligence are not a full and accurate depiction of people’s abilities. His theory describes eight distinct intelligences based on skills and abilities that are valued in different cultures. The eight intelligences Gardner described are: ~ Visual-spatial Intelligence ~ Verbal-linguistic Intelligence ~ Bodily-kinesthetic Intelligence ~ Logical-mathematical Intelligence ~ Interpersonal Intelligence ~ Musical Intelligence ~ Intrapersonal Intelligence ~ Naturalistic Intelligence

Howard Gardner initially formulated a list of seven intelligences. His listing was provisional. The first two have been typically valued in schools; the next three are usually associated with the arts; and the final two are what Howard Gardner called ‘personal intelligences’ (Gardner 1999).

50 Linguistic Intelligence involves sensitivity to spoken and

written language, the ability to learn languages, and the capacity to use language to accomplish certain goals.

This intelligence includes the ability to effectively use language

to express oneself rhetorically or poetically; and language as a means to remember information. Writers, poets, lawyers and speakers

are among those that Howard Gardner sees as having high linguistic intelligence. Logical mathematical intelligence consists of the capacity to analyze problems logically, carry out mathematical operations, and investigate issues

scientifically. In Howard Gardner's words, it entails the ability to detect patterns, reason deductively and think logically.

This intelligence is most often associated with scientific and mathematical thinking. Musical intelligence involves skill in the performance, composition, and appreciation of musical patterns. It encompasses the capacity to recognize and

compose musical pitches, tones, and rhythms. According to Howard Gardner musical intelligence runs in an almost

structural parallel to linguistic intelligence. Bodily kinesthetic intelligence entails the potential of using one's whole body or parts of the body to solve problems. It is the ability to use mental abilities to coordinate bodily movements. Howard

Gardner sees mental and physical activity as related. Spatial intelligence involves the potential to recognize and use the patterns of wide space and more confined areas. Interpersonal intelligence is concerned with

the capacity to understand the intentions, motivations and desires of

other people. It allows people to work effectively with others. Educators, salespeople, religious and political leaders and counsellors all need a well-developed interpersonal intelligence. Intrapersonal intelligence entails the capacity to

understand oneself, to appreciate one's feelings, fears and motivations. In Howard Gardner's view it involves having an

effective working model of ourselves, and to be able to use such information to regulate our lives. In Frames of Mind

Howard Gardner treated the personal intelligences 'as a piece'. Because of their close association in most cultures, they are often linked together. However, he still argues that it makes sense to think of two forms of personal intelligence.

Gardner claimed that the seven intelligences rarely operate independently. They are used at the same time and tend to complement each other as people develop skills or solve problems.

51 In essence Howard Gardner argued that he was making two essential claims about multiple intelligences. That : First, the theory is an account of human cognition in its fullness. The intelligences provided 'a new definition of human nature,

cognitively speaking' (Gardner 1999). Human beings are organisms who possess a basic set of intelligences. Second,

people have a unique blend of intelligences. Howard Gardner argues that the big challenge facing the deployment of

human resources 'is how to best take advantage of the uniqueness conferred on us as a species exhibiting several

intelligences'. These intelligences, according to Howard Gardner, are amoral — they can be put to constructive or

destructive use. Impact of multiple intelligences on educators Howard Gardner's theory of multiple intelligences has not

been readily accepted within academic psychology. However, it has met with a strongly positive response from many

educators. It has been embraced by a range of educational theorists and, significantly, applied by teachers and

policymakers to the problems of schooling. A number of schools in North America have looked to structure curricula

according to the intelligences, and to design classrooms and even whole schools to reflect the understandings that

Howard Gardner develops. The theory can also be found in use within pre-school, higher, vocational and adult

education initiatives. 1.4.4.3 Robert Sternberg Triarchic Theory of Intelligence Psychologist Robert Sternberg defined

intelligence as "

mental activity directed toward purposive adaptation to, selection and shaping of, real-world environments relevant to one's life."

While he agreed with Gardner that intelligence is much broader than a single, general ability, he instead suggested some

of Gardner's intelligences are better viewed as individual talents. Sternberg proposed what he referred to as 'successful

intelligence' comprised of three different factors: ~ Analytical Intelligence: This component refers to problem-solving

abilities. ~ Creative Intelligence: This aspect of intelligence involves the capacity to deal with new situations using past

experiences and current skills. ~ Practical intelligence: This element refers to the ability to adapt to a changing

environment.

52 Sternberg's Triarchic Theory of Human Intelligence (1977, 1985, 1995) subsumes both Spearman's g and underlying

information processing components. His triarchic theory includes three facets or subtheories: • Analytical

(componential) • Creative (experiential) • Practical (contextual) Sternberg's theory builds on his earlier componential

approach to reasoning. His theory is mostly based on observing Yale graduate students. Sternberg believes that if

intelligence is properly defined & measured it will translate to real-life success. Sternberg's Triarchic Theory is an

important effort to synthesize the various theories of intelligence. Analytical (componential) Facet (or Subtheory)

53 Analytical Intelligence similar to

the standard psychometric definition of intelligence e.g. as measured by Academic problem solving: analogies and puzzles, and corresponds to his earlier componential intelligence.

Sternberg considers this reflects how an individual relates to his internal world. Sternberg believes that Analytical Intelligence (Academic problem-solving skills) is

based on the joint operations of metacomponents and performance components and knowledge acquisition components of intelligence. 1.5

Creativity: Concept, Definition and Characteristics.

Creativity

is the act of turning new and imaginative ideas into reality.

Creativity

is characterized by the ability to perceive the world in new ways, to find hidden patterns, to make connections between seemingly unrelated phenomena, and to generate solutions. Creativity

involves two processes: thinking,

then producing. If you have ideas, but don't act on them, you are imaginative but not creative. "Creativity is the process of bringing something new into being. Creativity requires passion and commitment. It brings to our awareness what was previously hidden and points to new life. The experience is one of heightened consciousness: ecstasy." - Rollo May, *The Courage to Create*. "A product is creative when it is (a) novel and (b) appropriate. A novel product is original not predictable. The bigger the concept, and the more the product stimulates further work and ideas, the more the product is creative." —Sternberg & Lubart, *Defying the Crowd*. Creativity is the development of ideas and products that are both original and valuable. It is essential for something to be both original and valuable to be creative. It is possible that something could be very original but not valuable. We probably would not view something as creative if it is not valuable.

For example, a person could write a book that was just random sentences. This may be highly original, but it would not be of value to anyone. Examples of creativity include a scientist who develops a theory to explain human behavior, a musician who writes original songs that are enjoyed by many people, and a writer who writes a book that provide new ideas for fundraising. Not all creative people are alike, which makes defining creativity a challenge and assessing it a monumental undertaking. The traditional psychological definition of creativity includes two parts: originality and functionality. "You can't be creative

54 unless you come up with something that hasn't been done before," - Dean Keith Simonton, "The idea also has to work, or be adaptive or be functional in some way; it has to meet some criteria of usefulness." Motivation and intelligence There are other components of creativity—domain-relevant skills, quality processes and intrinsic task motivation—according to a componential theory of creativity developed by Teresa Amabile. But Amabile points out that environmental factor such as freedom, support and positive challenges also play a key role in fostering creativity. Another important factor in creativity is intelligence, but contrary to beliefs at the turn of the 20th century, it is not the only factor, says Simonton. In the 1920s, psychologist Louis Terman began looking at the relationship between intelligence and creativity. In a longitudinal sample of intelligent children, not all ended up developing their creative abilities, he found. That's when psychologists started to realize more than intelligence was required—also critical is having an ability to see things from a different perspective, Simonton says. "You need an IQ of around 140 to learn enough physics to be truly creative in it," Simonton says. "But once you have that minimal IQ, there's still something else that must be there for a person to be truly creative." The personality creativity connection

55 Big-C creativity The field of the Psychology of Creativity applies empirical, scientific rigor to the study of this type of pioneering creativity, or what research psychologists call “big-C” creativity. Convergent vs. Divergent thinking Convergent thinking refers to intelligence rated by IQ tests, or tests that measure rational, problem-solving abilities. Convergent thought is analytical, logical and controlled. It means one “right answer” for a given problem. Standardized tests and intelligence tests measure convergent thinking. Divergent thinking refers to the ability to come up with many solutions or ideas for problems that don’t have one solution. It refers to associative and intuitive thought, and thinking that requires flexibility. It’s the ability to ask simple questions to develop unique and novel ideas. Theories of creativity Up until the middle of the last century, creativity wasn’t widely discussed among psychologists, let alone studied. However, in a speech to the American Psychological Association in 1950, psychologist J.P. Guilford proclaimed that creativity had been overlooked as a research topic, and challenged researchers to study it empirically— to come up with a plausible way of describing how creativity actually occurs. The six “P’s” of Creativity To develop theories on creativity, research psychologists focus their emphases and investigations on one or more central aspects of creativity, which they have labeled the six “P’s.” Process. Process refers to how creative processes take place cognitively, or more specifically what types of processing occur during creative thought and invention. Product. Research psychologists rate and quantify the creativity of a particular creative output, such as a Harry Potter book, a painting by Pablo Picasso, or a new product, such as Facebook. Scientists rate the ingenuity and novelty of a product against more traditional, conventional, and less creative outputs. Personality. Early research tended to focus heavily on personality traits, as certain traits apply to creative individuals across domains, such as mathematics, science, business, or the arts. Most theories today regard personality traits as only one aspect or influence of creative behavior.

56 Place. Place is also referred to as “press” for pressure, or high-demand environments vs. low-demand environments. Creativity thrives in less controlled environments, where there is “low” pressure for quick results, and managers, parents or superiors reward differences rather than behaviors that fit in with conventional ways of doing things. Persuasion. Creativity persuades or initiates change, so those highly creative individuals with innovative ideas and products must have the ability to convince others in a field of expertise of the output’s true novelty. Potential. Potential research focuses on potential creative outputs, or the as-of- yet unfulfilled creative potential of individuals. This “P” focuses more research on everyday creativity, and most specifically on the potential of children and the educational supports needed for creativity to flourish. 1.6 Implications for Classroom Teaching and Learning Pedagogical theory and practice have seen a great number of advancements over the past half-century, but perhaps the most significant of these is the recognition by educators that the teaching-learning process must be seen as a single transaction. In other words, if something has not been learned, then it has not been taught. Educators have taken ownership of the process and, in today’s world, they accept that their teaching has not reached its objective, and they have not met their obligation, if all students have not learned the material at hand. This approach to teaching and learning has forced educators to focus on how individual students learn. It has always been recognized, of course, that sensorial experience and activity are the fundamentals of anyone’s learning process, whether child or adult, and effective teachers have always provided the opportunity for these in their lesson plans. It is only in recent years, however, that educational theory has focused on learning styles as a way of helping students who are not achieving normal learning objectives. If some children do not succeed well by one approach, then perhaps they will do better by another. Educators normally refer to fundamental learning styles as auditory, visual, and tactile. It would be a mistake, however, to imagine that any individual student relies on a single style of learning. The reality is that humans learn through a variety of processes and all of them involve fundamental sensorial and motor components. What the teacher must realize is that some students require more sensorial or motor engagement than others in order to learn effectively.

57 Auditory instruction is by far the weakest in terms of reaching teaching learning objectives. Even adults have difficulty listening to a speaker for any length of time. Most children are unable to listen and learn effectively without other stimuli, and a child who can succeed well through listening alone, an auditory learner, is a rare child indeed. Visual perception is an essential component of the learning process for most people. Though blind persons, for example, are able to learn much about the world through other means, the formation of certain concepts are impossible for them. Educators over the past three centuries have considered visual stimulation to be the essence of concept formation, and it is for this reason that classroom teachers have always considered visual aids to be a basic necessity in any lesson. Listening and seeing, then, are vital requirements in the learning process for most children and adults. But it is the hands on approach that characterizes effective teaching in today's classroom. Though some students are identified as auditory or visual learners, the reality is that all children, and probably all adults, learn most effectively through practical involvement in the task at hand. Effective teachers everywhere understand the importance of providing tactile experience for their students. Certainly, some students may succeed quite well without a hands-on approach, but it is undeniable that learning is enhanced for all of them when an opportunity for tactile experience is added to auditory and visual instruction. Learning styles are an important consideration to any teacher who is determined to succeed. Today's teachers are well trained and they know that they have not succeeded as long as some students have not reached the objectives of their teaching. A knowledge and understanding of the learning process, the importance of sensorial stimuli and activity, and a recognition of the significance of learning styles, will enable today's educators to succeed where perhaps their predecessors did not. Implications for teaching practice of some key ideas from learning theories

1. Learning is a process of active construction. Learning is the interaction between what students know, the new information they encounter, and the activities they engage in as they learn. Students construct their own understanding through experience, interactions with content and others, and reflection.

58 Teaching Implication Provide opportunities for students to connect with your content in a variety of meaningful ways by using cooperative learning, interactive lectures, engaging assignments, hands-on lab/field experiences, and other active learning strategies.

2. Students' prior knowledge is an important determinant of what they will learn. Students do not come to your class as a blank slate. They use what they already know about a topic to interpret new information. When students cannot relate new material to what they already know, they tend to memorize—learning for the test—rather than developing any real understanding of the content. Teaching Implication Learn about your students' experiences, preconceptions, or misconceptions by using pretests, background knowledge probes, and written or oral activities designed to reveal students' thinking about the topic.
3. Organizing information into a conceptual framework helps students remember and use knowledge. Students must learn factual information, understand these facts and ideas in the context of a conceptual framework, and organize knowledge in ways that facilitate retrieval and application in order to develop competence in a new topic. Teaching Implication Support students by using concept maps, flowcharts, outlines, comparison tables, etc., to make the structure of the knowledge clear.
4. Learning is a social phenomenon. Students learn with greater understanding when they share ideas through conversation, debate, and negotiation. Explaining a concept to one's peers puts knowledge to a public test where it can be examined, reshaped, and clarified. Teaching Implication Use Cooperative learning strategies, long-term group projects, class discussions, and group activities to support the social side of learning.
5. Learning is context specific. It is often difficult for students to use what they learn in class in new contexts (i.e., other classes, the workplace, or their personal lives).

59 Teaching Implication Use problem-based learning, simulations or cases, and service learning to create learning environments similar to the real world. 6. Studentes' metacognitive skills (thinking about thinking) are important to their learning. Many students utilize few learning strategies and have a limited awareness of their thinking process. Teaching Implication Help students become more metacognitively aware by modeling your thinking as you solve a problem, develop an argument, or analyze written work in front of the class. Teach metacognitive strategies, such as setting goals, making predictions, and checking for consistency. Focus attention on metacognition by having students write in a learning journal or develop explanations of their problem-solving processes. Principles of Learning and Their Implications Principle : Effort Produces Achievement For a long time individuals have operated on the belief that inherited intelligence mainly determines academic achievement. It is now clear that the amount of effort the student makes has much more to do with one's academic achievement than inherited ability. Given the right conditions and support, almost everyone can achieve at high levels. Implications of Principle A primary condition for high achievement is high expectations and challenging targets. The single biggest obstacle to high achievement is the belief by faculty members that certain students—often those from low-income families and minority groups—can't achieve at high levels. The principal has to engage the faculty in setting challenging targets and find a way to create a culture of high expectations in which the whole faculty expects all of the students to reach those targets and communicates those expectations lo the students. High expectations and pressure LO achieve must he accompanied by appropriate support. Because different students need different amounts and kinds of help to reach the targets, one of the most important roles of the principal is to see to it that the school is organized to accurately assess where every student is with respect to the standards at any point in time. And for those students who are falling behind, the

60 principal must ensure that programs of assistance are in place that will get those students to the standards, no matter how far behind the students are when they start out. While the standards remain the same for everyone, the support given to students must be varied according to individual need. Principle 2 : Learning is About Making Connections Knowledge is a "constructive process." We learn by adding new knowledge to the knowledge we already have and integrating it with that knowledge. To make that process of integration effective, we have to organize our existing knowledge into some sort of structure. Among the most useful functions of formal education is the way in which it provides powerful frameworks on which students can "hang" new knowledge. Those frameworks come in the form of the theories and concepts associated with the academic disciplines and the very structures of the disciplines themselves. It is the very process by which we fit new and unfamiliar facts to frameworks we have made our own that constitutes what we mean by the word "understanding/'And it is understanding that permits us to use what we have learned to solve problems that are not quite like any that we have encountered before. Either the new knowledge that we acquire fits the structures we carry with us, or we must alter the structure to accommodate the new knowledge. The act of fitting the new knowledge with the old and adjusting the structure until it fits both new and old knowledge is a creative act, not simply a passive act of "adding another book to our shelf of knowledge." We are constantly selecting what new knowledge we want to integrate with what we already know, making connections to that old knowledge and then making adjustments to our whole understanding of the world and how it operates. We learn by activating and constructing networks of related concepts or "schemata." This is an active process that is greatly facilitated by constant interaction with other people and the larger world around us- interaction that helps us try out new frameworks on which to "hang" our knowledge, provides challenges from which we can learn and problems for us to solve, and thereby provides both new knowledge and an opportunity to find out whether our explanations of how the world works hold up in practice. Implications of Principle 2 The principal has an important role to play encouraging teaching that places a premium on students as active learners and problem solvers. This involves encouraging teachers to present the core concepts of the subject matter clearly and straightforwardly, on the one hand and, on the other, to create an environment in which students:

61 ~ Internalize those concepts ~ Test their own knowledge against them ~ Use the concepts and theories as frameworks in which they can hang new knowledge ~ Challenge the concepts and theories constantly, both as a means to better understand them and to make changes to the frameworks of their understanding as they interact with the world. Thus principals should not only coach teachers to help students create the structures on which they can hang new knowledge, but also to create classrooms that are busy places, full of talk and movement, so that they can become the scene of a constant interplay between ideas and action. Principle 3 : We Learn with and Through Others Most learning is done in a setting in which others are present. We teach one another, exchange ideas, reinforce concepts, solve problems, debate ideas, and challenge assertions with others. Student learning is greatly enhanced when students understand and accept the conventions that structure such social interactions in the classroom. This embraces rules of discourse including everything from the criteria for demonstrating that a mathematical solution is correct to making a point about a piece of literature based on evidence taken from the text, to understanding the conventions for determining what order students are recognized in class. Implications of Principle 3 The principal's role is to recognize the link between social interaction and learning and to encourage the notion of a "community of learners" in which students articulate and justify their thinking, and listen and respond constructively to the views of their peers. The principal can also seek opportunities to promote cooperative learning and the use of powerful strategies such as peer- and cross-age tutoring, which have been shown to exert a powerful impact on learning. Principled 4 : Learning Takes Time How much we can learn is a function of how much time we have to learn it. A given task will be learned only if the learner spends the amount of time needed to learn it. Moreover, individuals need different amounts of time in order to learn the same things.

62 Implications of Principles 4 When time is not available to do all that the curriculum calls for, then priorities must be set on the basis of what it is most important to learn. When time is not available in the regular school day to teach all that is high priority, then time must be made available outside the regular school day to teach it. It is mainly up to the principal to set the priorities for what is most important to learn during the regular school day. This may mean providing double periods for students who are having difficulty, and making sure that those double-period courses are properly staffed, which will entail cutting back on some other aspect of the curriculum or of the sports program. Similarly, it is the responsibility of the principal to make sure that students who are behind get the extra instructional time they need before school, after school, on Saturdays and during the summer break. Of course, it is not just the total amount of time available for learning that matters, but rather the amount of engaged learning time. This implies that the principal will take action to minimize interruptions and disruptions and maximize the time students are on task. Principles 5 : Motivation Matters Our levels of motivation affect our readiness to learn. Students who see a connection between something they want for themselves and what they are being asked to learn, who believe in their ability to learn and who feel good about themselves as learners, make more progress than those who see no purpose in learning, who doubt their abilities, who are fearful of failure, or who are excessively anxious about their results. Deep understanding and a feeling of mastery can produce highly motivated students. So can the demonstration of what they have learned to peers and adults when they have met a high standard of accomplishment. Finally, high levels of motivation can arise when students see purpose and meaning in what they are learning at school. Implications of Principle 5 The principal has a key role to play in promoting across the school a culture in which students have a belief in their capacity to succeed as learners and in which positive reinforcements are given for effort and achievement, as opposed to punishments for failure to learn. This could mean establishing a system of rewards that give tangible recognition to all students who meet expectations and achieve excellence.

63 It also means listening to students' feelings about learning and themselves as learners and constantly encouraging positive attitudes. Principle 6 : The Teacher Matters How much a student learns depends much more on which teacher within the school the student gets than what school he or she goes to. This suggests that if all teachers in the school in a given subject taught as well as the best teacher, the result would be far higher student achievement throughout the school as a whole. It follows that improving the quality of teaching is the key to school improvement. Implications of Principle 6 The principal must become knowledgeable about every teacher with respect to his or her ability to enable the students in his or her classes to reach high standards. He or she must know what practices produce effective teaching and provide detailed coaching assistance to teachers to enable them to improve their teaching in a standards- based environment. He or she must also create a school culture in which the constant monitoring and improvement of teaching practice is one of the highest values of the professional staff of the school and make sure that the resources (chief among them time) are made available to support that priority. Establishing the new culture will mean breaking down the old culture in which how the teaching of any one teacher is the business of no other teacher. It will involve the creation of a culture in which teachers are constantly collaborating to define what good teaching is and learning from and critiquing the teaching of one another to advance the practice of teaching throughout the school. Principle 7: Focused Teaching Promotes Accelerated Learning The key to accelerating learning lies in matching instruction to the level of the learner. When students are presented with tasks that are well beyond their level of competence, learning is unlikely to occur. Instead they become anxious and quickly give up. When they are presented with tasks that are easy and well within their competence, learning is also unlikely to occur, because they have already learned how to do the task and without specific motivation to repeat it, they quickly become bored. Rapid learning is likely when the difficulty of the task is in alignment with the ability of the learner. Teaching that aligns instruction we refer to as "focused teaching." The teacher's role is to 'scaffold' the learning of the new task, revealing to the learner how to move from what he or she can currently do independently to a higher

64 level of cognitive functioning. Vygotsky referred to this critical zone in which learning can be facilitated as the "zone of proximal development." He defined this zone as, " the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers".

Higher levels of understanding occur as a result of focused teaching and of performance in the zone of proximal development. Implications of Principle 7 The concept of the zone of proximal development has far-reaching implications for teaching and for school and class organization. It implies constant monitoring of each student to establish starting points for instruction and to enable matching of instruction to the development level of the student. It also implies that teaching is driven by knowledge of what students can do and what assistance they need to move to a higher level of cognitive functioning. The principal has an important role to play in legitimating teaching that seeks to accelerate learning by supporting students to move from actual to potential levels of development. The principal can also assist by facilitating forms of school and class organization that allow teachers to respond effectively to the wide range of student abilities encountered within a given grade, such as cross-age grouping and use of within-class instructional groups.

Principle 8 : Clear Expectations and Continuous Feedback Activate Learning Students achieve at higher levels when they have a clear image of what is expected of them. The most effective image for that purpose is an example of student work that meets the standards to which they are expected to work. Their chances of producing work that meets those standards is further enhanced if they have access to clear criteria for judging the quality of their work, in addition to examples of work that meet the standard. Finally, students are most likely to produce work that meets the standard when they have access to continuous feedback on their work so that they know how to bring it up to the required standard. Implications of Principle 8 The principal must ensure that standards are at the heart of classroom teaching and that each lesson is focused on meeting those standards. The most effective way to help students internalize these standards is to prominently display them, along with criteria that indicate whether the standard has been met and examples of student work that meet the standards.

65 The principal should visit classrooms on a daily basis. These visits should be purposeful and focused. The primary focus should be on student work and the extent to which it is meeting the standards. The principal should seek to establish the extent to which students are aware of the standards and the criteria for meeting them. Finally, the principal should be alert to the extent to which students are receiving feedback on their work related to the standards. Principle 9 : Good Teaching Builds on Students' Strengths and Respects Individuals' Differences Each child arrives at school with a unique mix of strengths and weaknesses. Learners make use of different ways knowing and have individual strengths that they exploit in learning a new task. Some may have strong language skills and others may have unusual artistic talent. Some may get along very well with other people and others may have gift for logical-mathematical reasoning. Individuals find it easier to learn using a particular ability or adopting a particular style. But these are not set in concrete; abilities and styles are capable of being developed in school. Implications of Principles 9 The principal can establish a culture within the school that seeks to respond to and develop different learning styles and a wide range of cognitive abilities. Within schools, there is a danger that teaching will focus on and value a narrow range of abilities and be insensitive to different learning styles. Good teaching builds on student strengths and respects differences in the learning styles of individuals because by doing so, students are able to progress more rapidly to address areas of weakness. Principle 10 : Good Teaching Involves Modelling What Students Should Learn Much of what students need to know and be able to do is best learned the time-honored way, by apprenticing to an expert, in the form of a teacher. The student is presented with a challenge. The facilitator models the behavior the student is being asked to demonstrate. Then the student is asked to attempt the set task. In the early stages, the teacher provides a lot of guidance and support; later on, progressively less guidance is provided until the student is able to perform the task independently. For example, the teacher might begin by reading to a group of young students. Later on, they work together in shared or guided reading sessions, finally moving to independent reading.

66 The students' performance is evaluated in relation to explicit standards and associated criteria, and the student is asked to make revisions in response to the feedback provided. The assigned tasks get progressively more demanding as time goes by. The teacher sets the level of difficulty of each new task at a level that is within the students "zone of proximal development." That is, it is demanding but not so demanding as to demoralize the student, thus enabling the student to make rapid progress. At key points the student's work product is presented to a wider audience. This process is repeated through as many cycles as necessary to enable the student to produce work that meets the standard. Implications of Principle 10 In schools one frequently encounters teaching that reflects very different but equally dangerous, views of effective teaching. One is that students are "empty vessels" that need to be "filled up" and that the role of the teacher is to "tell" the students what they need to know. The other is that learning is a natural process and that the role of the teacher is to simply be on hand to "facilitate" the learning. While there are times for telling and times for facilitating, accelerated learning calls for a form of cognitive apprenticeship of the kind described above in which the teacher models the desired behavior, initially providing a lot of structure as students learn to perform independently. The principal can act as a coach to teachers in assisting them to find the right balance in their teaching. Principle 11 : The Curriculum Should Focus on Powerful Knowledge In a world in which information is growing exponentially and in which much higher levels of knowledge and skill are needed by most people to do the work for which they will be responsible, it is vital that educators provide students with access to powerful knowledge. Knowledge is powerful when it provides a basis for further learning and when it concerns important and validated knowledge. Three of the most important kinds of powerful knowledge are: • The new basics, since these provide the foundations of learning in almost all other areas. According to Levy and Murnane (1996), they include: - The ability to read at a ninth grade level or higher - The ability to do math at the ninth grade level or higher - The ability to solve semi structured problems where hypotheses are formed and tested

67 - The ability to work in groups with persons of various backgrounds - The ability to communicate effectively, both orally and in writing - The ability to use personal computers to carry out simple tasks like word processing. • Discipline-based subjects (especially history, mathematics, and science), since these provide entry-points to the stock of human knowledge and foundations for understanding validated and important knowledge; and • Skills, strategies, and attitudes that support independent, purposeful learning and problem solving, since these are capabilities that remain important throughout one's life in coping with change. Implications Principle 11 Principle 12 : All Students Should Experience a "Thinking Curriculum" Our culture believes that some people are born smart and others are not, and that there is nothing that can be done about it. But research shows that it is quite possible to learn how to act intelligently. We can all be taught to manage our own thinking and learning processes. Challenging tasks that support deep thinking will stimulate intelligent behavior, as will explicit teaching of cognitive and metacognitive strategies. It is not true that students must be taught basic facts and procedures before they can engage in challenging tasks that require deep thinking and learning. The contrary is true. Students can more easily acquire those facts and learn those procedures if they have conceptual framework on which to hang those facts and can understand why the procedures work the way they do. Thus the learning of basic skills and higher- order thinking should go hand in hand. Higher-order thinking is particularly facilitated by an emphasis on extended problem-solving around "fertile questions" that are of intrinsic interest and relevance to students, that have no one correct answer, that are open-ended, that lead in many directions and that tap into a number of disciplines or fields of knowledge. Implications of Principle 12 The principal is critical to establishing within the school a curriculum in which there is an emphasis on higher-order thinking. All too often, teachers feel pressured to cover far too much content and because of the lack of time, do so in a very shallow and superficial way. The principal can promote the idea that covering less content in greater depth can mean greater understanding. To facilitate in-depth learning,

68 the principal can create larger blocks of instructional time. The principal can also encourage explicit teaching of cognitive and metacognitive strategies and teaching in which all students are provided with challenging tasks that stimulate and support deep thinking.

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74 Unit : 2.1 □□□□□ Sensation Structure 2.1.1 Introduction 2.1.2 Objectives 2.1.3 Sensation 2.1.3.1 Meaning and Definition 2.1.3.2 Characteristics of Sensation 2.1.3.3 Types of Sensation 2.1.4 “

Check your progress” 2.1.5 Let us sum up 2.1.6 Unit end exercises 2.1.7 References 2.1

Introduction All the information of the outside world comes to us through the sense-organs. They are described as ‘the gate-ways of knowledge’. Through our five sense organs we acquire knowledge of the conditions outside our bodies. It is only when a particular sense organ is stimulated that we have a sensation. It is a response or reaction aroused in us by the stimulus. It is the stimulus that comes to us and the sensation is our own act, aroused by the stimulus. So, a sensation is an elementary mental process. In this unit you will be studying the concept of sensation and its meaning, definition and sensory process. 2.1.2 Objectives After reading this unit students will be able to: • Explaining the meaning of sensation • Define the term sensation Express the nature of motivation • Express the types of sensation Unit -2 : Learning Process and Motivation

75 2.1.3 Sensation 2.1.3.1 Meaning and Definition: Sensation is an important mental process for getting knowledge. Some of the psychologists described that "sensation is a gateway of knowledge or window of soul and the mind." All kinds of information first we receive from the outside of the environment through our different sense organs i.e. eyes, noses, tongue, ears and skin. In the process of sensation it reacts to certain stimuli from outside or itself. Thus the eyes react to light and give us colour, the ears respond to sound waves in the atmosphere and give us noises and rhythmic music; the nose feel us about smells, the tongue about tastes and the skin about temperature, contact and pain. Sensation is an abstract mental condition. Definition: Some important definitions are discussed here for clear understanding the sensation. According to Sully James: "Sensation is a simple physical phenomenon resulting from the stimulation for the peripheral extremity of an afferent nerve when this is propagated to the brain." Tichener defined that- "A sensation may be defined as an elementary mental process which is constituted of at least four attributes-quality, intensity, clearness and duration." After a discussion of meaning and definition of sensation, we may conclude that- Sensation is defined as the process in which a sensory receptor is stimulated, producing nerve impulses that -travel to the brain, which in turn interprets such impulses as a visual image, a sound, taste odor, touch, or pain. The physical stimulus present in the environment emits energy that is absorbed by a sensory organ, causing sensation. 2.1.3.2 Characteristics of sensation: After discussion the meaning and different definitions of sensation we can find some characteristics of sensation given below: 1. In the sensation process three components are necessary - stimulation, nervous system and mind. 2. Sensation is the simplest form of knowledge. 3. Sources of sensation is stimulus. 4. Sensation is a mental state like feelings. Though sensation is subjective but its feeling is personal.

76 5. Sensation remains passive while receiving but when sensation creates mind becomes active. 6. Sensation attracts attention forcefully. 2.1.3.3 Sensory Process : Sensation is the first step of knowing process. In the classroom situation when the teachers teach, the students feel one type of sensation that helps the learners to think about the subject matter. In every case, mainly our brain is linked with outside world through the five sense organs by which all stimuli reach to the brain through motor nerve. Communication between person and external environment In the sensory process there two different physical organs are used -i) Receptor organs ii) Nervous system Sensory organs Receptor organs nervous system Skin eye Ear nose tongue Central Peripheral Autonomous Types of Sensation : There have five types of sensation:

77 1. Visual sensation: Two eyes are the central part of visual sensation. From different external stimulus light falls up on the eyes. That light enters into cornea and then enters into Iris to pupil. In pupil, there is aqueous humour that falls on lens which controls the light. From the stimulus the light moves to the lenses in a parallel way. After that the light creates an opposite image on the retina. This stimulus goes to visual sensation organ in brain through optic nerve and this organ shows normal image of stimuli that comes through eyes. 2. Hearing sensation : The organ of hearing sensation main and the stimuli are air waves. Light ways can go through vacuum medium but sound wave needs a medium. Every sound wave has three characteristics. I) Pitch, ii) loudness, iii) Timber. Sound waves enter into external auditory organ and hits on tympanic membrane and creates a vibration. This vibration goes to Cochlea (organ of Corte) through middle ear. From the Corte sensation auditory goes to the hearing sensation organ and then we can hear it. 3. Smell sensation: During breathing some smells molecule enters into nasal whole. In the nasal whole smell molecules are absorbed in nasal membrane. The smell sensation is received by olfactory cell and this sensation goes to smell through olfactory nerve. Then sense organ of brain analyses the smell molecules and we feel smell sensation. 4. Sensation of Taste: During eating at first food is dissolved in (Saliva) and comes contact with taste buds. Then taste cells are stimulated and this stimulation goes to taste sensation organ through nerve, then we get the taste of any food. 5. Skin sensation: Any type of skin sensation reaches to brain through skin sensation nerve. Then we feel heat, pressure. Cold, pain and different skin related sensation through our brain. 2.1.4 "Check your progress :"

1. What is sensation?
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.....
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78 6. Write the meaning of sensation?

.....

..... 7. Write some characteristics of sensation.

.....

..... 8. Discuss the types of sensation

.....

..... 9. What do you mean by visual sensation?

.....

..... 2.1.5 Let us sum up Sensation is the first step of inculcating knowledge. It is the primary sense of knowledge. All the information we receive through our five sense organs, i.e. eyes, ears, noses, tongue and skin. According to five sense organs there have five types of sensation- i) visual sensation ii) Hearing sensation iii) Smell sensation iv) Sensation of taste v) Tactual or Skin sensation.

79 2.1.6 Unit end exercises: 1. Define sensation. 2. Discuss the meaning of sensation. 3. Explain the sensory process 4. What do you mean by visual sensation? 5. What are the characteristics of sensation? 6. Describe the different types of sensation 7. Write a short note on; a. Hearing sensation b. Smell sensation 2.1.7 References 1. Aggarwal. J. C. Essentials of Educational Psychology (second edition). Vikash publishing House Pvt. Ltd. Noida (U, P.) (2007). 2. Bhatia, H. R. (Fifth edition) Orient Longmen Ltd. : Elements of educational psychology, Hyderabad. (1986). 3. Chauhan, S. S. Advanced Educational Psychology (Seventh Edition). Vikash Publishing House Pvt. Ltd. '(2007), Noida, (U.P). 4. Dandapani, S. (Second Edition). Educational Psychology. Anmol publications, New Delhi (2003). 5. Ghosh. S. K. Adhunik sikshabigyan. Bani Samsad Publicating House, (2009), Kolkata. 6. Kundu, C. L. & Tutdo, D. N. Educational Psyschology (fifth revised edition). Sterling Publishers Pvt. Ltd., New Delhi (1998). 7. Sharma. R. A. : Fundamentals of Educational Psychology (third edition, 2001). Surya Publication, Meerut. 8. Mangal, S. K. Educational Psychology, Prakash Brothers, Tandon publications. Ludhiana (2001).

80 Unit : 2.2 Attention Structure 2.2.1 Introduction 2.2.2 Objectives 2.2.3 Attention 2.2.3.1 Meaning and Definition 2.2.3.2 Characteristics of attention 2.2.3.3 Factors of Attention 2.2.3.3.1 External factors 2.2.3.3.2 Internal factors 2.2.3.4 Implication of factors of attention in education 2.2.4 "

Check your progress" 2.2.5 Let us sum up 2.2.6 Unit end exercises 2.2.7 References 2.2.1

Introduction The term 'attention' is frequently used in our everyday situation. Entering into the classroom, the teacher announces, "attention please 1 '. Attention is a process which the individual to select some particular stimulus according to his interest and attitude out of the multiplicity of stimuli present in the environment. It can never be considered as a force or a faculty of the mind. Attention is of two factors such as external and internal. Teachers and educators can implement these factors of attention for the betterment of their learning and success. 2.2.2 Objectives After reading this unit students will be able to :

81 • Explaining the meaning of attention • Define the term attention • Express the characteristics of attention • Describe the factors of attention • List out the educational significance of different factors of attention. 2.2.3 Attention 2.2.3.1 Meaning and Definition In our daily life we always use the term 'attention'. Generally attention means to concentrate our mind in a particular object from different stimuli in a particular object from different stimuli. In the classroom situation most of the teachers try to become attentive his/ her students on his/her lesson. The teachers often tell his students please pay your attention to the blackboard and text books. But very commonly we can see that our mind cannot strictly point in a particular object. Very frequently it is replaced from one object to another. Thus attention is taken as a power, capacity or faculty of our mind, which can be turned on or off at will or something in kind or form that can be lent or given to this or that situation. Meaning: Attention is the heart of the consciousness process and it is basis to all the mental activities and behaviour. When we are conscious of any object, it means that an individual is aware of its presence in the environment. To attend to an object means to become aware of it more keenly specifically than other stimuli and keep this object in the focus of consciousness. Consciousness is a wider field and includes attention. When a person attends to a part of the field of consciousness, the rest is not attended to. While we are looking on the blackboard in a particular object, we are conscious of a large number of objects in the classroom, But the object of blackboard is at the centre of consciousness and other particulars of the classroom remain at the margin of consciousness. Definition: Attention depends upon the nature and strength of stimulus in the environment. The psychologists have defined attention in a number of ways. According to Ribot - "emotive process translated into action", 82 McDougall (1920) defined that: "Attention is merely conation or striving, considered from the point of view of its effect on cognitive process." B. Dumville(1938): "Attention is the connection of consciousness upon one object rather than upon another.' 1 Stout (1953): "Attention is conation determining cognition." J. B. Ross (1954) : "attention is a process of getting an object of thought clearly before the mind." Roediger et. al. (1987): "attention can be defined as the focusing of perception that leads to a greater awareness of a limited number of stimuli." 2.2.3.2 Characteristics of attention: On the basis of previous discussion and definitions the chief characteristics of attention may be noted as: 1. Attention is a form of activity of the mind. 2. Attention is essentially a process and not a product. 3. It helps our awareness of consciousness of our environment. 4. Attention or the consciousness is selective. 5. At any one time we can concentrate or focus our consciousness on one particular object only. 6. Attention is shifting from one stimulus to another. 7. Attention is cognitive, affective and conative. 8. Attention helps us in the clear understanding of the objects. 2.2.3.3 Factors of Attention: Attention depends on strength and nature of the stimuli and it is the process of selectiveness. In a particular moment we select any object in our focal point of consciousness. There have some factors or conditions in which anybody selects one topic or object in a particular situation. Mainly there are two types of factors such as: 1) External factors of attention 2) Internal factors of attention 83 Factors of attention External factors Internal factors Intensity Extensity Repetition Novelty Movement Suddenness: Clarity Instinct Emotion Habit Interest Sentiment Temperament Attitude Attitude 2.2.3.3.1 External factors: Some important external factors may be noted as: 1. Intensity: The main external factor of attention is intensity of a stimulus. In a normal situation strong or intense stimuli will attract our attention. Such as: red colour, a loud noise, intense perfume etc. 2. Extensity: The size of the stimulus is one of the important external factors to draw the attention. Because the large size of objects have a stimulus value than smaller stimuli. A large building will be more readily attractive than a smaller hut. The advertisement agency used these criteria to attract the audience very easily. 3. Repetition: Repetition is a factor of great importance in securing attention. We may ignore a stimulus

the first time, but when it is repeated, comes to the sense organ in several times it is bound to draw our attention. In the classroom the teacher tries to draw our attention on important word he emphasizes it again and again. 4. Novelty: We generally attracted by new object rather than common household objects. Novelty occupies a unique character that differs from others. That's why new fashion dresses, cars, styles, teaching styles draw our attention very quickly. 5. Movement: A moving stimulus catches our attention more quickly than one which is still. In the market areas different moving electrical advertisements are very easily draw our attention rather than still ones. The stimulus value of moving object is much higher than others. 6. Suddenness: Sudden presence of stimulus bound to draw our attention on these particular stimuli, though we are not ready to draw our attention on it. Such as 84 sudden ringtone of mobile in the classroom, thunder and lightning etc. are bound to draw our attention. 7. Clarity: Clearness or lucidity of stimuli generally draws our attention very quickly because its stimulus value is higher than normal ones. Good handwriting, sweet voice of the singer generally draws our attention most. 2.2.3.3.2 internal factors: In a particular situation a person will attend to a stimulus that depends not only on the external or "objective factors of the stimulus but also depend upon the person's own interest, motives, sentiment, basic instincts etc. these are mainly subjective factors of attention. Let us try to understand the subjective or internal factors of attention in securing the attention of a person. 1. Instinct: Basically our attention draws as per our instincts. Such as food, thirst, sex is our basic instincts. When we feel hungry, we look or attentive to a food plaza or hotel. For our aesthetic instinct we are attracted by red roses. 2. Emotion: Emotion is one of the internal factors to draw our attention. Love, affection, anger, fear, jealousy these emotions draws our attention easily. Such as a person who loves another, he or she always becomes attentive to each other. One who jealous to another, also becomes attracted to him or her style, dresses, behaviour etc. when we become fearful, we want to keep safe place. 3. Habit: The role of habit in our life has immense significance as McDougall opines- "habit is our best friend and worst enemy." When the teacher enters into the classroom, the students stand up, when the teacher evaluates the answer scripts his/ her eyes falls on wrong words or mistakes. Ad agency also uses this factors to draw the public attention such as "idea" 4. Interest: Interest is latent attention which is very helpful factor for securing attention. We attend to objects in which we are interested and we do not attend to those in which we have no interest. In the newspapers, senior members of the family pay attention to the political news as per their interest. On the other hand female members are attracted by entertainment pages (rupcharcha, Horoscope) as per their interests. 5. Sentiment: Sentiment is an emotional complex mental process. By the sentiment different persons pay attention as per their own sentiment. For example we become excited when our country wins in sports against foreign country. A student who is sentimental to a particular teacher, generally draws his/her attention to his/her class normally. 85 6. Temperament: Temperament controls the behaviour of a person. For examples highly aggressive person easily react to face any abnormal situation in public area. 7. Attitude: Attitude means the combination of pre-experience, emotion and his own idea. When a student possesses positive attitude he 'she very easily draws his/her attention to the study. Whereas one who has negative attitude, he/she ignores the study and frustrated to education system. 2.2.3.4 How can you implement the factors of attention in classroom or education? In the field of education it is very essential to draw the student's attention towards classroom teaching and study. It helps the teachers to teach well and helps the students to learn well. There is no doubt that attention is the key factor for the desired achievement of the learners and the success of education. So, the teachers can frequently use the external and internal factors of attention in their teaching learning process to pay the attention of the students towards his/her teaching. 1. When the teacher uses blackboard, he/she must remains careful for writing his topics boldly and clearly. So, that all the students very clearly can follow him. At the same time teachers voice in the classroom should be clearly presented to the students. In case of writing the text books at elementary level font size must be bold and colourful so that it becomes attractive to the learners. 2. Teacher should always try to bring novelty in his teaching. He/she can use TLM which are innovative and novel to the learners, 3. Movable teaching strategies may followed by the teachers during their teaching. They may present their topics for using OHP and PowerPoint presentation. 4. Teachers love and affection towards his/her students easily become attentive to his lesson, It is noticed that students who are paniked to the mathematics teacher cannot do well in mathematics paper. 5. Teacher's major role should be to arouse sentiment among the learners towards schools, teachers, subjects, so that they become easily attentive to their school subject and teacher. 6. It is one of the important duties of the teachers to create interest in different areas among the learners. So, that they become interested in different areas easily. 7. The teacher may create good habits among his students so that they acquire good habit for their life. Such as habit of thinking, attentions etc. are very much essential for higher Studies or success in life.

86 8. Positive attitude generally pays to make attentive very easily. So, the teachers should arouse or awake positive attitude towards subject as well as education to make the learners successful in different fields. 2.2.4 "Check your progress": 1. What do you mean by attention?

..... 2. Write four characteristics of attention?
.....

..... 3. What are external factors of attention?
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..... 4. What are internal factors of attention?
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..... 2.2.5 Let us sum up Attention is an important mental process for learning. In the process of attention an individual select an object from different stimuli. Attention helps to increase efficiency and remember experiences. Attention depends on two types of factors, such as external & internal. With the help of these factors teachers can very easily become attentive to

87 the students. For securing attention of students the teacher can adopt novel learning experiences, by repetition, use of audio-visual aids etc. 2.2.6 Unit end exercises 1. What is attention? 2. What do you mean by external factors of attention? 3. What do you mean by internal factors of attention? 4. Discuss the characteristics of attention. 5. How can you implement the factors of attention in your classroom teaching? 6. Explain the external factors of attention. 7. Discuss the internal factors of attention with examples. 2.2.7 References 1. Kundu, C. L. & Tundo, D. N. Educational Psychology (fifth revised edition). Sterling Publishers Pvt. Ltd./New Delhi (1998). 2. Sharma, R. A. : Fundamentals of Educational Psychology (third edition. 2001). Surya Publication, Meerut. 3. Bhatia, H..R. (Fifth edition) Orient Longmen Ltd. : Elements of educational psychology, Hyderabad. (1986). 4. Dandapani, S. (Second Edition). Educational Psychology. Anmol publications. New Delhi (2003). 5. Mangal, S. K. Educational Psychology, Prakash Brothers, Tandon publications. Ludhiana (2001) 6. Aggarwal. J. C. Essentials of Educational Psychology (second edition). Vikash publishing House Pvt. Ltd. Noida (U. P.) (2007). 7. Chauhan, S. S. Advanced Educational Psychology (Seventh Edition). Vikash Publishing House Pvt. Ltd. (2007), Noida, (U.P). 8. Ghosh, S. K. Adhunik Sikshabigyan. Bani Samsad Publicating House, (2009), Kolkata.

88 2.3 Perception Structure 2.3 Introduction 2.3.2 Objectives 2.3.3 Perception 2.3.3.1 Meaning and Definition 2.3.3.2 Differences between Perception and Sensation: 2.3.3.3 Types of Perception 2.3.4 "

Check your progress" 2.3.5 Let us sum up 2.3.6 Unit end exercises 2.3.7 References 2.3

Introduction Perception is combination of sensation with meaning. We sense qualities and we perceive objects. Perception gives meaning to sensation. Sensation is awareness of objects and perception is the awareness of this or that object. Perception involves two processes. It involves a sensation through the stimulus of a sense organ and an interpretation of the sensation. Perception is sensation plus thought. 2.3.2

Objectives After reading this unit students will be able to know :— •••• Differences between perception and Sensation. •••• Different types of perception •••• How perception is combination of sensation with meaning.

89 2.3.3 Perception A meaningful sensation is called perception. When the sensation process is explained the primary concept of sensation transformed in perception. This is more elaborated in 2.3.3.1. 2.3.3.1 Meaning and Definition: The process of organizing and interpreting sensory information so that it makes sense. Receptor cells in our eyes record - that is, we sense a sleek silver object in the sky, but they do not see a jet plane. Recognizing that silver object as a plane is perception. Sensing and perceiving give us views of the setting sun, the sounds of a rock concert, the touch of soft caresses, the taste of sweets, the fragrance of flowers of all the various stimuli that are present in your environment right now, you are able to sense and perceive only some of them. Every specialist adapted to sense and perceives stimuli that matter to that species' ability survives in its environment. A meaningful sensation is called perception. When the sensation process is explained the primary concept of sensation transformed into perception. Sensation is awareness of objects and perception is the awareness of this or that object. For example, waiting on the road I hear a sound from the back side calling someone with my name. Then at that moment I conclude that it is my friend (Sanlap's) voice. Because such voice (Sanlap) has been previously familiar to me day to day. Thus when a sensation (voice of Sanlap) means an object we call it perception. It involves a sensation through the stimulus of a sense organ and an interpretation of the sensation. 2.3.3.2 Differences between Perception and Sensation In the year 1765 Thomas Reed first differentiates between sensation and perception. He commented that though perception comes from sensation yet perception is more complex than sensation. To Reed sensation is the result of physical activity. But perception is the interaction between body and mind. The difference between sensation and perception is given below:

90 SENSATION PERCEPTION Sensation is the knowledge of object Perception is meaningful sensation. Sensation is not knowledge but components of knowledge Perception is subjective knowledge. Sensation is the primary process for acquiring knowledge Perception depends on sensation. During sensation our mind remains passive. During perception mind becomes active. Sensation is a condition of perception Perception is a mental process Sensation is linked with present Perception is linked with present and past We do not get the full shape of the object in sensation In case of perception we get full shape of object. Its function is to provide components of knowledge Its function is to make sensation meaningful and co-related. 2.3.3.3 Types of Perception: Perception is of four types such as- 1. Direct perception 2. Acquired perception 3. Apperception 4. Deviated perception 1. Direct perception : Perception through direct sense organs is called direct perception. W r hen we look at a red rose or touch a piece of ice, we acquire knowledge about red colour or cool ice directly. 2. Acquired Perception: When we acquire any sensation through such organ which is not wanted, then it is called acquired perception. For example, when we touch ice, we feel it is cold. But when we look at ice, our visual sensation reminds about past experience about icy cold, so through eyes we feel that ice is cold. 3. Apperception: Apperception is readiness to perception. The experiences that is kept in our mind with long before and is viewed with the light of new incidents, it is called apperception, For example, a common person visualizes a tree as a tree but when a botanist observes a tree, he/she analyses it in the light of his past 91 experiences. That is why; apperception plays a vital role regarding an object or matter for conception. When we teach a child a new idea, we try to link with his/her familiar subjects/ elements with the help of apperception. 4. Deviated perception: In our real life we do not perceive many things rightly. We perceive deviated from real situation. For example, in the moonlight night we feel the existence of ghost seeing a big banana leaves. Deviation is of two rypes- a. Illusion b. Hallucination a) Illusion: Illusion is perfect sensation. The mistake that is done is of perception process. As illusion is a primary mental process, so mental tendency is the source of mistakes. b) Hallucination; To perceive such a thing that has no real existence is called hallucination. In the opinion of Stout, it is done due to change in blood flow in brain. But in the opinion of Freud hallucination is one type of mental disease. For example, we feel the existence of ghost without any valid reason. According to our five sense organs we may categorize the perception into five types: 1. Visual perception: Two eyes are the central part of visual sensation. From different external stimulus light falls up on the eyes. That light enters into cornea and then enters into Irish to pupil. In pupil, there is aqueous humour that falls on lens which controls the light. From the stimulus the light moves to the lenses in a parallel way. After that the light creates an opposite image on the retina. This stimulus goes to visual sensation organ in brain through optic nerve and this organ shows normal image of stimuli that comes through eyes. Generally the process of visual perception is like the function of a camera. Through it we can know different things like shape, design, difference of colour, distance, depth etc. it helps to judge comparatively different sizes, shapes of animals and plants. Light rays entering into pupil falls on lens and then it meets at focus. Position of the object determines focal length and for this reason curvature of lens can be

92 changed. When stimulation creates in retina, it reaches to brain through nerves and visual perception takes place, A problem regarding visual perception is given below: Colour perception: Among animals man is the only one who can differentiate among different colours. Young and Helmholtz in their Tri-chromatic theory first mentioned that in our retina there are three types of cone cells. The first one is stimulated by blue colour (wave length 400-500 nm) the second is by green colour (475-600 nm) and third one is by red colour (490-650 nm). Other colours are the mixture of those three colours in different ratio. Later Brown and others mentioned opponent process theory. According to this theory, the chemical reaction that prevails among three cone cells is opposite and sensible to different lights. The function of first cone cell is blue-yellow, second function of cone cell is red-green, third function of cone cell is white-black, But whereas blue light does such chemical reaction, yellow light does the opponent type. 2. Hearing Perception: The main organs of hearing sensation are ear and the stimuli are air waves. Light ways can go through vacuum medium but sound wave needs a medium. Every sound wave has three characteristics. 1) Pitch, ii) Loudness, iii) Timber. When we hear any sound coming behind it is sensation. But after hearing the sound when we look behind and recognize the person who is calling me, is called perception. Such type of perception is called hearing perception. Sound waves enter into external auditory organ and hits on tympanic membrane and creates a vibration. This vibration goes to Cochlea (organ of Corte) through middle ear. From the Corte sensation auditory goes to the hearing sensation organ and then we can hear it. 3. Smell Perception: During breathing some smells molecule enters into nasal whole. In the nasal whole smell molecules are absorbed in nasal membrane. The smell sensation is received by olfactory cell and this sensation goes to smell through olfactory nerve. Then sense organ of brain analyses the smell molecules and we feel smell sensation. When we smell the fragrance of a rose, we recognize it as a flower named rose. One of my friend who uses same perfume and then smell perception happens by me.

93 4. Perception of Taste: During eating at first food is dissolved in (Saliva) and comes contact with taste buds. Then taste cells are stimulated and this stimulation goes to taste sensation organ through nerve, then we get the taste of any food. When we eat a sour fruit we can say it is sour when we take sugar, we can say it is sweet; tongue plays an important role in the function of taste perception. We can taste sweet taste by the front part of the tongue, bitter taste by back part, and sour by the two sides of the tongue. There are nerve cells in the tongue. But there is no taste is selected at the middle part of the tongue. 5. Skin Perception: Any type of skin sensation reaches to brain through skin sensation nerve. Then we feel heat, pressure, cold, pain and different skin related sensation through our brain. When a bite is felt by us it is sensation but when we recognize it that the bite of a mosquito, it is skin perception. Similarly when we feel any pain, it is sensation but after recognizing the cause of the pain, and when it becomes meaningful to us that it is my friends pushing by pen on my skin, it is called skin perception. 2.3.4 "Check your progress" : a) What is perception?

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..... b) Write some differences between sensation and perception

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..... c) What is hallucination?
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94 d) What is illusion?

..... e) How can we visually perceive?

..... 2.3.5 Let us sum up Perception is a very important mental process of learning. Through this process a learner can learn or getting any knowledge of objects. In education perception is very essential for getting or knowing the objects. Sensation and perception both are interrelated to each other. But they have some basic differences. Perception may categorize in different point of view. Generally we categorized the perception on the basis of our five sense organs i.e. visual perception, hearing perception, smell perception, taste perception and skin perception etc. 2.3.6 Unit end exercises a) What do you mean by perception? b) How the perception does differ from sensation? c) What is illusion? d) What is hallucination? e) Explain the types of perception. f) What is perception? Discuss the process of visual perception. g) What is deviated perception? Discuss its different types, h) Write a short note on: a) Colour perception b) Smell perception c) Skin perception

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96 Unit : 2.4 □ □ □ □ Memory Structure 2.4.1 Introduction 2.4.2 Objectives 2.4.3 Memory. 2.4.3.1 Meaning and Definition 2.4.3.2 Stages of Memory 2.4.3.3 Types of Memory 2.5.3.4 Economic methods of memorization 2.4.4 Problem solving 2.4.4.1 Meaning and definition 2.4.4.2 Steps of problem solving behaviour 2.4.5 Thinking 2.4.5.1 Meaning and Definition 2.4.5.2 Theories of thinking 2.5.4 "

Check your progress" 2.5.5 Let us sum up 2.5.6 Unit end exercises 2.5.7 References 2.4.1

Introduction: Memory is an important factor of learning. In our traditional educational system, memorization is very essential for the success of the learners. Without proper memorization learners cannot succeed in life. So memorization process is to learn something and to memorizing proper situation. It has four components-i) learning ii) retention, in) recall, and iv) recognition.

97 2.4.2 Objectives After reading this unit students will be able to: • Explaining the meaning of Memory • Define the term Memory • Express the stages of Memory • Express the types of Memory • Write the implication of Memory in education

2.4.3 Memory 2.4.3.1 Meaning and Definition One of the aims of school instruction is to expand the knowledge of learners. The teacher's responsibility is to encourage the learners to acquire and to retain the knowledge imparted in school for future use in meeting life problems. Memory increases our efficiency. It enables us to remember important facts, ideas, names etc. and other items of information. Memory is the function of the mind by virtue of which it records, retains and produces ideas gained by its own activity. Many times we use the word 'remembering in place of memorization, both the terms mean the same meaning.

Our mind possess a special ability by virtue of which every experience or learning leaves behind images or Iraces which are conserved in the form of anagrams.

This preservation of memory traces by the central nervous system or brain is known as retaining of the learned act. How long you can retain depends upon the strength and quality of memory traces. When you try to recollect or repeat past experiences, you make use of memory. Definition: Memory has been defined by many psychologists. Some of the important definitions are as follows: According to Woodworth and Marquis-"Memory consists in remembering what has previously been learned." Ryburn views that- "

the power that we have to store our experience and to bring them

98 into the field of consciousness sometime after the experience has occurred is termed memory."

Stout defined that - "The ideal revival, so far as field revival is merely reproductive in which the objects of past experience are reinstated as far as possible in the order and manner of their original occurrence." According to Ross- "Memory is a complex process involving the establishment of dispositions, their retention and the recalling of experience that have left the dispositions behind them." Eysenck (1970) stated that "Memory is the ability of an organism to store information from earlier learning process, experiences, retain and reproduce that information in answer to specific stimulation." 2.4.3.2 Stages of Memory: According to Woodworth four main elements of memory are: learning (acquisition), retention, recall and recognition. 1. Learning : This is the first stage of memory. It is the process of establishing association of the ideas in mind. To remember a poem or a text, the first thing to be done is to learn or get it by heart who never seen 'Tajmahal' cannot explain the beauty of Tajmahal. 2. Retention: It is the process of relegation of the past experience in the subconscious mind of the individual in the form of a mental experience. Progress in learning happens only when the thing learnt is retained. Knowledge develops if the materials learnt are preserved in the mind in the form of images. 3. Recall: It is bringing again to mind the past experience on the basis of association if ideas. Recall is of two types: i) spontaneous and ii) deliberate. In spontaneous recall we make no effort to recall but the experiences or ideas just flow. In deliberate recall, we make an effort to recall something.

99 4. Recognition: It is the capacity to recognize or express knowledge of all seeing a thing that has been seen earlier. The individual is able to identify different objects due to recognition ability. 2.4.3.3 Types of Memory Memory may be categorized in various kinds but we will discuss here only some important types of memory: 1.

Short term memory (STM): Often in daily life situations we need to recall material immediately or after a very short time. The information temporarily stored in short term memory may last as long as thirty seconds even if the material is not being rehearsed. When

we go to a new city we have to remember the names of different streets and persons or telephone numbers. All these situations are the examples of short-

term memory. 2. Long term memory (LTM): Psychologists think of long-term memory (LTM) as a store house where information is stored fairly permanently when we are not recalling it. Long-term memory codes information according to meaning, pattern and other characteristics. It is this memory that helps us to remember a number of things on a relatively permanent basis. Remembering identifying data like one's name, fathers name, date of birth, date of marriage. etc. is the simplest example of long-term memory. 3. Sensory or immediate memory: Sensory or immediate

memory is the memory that helps an individual to recall something immediately after it is

perceived. In this memory the retention time is generally from a fraction of second to several seconds.

Immediate memory is needed when we want to remember a thing for a short time and can then forget it. When we go for a journey in a train talking with co passenger and when we leave the train we forget the person. This is one type of sensory memory. 4. Photographic memory: Photographic memory means memory possessed by a person who can

remember a scene in photographic detail. This memory also known as eidetic imagery memory. Such people can 'see' a picture after it has been taken away, with their descriptions of objects from the picture stating the right colour and the proper locations. 5. Episodic and semantic memory: This memory is based on some episodes and events. This events may be personal events and experiences associated with one's life. At the time of event he/ she stored in the shape of episodic memory traces

100 organized according to the time, space and other characteristics of the events. When we want to recall the events these memory traces are reproduced in the manner and sequence in which they have been organized and stored in one's mental set up. For example, in educational excursion the students can narrate the experiences of excursion through the episodic memory.

2.5.3.4 Economic methods of Memorization:

1. Interest: Interest is essential for useful learning and memorization. If someone has great interest on any subject he/she becomes self-motivated by subject. If one has interest in music, he/she easily grasp the tone of a new composition easily.
2. Attention: Without attention, learning and retention cannot take place properly. "Attention is the control process that governs the flow of information from the sensory register to short-term memory" - Paraswara and Davis, 1984, Triesman and Geladi, 1980). The tor- he/she cannot memorize it properly for a long time.
3. Meaningful learning: If someone reads a topic without understanding the meaning of without understnading the meaning of the topic, he/she cannot memorize it properly for a long time.
4. Chunking and rhythm : Chunking and rhythm also help learning and help in remembering. For example mobile number of 9732562682 can easily be memorized and recalled if we try to group it as 9732 56 26 82. Similarly rhythm provides to be an aid in memorizing. Children learn effectively the multiplication table by reciting then in a sing-song.
5. Principle of association: It is very helpful to follow the principle of association in learning. The letters VIBGYOR have proved to be a very effective aid to remembering the colours of the rainbow. V- Violate, I- Indigo, B-Blue, G- Green, Y-Yellow, R- Red.
6. Over learning: If we learn more and more about an object or material, we cannot forget it after a long time. For example, we never forget our name, address, and best friend's name.
7. Repetition and practice: After learning if we repeatedly practice it, we can easily memorize it and this memory converts into long-term memory. For example, if one does not practice maths or computer for a long time, we easily forget it.

101 8. Emotional equilibrium: While learning we are disturbed emotionally, we can learn it properly and easily forget it. So in the time learning we must not be emotionally disturbed.

9. Uses of multiple sensory organs: While learning if we use multiple organs, it helps us to memorize for a long time. Such as demonstration method and PowerPoint presentation is more helpful to memorize due to use of multiple sense organs.

10. Distributed learning: Affter learning and reading if we give some time space, it helps us to memorize it for a long time.

2.4.4 Problem Solving 2.4.4.1 Meaning and definition

From our early childhood we are facing a lot of problems. There are needs and motives that to be satisfied. So, definite goals or aims are set.

The productive work involved in the evaluation of the situation and the strategy worked out to reach one's set goals is collectively

named as

problem solving. This is an essential exercise for individual advancement as also for the advancement of society.

It is a process of overcoming difficulties that appear to interfere with the attainment of a goal. It helps in the removal of or adjustment with and ultimately helps an individual to reach his goal and satisfy his motives.

The productive work involved in the evaluation of the situation and the strategy worked out to reach one's set goals is collectively termed problem solving, this is an essential exercise for individual advancement as also for the advancement of society. The

psychologists have defined about problem solving in a number of ways.

Woodworth and Marquis (1948) stated that "Problem solving behaviour occurs in novel or difficult situations in which a solution is not obtainable by the habitual methods of applying concepts and principles derived from past experience in very similar situations."

According to Skinner (1968) - "Problem solving is a process of overcoming difficulties that appear to interfere with the attainment of a goal. It is a procedure of making adjustment in spite of interferences."

2.4.4.2 Steps of problem solving behavior : Psychologists have suggested different steps involved in the process of problem-solving according to their respective findings and viewpoints:-

102 John Bransford and Barry Stein (1984) advocated five steps that are basically associated with the task of problem-solving. They referred to these as 'IDEAL' thinking and arranged them in the following order: - I- Identifying the problem. D- Defining and representing the problem. E- Exploring possible strategies. A- Acting on the strategies. L- Looking back and evaluating the effects of one's activities. In general the following steps may be followed in the task of problem solving: - 1. Problem awareness: this is the first step in problem solving. At this step an individual is concerned with his awareness of the problem which needs to be solved. He must be faced with some obstacle in the path of the realization of his goals, needs or motives and consequently he must be conscious of the difficulty or problem. 2. Problem understanding: After facing or encountering the problem, the individual should identify and analyze the problem for its exact nature to become clear to him. 3. Collection of the relevant information: At this stage the individual is required to collect all the necessary information about the problem by all possible means. He may consult with experienced persons, read the related literature, recall his own experiences, think of the numerous possible solutions, and put in all possible efforts to collect comprehensive data and knowledge concerning the problem. 4. Formulation of hypothesis: After understanding the nature of the problem, one may start some cognitive activities to think out the various solutions to the problem. 5. Selection of the correct solutions: In this important step, all the possible solutions, thought out in the previous step, are closely analyzed and evaluated. Gates and others (1948) have suggested the following activities in the evaluation of the assumed hypotheses or solutions. a) Identify the conclusion that completely satisfies all the demands of the problem, b) Find out whether the solution is consistent with other well-established or accepted facts and principles. 103 c) Make a deliberate search for negative aspects which might cast any doubt upon the conclusion. The suggestion mentioned above would help the individual to select the proper solution of his/her problem out of the numerous solutions that may be available. In the final analysis, however, he has to use his own discretion by utilizing his higher cognitive abilities to properly identify the appropriate hypothesis or solution by rejecting all other hypotheses. 6. Verification of the concluded solution or hypothesis: The solution arrived at or conclusion drawn must be further verified by applying it in the solution of various similar problems and only if the derived solution helps in the solution of these problems, should one consider the solution to be acceptable. Such a verified solution may then become a useful product of one's problem-solving behaviour and be utilized in solving other future problems.

2.4.5 Thinking

2.4.5.1 Meaning and Definition: Thinking is a cognitive ability.

Good poetry, a highly developed computer or a robot, a beautiful painting, or nice buildings are all products of the thinking.

Even to understand or to appreciate, we have to employ our power of thinking.

Thinking is a complex process and the most difficult concept in psychology to define or explain. Some of the important definitions are given below for clear explanation about thinking. According to

Ross (1951): "Thinking is mental activity in its cognitive aspect or mental activity with regard to psychological objects."

Valentine (1965) stated that "In strict psychological discussion it is well to keep the thinking for an activity which consists essentially of a connected flow of ideas which are directed towards some end or purpose." Garrett (1968) defined that "

Thinking is behaviour which is often implicit and hidden and in which symbols (images, ideas, and concepts) are ordinarily employed." Mohsin (1967) defined that

104 "Thinking is an implicit problem-solving behaviour." Gilmer (1970) stated that "Thinking is a problem solving process in which we use ideas or symbols in place of overt activity. 2.4.5.2 Theories of thinking: different psychologists have put forwarded various theoretical view points from time to time to explain the nature, mechanism and development of thinking. 1. Behaviouristics learning theory: According to this theory, thinking behaviour is acquired in much the same way as other modes of behaviour, interest, attitude, knowledge and skills etc. J. B. Watson opined that there is association between the movement of one tongue or vocal cords with one's thoughts. Here S-R mechanism takes place. So. the response, an outcome of one's thinking is the product of the associated stimuli—that generates the thinking- process. The same stimuli generate the same type of thought and the organism thus becomes conditioned. The behaviorists viewed thinking as that private behaviour which is determined by stimulus control and reinforcement in the same way as overt behaviour. 3. Gestalt and Holistic theory: In the process of thinking leading to problem solving behaviour the organization of the perceptual field. Thinking behavior is always purposeful and goal-oriented - according to it. While thinking, one gets to look at the whole field or context in which the thinking is occurring. With this wider perception, one is set for the reorganization and restructuring of the perceived field or and optimal solution of the problem in hand. The acts of such restructuring or reorganizing of the perceptual field belong to the process and product of thinking. 4. Bruner's Theory of Cognitive Development: Jerome S. Bruner hypothesized that one's thought processes evolve as a result of maturation, training and experiences through a series of sequential stages. The stages of cognitive development advocated by him for this purpose are- i) Enactive, ii) Iconic and iii) Symbolic. The first stage that is enactive representations stage is characterized by the child's representation of appropriate motor activities. At the stage he is unable to make use of language images or other symbolic representations for carrying out his thought processes and acts out and represents them through no-verbal activities based on motor actions and movement. The second stage that is iconic representation stage is characterized by the child's representation of things and events in terms of sensory images or mental picture. The final stage i.e. symbolic representation stage is that stage of one's cognitive development when thought about things and events is not necessarily dependent upon the motor activities or sensory images and mental pictures. During this stage symbolic representations in the form of words, symbols and other imaginary abstract phenomena take the place motor manipulation or concrete visualization. For example, to understand a question like: "If a child has four apples and his sister has three, how many apples do they have between them? One does not now need to actually have these apples (in physical terms) or to draw a mental picture of these apples for the counting. One may just write the numbers 4 and 3 or mentally visualize these numbers to add them up. 5. Freud's psychoanalytic theory: Sigmund Freud's psychoanalytic theory of thinking may be described as the inherent desire for satisfaction of the sex urge and the role of the unconscious in moulding and shaping or one's behaviour. The thinking behaviour is also governed through those two factors. If the goal is pleasure through sex gratification, the thought process would be naturally colour accordingly and since nine -tenths of one's psyche consists of the unconscious and sub-conscious, the major portion of one's thinking must emerge from it. The wish fulfillment, dreaming and unconscious morbid thinking, should thus be considered to be a major part and parcel of one's thought process influencing one's interests, attitudes and overall behavior. In the process of development of thinking, the new-born infant does not show any sign of thought-related activities. In fact, his mental life is characteristic at this stage and is driven by a set of psycho-physiological drives, for example, when he/she is hungry, he/she cries. Gradually ; Freud maintains, the infant develops a kind of self-centered thinking termed as narcissistic thinking. His behavior is almost entirely dominated by the Id and the pleasure principle and the thoughts of the infant are highly coloured by instinctual impulses demonstrating a total disregard of realities and logic. As the child grows older, another part of his personality, the ego comes into play. He then begins to pay attention to people and his environment in order to be able to

106 cope with it effectively. He now begins to operate according to the reality principle and his thought processes become more rational and logical. Symbols and words also became involved in his thinking but he still remains ego-centric. With the entry of another component of personality, the super-ego his thinking is now fashioned in accordance with the mores and ideals of a society. It becomes more objective. The development of creative thinking, enrichment of fantasy, imagination and abstract thinking is the outcome of emergence of the super-ego and the subsequent expansion of the child's thinking apparatus. 2.5.4 "Check your progress" 1. What is memory?

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- 2. Write some definition of memory
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- 3. Explain the meaning of memory
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- 4. Discuss the types of memory
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- 5. What do you mean by problem-solving
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- 6. Discuss the steps of problem solving behaviour
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- 7. What is thinking?
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- 8. Explain the gestalt theory of thinking
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- 9. Explain the Freud's theory of thinking
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..... 2.5.5 Let us sum up: Memorization is most important mental process of learning. In the present formal education system without memorization a learner cannot success in his learning areas. Memory has some steps i.e. learning, retention, recall and recognition. A teacher must have to knowledgeable about memory and how memory can be improved. There have some techniques to improve or strengthening the memory. Thinking refers to a pattern of behaviour in which we make use of internal representations of things and events for the solution of problems. The important theories

108 for understanding the nature, development, and mechanism of thinking are, the behaviourist's learning theory, Gestalt theory, Piaget theory, Freud's theory, Burner's theory etc. Each of these theories explains the human thought processes. Problem-solving is a deliberate and serious act, involves the use of some novel methods, higher thinking and systematic planned steps for the realization of set goals. The systematic steps involved in effective problem-solving may be identified as problem awareness, problem understanding, and collection of relevant information, formulation of hypotheses and selection of a proper solution. 2.5.6 Unit end exercises: 1. What is memory? 2. What do you mean by thinking? 3. What is problem solving behaviour? 4. Discuss the different steps of memory 5. Explain the different steps of problem solving? 6. What are the different steps of memory? Write some economic methods of memory 7. What is thinking? Explain the different theories of thinking 8. Write short not on i) Freud's theory of thinking ii) Gestalt theory of thinking iii) Memory and education iv) Types of memory 2.5.7 References 1. Aggarwal, J. C. Essentials of Educational Psychology (second edition). Vikash publishing House Pvt. Ltd. Noida (U. P.) (2007). 2. Bhatia, H. R. (Fifth edition) Orient Longmen Ltd. : Elements of educational psychology, Hyderabad. (1986).

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110 Unit : 2.5 □□□□ Motivation Structure 2.5.1 Introduction 2.5.2 Objectives 2.5.3 Motivation 2.5.3.1 Meaning and Definition 2.5.3.2 Nature of Motivation 2.5.3.3 Types of Motivation 2.5.3.4 Maslow's theory of motivation 2.5.3.4 Role of Motivation in education 2.5.4 "

Check your progress" 2.5.5 Let us sum up 2.5.6 Unit end exercises 2.5.7 References 2.5.1

Introduction In this world all individuals have an inner drive or urge. This drive or urge is known to as motivation. For useful learning, motivation plays a vital role. There is a need for creating a conducive environment for learning and motivating the children to learn. Children are curious by nature. They always want to learn new things. A teacher has to take advantage of all these facts in order to turn the attention of children to what he/she has to teach them in the classroom. 2.5.2

Objectives After reading this unit students will be able to : • Explaining the meaning of motivation • Define the term motivation

111 • Express the nature of motivation •

Describe the- factors of motivation • Express the types of motivation • Explain the Maslow's theory • Write the implication of motivation in education 2.5.3 Motivation 2.5.3.1 Meaning and Definition The term motivation comes from the Latin word 'moveers' which means to move. Motivation is an internal force which accelerates response or behaviour. Some learners learn the same subject matter more efficiently than others, some find it more rewarding and interesting than others, and some enjoy it more than others. At any time learners vary in the extent to which they are willing to direct their energies to the attainment of goals due to difference in motivation. Motivation is the very heart of the learning process. No learning is possible without motivation. It has been stated that "motivation arouses interest. Interest is the mother of attention and attention is the mother of learning. Thus to secure learning you must first engage the mother, grandmother and great grandmother." The steps involved in motivation are given below: Need ⇒ Drive ⇒ Motive ⇒ Behaviour ⇒ Goal ⇒ Reduction ⇒ Need Definition: Some of the important definitions are given here for having a clear understanding of the term motivation. According to Bernard (1965): "Motivation is the stimulation of actions towards a particular objective where previously there was tittle or no attraction to that goal." Guilford stated that (1950): "A motive is any particular internal factor of condition that tend to initiate and sustain activity." Atkinson (1966) defined motivation as: "The term motivation refers to the arousal of tendency to act to produce one or more effects. 11 Maslow (1954) defined that "Motivation is constant never ending fluctuating and

112 complex and that it is an almost universal characteristic or particularly every organismic state of affairs." Crow and crow (1962) stated that "

Motivation is considered with the arousal of the interest in learning

and to the extent is basic motives.' 2.5.3.2 Nature of Motivation: Motivation is a very complex phenomenon which is influenced by multiple variables operating within the organism and in the environment. Motivation has some unique nature. After discussion different views and definitions of motivation, there are some natures of motivation. These characteristics of nature may be noted as: 1. Motivation creates interest to the learner towards learning. 2. Motivation is controls the behaviour. 3. Motivation leads to self actualization in learning. 4. Motivation is the arousal of tendency to act and product result. 5. Motivation engaged the learner towards activities until the goal is not reached. 6. Motivation is directed to a selective goal. 7. Motivation initiates and-energies activity in learning. 8. Motivation is the internal condition or factor of learning. 9. Motivation provides the energy and accelerates the behaviour of the learner. 10. Motivation releases the tension and helps in satisfying the needs of the learner. 2.5.3.3 Types of Motivation: There have two types of motivation: 1. Internal or intrinsic motivation 2. External or extrinsic motivation I. Internal or intrinsic motivation : Some of the individual feels inner drive to fulfill or reach his own goal. This inner drive mainly intrinsic motivation. Intrinsic motivation creates due to internal urges, drives, needs and appetites. Men possess appetite for food, for water, for rest, and sleep, for change of variety, for play, for sex etc. A great part of life of man in spent in activities which are motivated by these appetites. One of the most important foundations of happiness, contentment and mental health is a feeling

113 of security in terms of basic organic needs. When this security is threatened, one may become a radical in thought, he may try to lay the blame on others or he may do any one of a great number of positive things developed from his training and experience. 2. External or extrinsic motivation: most of the cases motivation arouses through external stimulus like, praise, gifts, certificate, good marks etc. this type motivation is called external or extrinsic motivation. Learning must proceed in the absence of internal motivation. If there is intellectual immaturity and lack of sensitivity to ultimate consequences and ideals in the individual, then internal motivation will fail. In such circumstances recourse is to be taken to external motivation. It has to be built upon the foundation of some existing natural response or tendency. Extrinsic motivation is not permanent rather than intrinsic motivation. 2.5.3.4 Maslow's theory of motivation: Abraham Maslow developed the new humanistic theory of self-actualization in the year 1954. He believed that man can work out a better world for mankind as well as for himself. He critically examined the traditional approach of pain, avoidance, and pleasure seeking and tension reeducation as the major sources of motivating behaviour. According to Maslow human needs arrange themselves in a hierarchy. In other words, the appearance of one need generally depends on the satisfaction of the others. They are closely related to each other and may be arrange from the lowest to the highest development of the personality. He proposed five sets of basic needs that can be arranged in a definite hierarchical order for understanding human motivation as shown below: Fig: Maslow's hierarchy of needs Physiological Safety Love/belonging Esteem Self- actualization

114

The needs of the first category include psychological needs, such as hunger and thirst. Once these needs are satisfied, the person seeks to satisfy safety needs- love needs, belongingness need and esteem needs. In this way the motivational behaviour of a person is always dominated not by his satisfied needs but by his unsatisfied wants, desires and needs. Psychologically, self actualization means to fulfill one's individual nature in all its aspects. When all the basic needs are satisfied self actualization is possible. According to Maslow, when the basic needs are satisfied at least minimally, he will be motivated towards self actualization. A self actualized individual will be dynamic and optimistic. He will be void of anger, distress, malice, selfishness and aggressiveness. He behaves with love, tolerance and spirit of cooperation. Change to the original five Stage model are indented and include a seven stage model and a eight-stage model, both developed during 1960's and 1970's. 1. Biological and Psychological needs—air, food, drink, shelter, warmth, sex, sleep etc. 2. Safety needs—protection from elements, security, order, law, stability, etc. 3. Love and belongingness needs—friendship, intimacy, affection and love, from work-group, family, friends, romantic relationships. 4. Esteem needs—Self esteem, achievement, mastery, independence, Status, dominance, prestige, managerial responsibility etc. 5. Cognitive needs—Knowledge, meaning etc. 6. Aesthetic needs—appreciation and search for beauty, balance, form etc. 7. Self Actualization needs – realizing personal potential, Self-fulfillment seeking personal growth and peak experiences. 8. Transcendence needs—helping others to achieve self actualization. 2.5.3.4 Role of Motivation in education: motivation is very important factor of education as well as teaching learning situation. A motivated student spontaneously pays attention to the learning. The teacher's role should be aroused motivation to the learners. According to Garratte - "motivation is a super highway to learning." M. K. Thomson stated that motivation is that education, by which interest is created in a person who does not have it. Due to interest the students concentrate their attention on studies. The following points show the importance of motivation in education.

115 1. Teachers try to arouse the motivation to his students towards teaching and learning. 2. Teacher may be used different external stimuli for creating motivation. 3. A good teacher always tries to arouse motivation in a intrinsic way. 4. Teachers always try to fulfill the needs of the students, because the needs are the basis of motivation. 5. The teacher should encourage the children to learn by constructing and creating things. 6. Teachers role should be stimulate the impulse of curiosity to learners. 7. Both positive and negative verbal reinforcement be used in the classroom for motivated the learners. 8. Classroom’s environment should be competitive and co-operative among the learners. Competition between groups makes it possible to spread the share of success or failure. 9. The teacher must provide pleasant and satisfying experiences to the students so that they are motivated for further learning. 10. Classroom’s condition also one or the important factor of motivation. The rooms should be ventilated and well decorated with full light and air. 2.5.4 “Check your progress” : 1. What is motivation?

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116 3. Write the nature of motivation?

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..... 4. Discuss the types of motivation
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..... 5. What is self actualization?
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..... 6. Discuss the Maslow theory of motivation?
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..... 7. Explain four areas of the significance of motivation?

..... 2.5.5 Let us sum up Motivation is the arousal of interest in learning. It is an internal force which accelerates the behaviour or learning. For useful learning motivation plays a vital role. Motivation is of two types- external and internal. A. Maslow developed a humanistic theory of self-actualization. It means to fulfill ones individual nature in all! its aspects. In the field of education specially learning motivation plays a vital role. With the help of motivation an efficient teacher can fulfill the student’s highest level achievement.

117 2.5.6 Unit end exercises 1. What do you mean by the term ‘motivation’? 2. What is the self actualization? 3. What is extrinsic motivation? 4. What is intrinsic motivation? 5. Write a short note on types of motivation? 6. What is motivation? Discuss the nature of motivation. 7. Explain Maslow theory of motivation 8. How can a teacher implement the motivation in education? 2.5.7 References 1. Aggarwal, J. C. Essentials of Educational Psychology (second edition). Vikash publishing House Pvt. Ltd. Noida (U. P.) (2007). 2. Bhatia, H. R. (Fifth edition) Orient Longmen Ltd. : Elements of educational psychology, Hyderabad, (1986). 3. Chauhan, S. S. Advanced Educational Psychology (Seventh Edition). Vikash Publishing House Pvt, Ltd. (2007), Noida, (UP). 4. Dandapani, S. (Second Edition). Educational Psychology. Anmol publications, New Delhi (2003). 5. Ghosh. S. K. Adhunik sikshabigyan. Bani Samsad Publicating House. (2009), Kolkata. 6. Kundu, C. L. & Tutdo, D. N. Educational Psyschology (fifth revised edition). Sterling Publishers Pvt. Ltd., New Delhi (1998). 7. Sharma, R. A. : Fundamentals of Educational Psychology (third edition, 2001). Surya Publication, Meerut. 8. Mangal, S. K. Educational Psychology, Prakash Brothers, Tandon publications. Ludhiana(2001)

118 UNIT 3 TEACHING LEARNING PROCESS Structure : 3.1.1. Introduction 3.1.2. Concept of mathematics Laboratory 3.1.3. Need 3.1.4. Equipment for setting up a mathematics Laboratory 3.1.1 Introduction : Teaching is an active process in which one person shares information with others to provide them with the information to make desired behavioural changes. Where as learning is the process of assimilating information with a resultant change in behaviours. Therefore, we may say that teaching-learning process is a planned interaction that promotes behavioural changes that is not a result of maturation or coincidence. Teaching-Learning process describe through diagram as stated below : Assess Fig-1, teaching learning process as a digramatic view. Prioritize Establishes objectives Choose content Plan Select strategies Environment Implement Order learning Experiences Evaluate Teaching Guidences Learning Teaching Document 119 The above diagram represents a intimate relationship among the five steps. Assessment is the intial stage to diagnose the learner ability and capability. According to the result assessment the next phase is planned to carryout the teaching. In the same way after implementation it is evaluated for documentation. Fig-2, Model of teaching learning process From the above two figures about the process of teaching-learning reflects that teaching-learning is the process of planning, organizing, leading and controlling the efforts of the variables involved and the resources avialable in the process of teaching- learning in such a way so as to result in the attainment of stipulated teaching- learning objectives with the maximum possible efficiency and effectiveness.

120 The need and significance of teaching-learning process. ● It helps in identifying the teaching-learning objectives. Specifying them in behavioural terms and make the teachers and the pupils conscious of attaining them within the specified time available resources. ● Identifying the needs and characteristics of the learners and help them accordingly. ● Helping in better teacher-pupil relationship, close cooperation and healthy integration in the process of instruction. ● Improving enriching the curricular contents, learning experiences and their proper organization and presentation to the learner. ● Identifying and utilizing the apopriate teaching-learning strategies, methods, tactics, teaching aids, etc., in view of learning experiences, objectives, and the available teaching-learning environment. The relationship between teaching and learning : The teaching and learning are the two sides of the same coin. One cannot succeed without the supprt and success of the other. Teaching style of the teachers should be with the learne's learning style. Learner is the centre of teaching. Knowledge of the learner and his learning style should be considered. Learners become complex individual capable of learning on their own, the repertoire of teaching should also increase. Teaching is the cause and learning is the effect. 3.1.2. Objectives On completion of the unit, the student teachers will be able to ● describe the maxims of teaching. ● understand the stages of teaching. ● comprehend the stages of learning. ●

know learning environment. ● describe leadership role of teachers in classrrom, school and community.

121 3.2.1 Maxims of Teaching : Teaching in simple terms, is referred to as either an occupation or profession of a group known as teachers or an activity or activities of a group undertaken to help an individual to learn or acquire some knowledge, skills, attitude or interests. However, the meaning and concept of teaching is not so simple. It is very complex social, cultural and either process designed in a social or cultural context. According to H. C.

Morrison (1934) : Teaching is an intimate contact between a more mature personality and a less mature one which is designed to further the education for the latter. Therefore, teaching is a skilled job and a complex task. By all means, it is done for the benefit of the pupils i.e. to bring desirable changes or improvement in their behaviour. Success of this operation depends upon a good planning and masterly execution of the same. The educationist, psychologists, research workers and the teachers working in the fields have tried to establish some general principles, psychological principles and maxims of teaching which may prove quite helpful in making the task of teaching quite effective and purposeful. An attempt will be made to present the maxims of teaching. Educationists and teachers engaged in the taks of acutal classroom teaching have evolved certain simple notions and worling ways based on their own experiences which may prove quite helpful in the task of teaching. These are known as maxims of teaching. Some maxims of Teaching are stated below : ■ From known to unknown : This is the basic notion for learning beacuse known can always prove a reliable base for making acquitance with the unknown. Similarly, previous knowldge of a particular subject or topic may help us to collect new information and explore the unknown. After acquiring knowledge and skills solving the problems on addition and subtration, one can learn easily the essentials of multiplication and division. A wise teacher should always plan his teaching on the principle of proceeding from the known to the unknown. ■ From definite to indefinite : A lesson always should begin with difinite to indefinite otherwise it will be very difficult for a learner to concentrate on topic with an indefinite matter. One can

122 always trust the tested or definite and therefore definite things, concepts, events or knowledge may be easily approached for catching the indefinite ones. Definiteness of the known facts in a multiplication table may help a student to acquire the knowledge or skills concerning thousands of odd combinations related to multiplication, division, square or cube roots. Similarly, definite rules of the grammar may help a student learn the concerned language effectively. ■ From simple to complex : It is always better to begin with the relatively simpler things than to fight with the unnecessary difficult and complex ones. Proceeding from simple to complex or easy to difficult always provide an appropriate learning order or sequence. Such properly graded sequence may work as the schedules of automatic reinforcement as the group and understanding of simple ones not only motivates an individual to aspire more and little difficult but also equips him with the understanding and mastery of the difficulty and complex concepts and phenomena in the course of learning. ■ From concrete to abstract : Abstract is confusing, difficult to understand and may be subjective. One may be easily bored, fatigued, perplexed and lose one's patience while attending to an abstract phenomenon. It is difficult to be remembered and applied in practical situations. Whereas concrete is relatively simple, understandable or objective. Acquisition of a new knowledge or skill may become a simpler task when it is supported with concrete examples, objects and events. A good teaching should land from concrete to abstract. The concrete material is to be shown, living, examples are to be given and the children should be given maximum opportunities for acquiring direct experiences in order to make them able to learn the abstract concepts and experiences at the later stage. ■ From actual to representative : Actual or real objects, a piece of knowledge, principle and theorem are always better than their replica or representative in any process of teaching learning. An on-the-spot experience of the thrills and life of a mountain lake, lonely desert, whistling trees and chattering birds is unmatched in terms of direct influence and educative value. Visit to an airport is going to have lasting impression and clarity in thoughts and concepts in comparison to mere talking about aeroplanes and aerodrome verbally or through illustrative aids. Therefore, a wise teacher should always lead his students from actual phenomenon to the artificial representation.

123 ■ From particular to general : Generalized facts, principles, concepts and phenomena are quite abstract in nature, therefore, should not be presented in the beginning of a teaching. A teacher who begins by saying that matter has weight and then presents particular example or provides demonstrations related with particular solids, liquids or gases is placing horse before the cart. One cannot generalize without facing or acquainting oneself with the particular instances leading to the generalization of the fact or behaviour. Therefore, a teacher should always begin with the learning or experiencing of the particular cases, facts or instances and then persuade his students to generalize or conclude. ■ From whole to parts : Whole is always not only greater than the parts but also more understandable, motivating and effective. Therefore, beginning should always be made with the whole, and then step-by-step its various parts or constituents should be presented before the students. For example, in teaching the topic "parts of the flower", the beginning should be made with the actual presentation of the whole flowering plant and then gradually the knowledge of the elements and functioning of the different parts should be presented. Similarly, a model of the water pump and the actual working of this pump should be demonstrated as a whole and then the study and working of its different parts should be taken step-by-step. ■ From induction to deduction : Induction is a way of proving a thing or statement by arguing if it is true for a particular case, and then it should be true for the next similar case, and so on. While employing it in teaching, a teacher is required to place particular instances, examples, facts or experiences before the students. On the basis of similarities of properties and repetition of a phenomenon, the students are thus made to generalize a concept, principle or rule. On the other hand, deduction is the net result of induction. Here, the beginning is made by placing the generalized fact, principle, formula or rule before the students and then they are asked to verify the truth of the generalization by applying it in particular instances or examples. It is needless to say that all good teaching begins with induction. Knowledge is formative and induction is a way of discovering the knowledge. Deduction is the result of such discoveries. Therefore, a teacher should always proceed from induction to deduction in his teaching.

124 ■ From analysis to synthesis : Analysis refers to a process of breaking or separating out a thing into the simpler parts, elements or constituents in order to understand its structure or composition. It is a sort of operation or investigation that is being carried out to know the hidden aspects of a problem, but causes of an event or behaviour or understanding the complex nature of a thing or phenomenon. On the other hand, synthesis works quite opposite to analysis. It refers to a process of combining the different elements or parts of a thing in totality. ■ From empirical to rational : In a teaching-learning process, it is always safe to begin with what we see, fact and experience than with what we agree, generalize or explain. The former approach is empirical while the latter is rational. Development of the rational point of view is a goal, a result of a process of empirical findings. The concrete facts or empirical evidences are the rock bottom of a conclusion or rational knowledge. The rational thinking is not the product of empty ideas or lofty ideals having no naked truth or concrete happenings. A teacher has to place facts, evidence, direct or indirect experiences, examples and instances full of objectivity and validity to arrive at some conclusion or develop to arrive at a some conclusion or develop a rational point of view in understanding the nature and concepts of the objects, people, events and phenomena. Therefore, in good teaching one should always lead the student from empirical to rational point of view. ■ From psychological to logical : In the process of education psychological principles of learning and teaching are very important points of view to emphasize. Because the modern education is childcentric, so the child is the centre of education; his needs, interests, abilities and capabilities are the deciding factors for the planning and organization of the teaching activities. The instructional goals are made to serve the cause of the child. The curriculum, teaching strategies, aid material and teaching-learning environment, all are set in view of the psychology of the child and teaching learning. But it should not mean that a teacher has to go unplanned or move haphazardly in his teaching act. What is to be taught, although based on psychological footing, should

125 have some logic. The proper organization and sequencing of teaching activities in terms of the organizations of learning experiences, teaching strategies, evaluation activities and feedback devices are very much essential for the effectiveness of a teaching act. Therefore, a wise teacher cares for a beautiful integration of psychological principle to logical agreement in his teaching. He is to move on a psychological track, keeping in view the logic behind his sequence of activities.

3.3.1 Introduction : Stages of Teaching : The stages of teaching means series of activities that are carried out by a teacher in his act of teaching in real teaching-learning situation. The stages of teaching is aimed to achieve certain teaching objectives. Therefore, teaching as a job of the person called teacher may involve a number of teaching acts or operations which need systematic planning and careful execution. In doing so, the teaching has progresses in some sequential and organized steps. These steps are known as phases of teaching.

3.3.2 Plan : Planning stage is called the pre-active phase of teaching. It is the beginning of the teaching task. It is very important because a good planning makes the task of the teacher smooth, functionable and successful. There are two major steps involved in the phase, namely Task of Teaching Pre-active phase Interactive phase Post-active phase (planning stage) (Implementation stage) (Evaluation stage) Figure–1, Stages or phases of a teaching task (i) Establishment of some kind of goals or objectives. and (ii) Discovering ways and means to achieve these objectives. Operations and activities concerning the planning phase may be summarized as follows : 1. A logical first step in planning for any teaching is the attempt made by a

126 teaches for the establishment of certain goals or objectives. Accordingly, he formulates, in detail, the specific instructional or teaching objectives and writes them in a proper way in behavioural terms. 2. How can the stipulated objectives be effectively achieved is a thing to be decided in the second step of the pre-active phase. Consequently, planning is done for taking decisions about the following aspects :

- Choice of the content to be taught or learning experiences to be given.
- The organization or sequence of the context or material.
- Consideration about the principle and maxims of teaching.
- Decision and planning about the proper use of teaching aids.
- Choice of methods, techniques and strategies of teaching.
- The duration, place and management of classroom teaching.
- Decisions about the evaluation tools.

3. In short, in the pre-active phase, a teacher has to chalkout the details of his journey that he wants to perform in the classroom along with his students. 3.3.3. Implement : The second phase of teaching is called the interactive or implementation stage. It is concerned with the implementation and carrying out what has been planned or decided at the planning stage. It is the stage for actual teaching, success or failure of which depends on the degree and quality of the classroom interaction between the teacher and pupils. The major activities undertaken in this phase may be grouped as (i) perception, (ii) diagnostic, (iii) reaction processes. ■ Perception : Interaction process demands an appropriate perception on the part of teacher as well as students. When a teacher enters the class, his first activity is concerned with a perception of classroom climate. He tries to weigh himself, his abilities and pre-planning for teaching against the classrroup. Similarly, the students also try to have a perception of the abilities, behaviour and personality characteristics of the teacher in order to seek desirable interaction in the teaching learning-process. ■ Diagnosis : A proper diagnosis of the abilities and behaviour of both students 127 and the teacher is very essential for the appropriate interaction. A teacher, therefore, tries to asses and diagnose the achievement level of his students with respect to their abilities, academic background, intelligence, interest and aptitude. The diagnosis work analysis done in several ways. He may ask some questions or assess their performances and behaviour potential by providing opportunity for performing or behaving. The students also, through verbal or non-verbal interaction get the opportunity to asses and diagnose the abilities, interest, aptitude and behaviour performance of their own responses and reactions for contributing towards effective interaction in the teaching act. ■ Reaction processes : Action-reaction processes play the central role in the task of classroom interaction. For this purpose, a teacher has to take right decisions with regard to the selection and use of the proper stimuli, schedule of reinforcement and feedback devices, and development of suitable strategies suiting the needs of the pupils, teaching environment and teaching objectives. The pupils or learner have also to learn the proper ways of reacting and responding to the various stimuli and teaching techniques presented to them. In this way, the interactive phase of teaching is responsible for establishing appropriate verbal and non-verbal classroom interaction between the teacher and pupils by arranging suitable teaching-learning activities and on equally suitable and controlled classroom environment. 3.3.4 Evaluate : The third stage of teaching is called post-active phase of teaching. It is concerned with the evaluation activities. First of all, the stipulated objectives are considered and attempts are made to measure or assess the degree or qualities of the expected behavioural changes in the students as result of the teaching activities performed in the interactive phase. This can be done in a number of ways including tests or quizzes or by observing students reactions to questions, comments, structured or unstructured situation and behaviour situation. The teacher should bring to take right decision about the selection of the appropriate evaluation devices for this purposes. The results of the carried evaluation may be used by the teacher as well as students for bringing desirable improvement in their roles and activities. It may take the following Steps.

128 1. The suitability of the stipulated objectives may be properly assessed. The extent or quality of their accomplishment makes them take decision about further contribution, alteration, or improvement. 2. The suitability of the content and its organization may be suggested. Decisions regarding re-teaching the content or moving to new content may be introduced in the strategies and techniques of teaching. 3. The suitability of the instructional process, aid material and teaching strategies are evaluated. As a result, change and improvement may be introduced in the strategies and techniques of teachings. 4. The role of the classroom environment and learning situations may be evaluated. Accordingly, the desired changes may be affected in the management of these elements. In the nutshell, the post-active concerning evaluation help the teacher and the students in bringing desirable improvement in their performance by providing necessary corrective feedback. All the above three phases of teaching, although described separately, are closely interrelated. They present continuous cycle of the teaching, influencing and directing each others shown in Figure–2. Pre-active phase (planning) Interactive phase Post-active phase (Implementation) (Evaluation) Figure – 2. Interaction among the phases or operations of teaching. It may help us to conclude that the process of teaching does not confine itself with mere classroom interaction or presentation of the content, teaching material or learning experiences. A teaching task can never be confined to the face-to-face dialogue between the teacher and the students carried out in the interaction phase. It begins even before the teachers enters the classroom, with the work of planning in teaching tasks, and continues after the interaction stage in the form of evaluation, feedback and similar others post-active activities, many times even after the teacher leaves the class.

3.3.5. Reflect : In teaching, reflection is very important aspect because using reflection as a basis for improving learning and teaching. Not only this, the professional standards for teachers, tutors and trainers in the lifelong learning sector state that those working in the sector should value reflection and evaluation of their own practice and their continuing professional development as teachers. In addition, their professional knowledge and understanding includes way to reflect evaluate and use research to develop own practice and to share good practices with others. As part of their professional practice, they should share good practice with others and engage in continuing professional development (CPD) through reflection, evaluation and the appropriate case of research. In a professional setting, reflection is : • deliberate • purposeful; • structured; • about linking theory and practice; • to learning; • about change and development; Therefore, reflection is a form of mental processing that we use to fulfil a purpose or to achieve some anticipated outcome. It is applied to gain a better understanding of relatively complicated or unstructured ideas and is largely based on the reprocessing of knowledge, understanding and possibly, emotions that we already possess.

130 Reflection in teaching and learning through diagram. Teaching and learning session Reflection in action Observing yourself Monitoring Writing notes immediately on completion of the session. Planning the next session What can I incorporate from my reflections? Shall I try something new? What works with these learners on this course? Reflection action Time to ponder; mull over what happened; why things happened; how does it relate to theory; what have I learned; what can I use in future planning ? Teaching and learning session 'Reflection in action' Observing yourself Monitoring Writing notes immediately on completion of the session. Figure – 3 Using reflection in and on action to improve teaching and learning. Reflection in teaching practice is very essential because it encourages us to understand over learners and their needs and abilities. Every learner is different and there are likely to be varying interpretations of what we say and do within any group of learners. There are different worlds within our classrooms and skilled teachers will try to see themselves as their students see them. If we practice reflection we can more effectively encourage learners to reflect on, analyse, evaluate and improve their own learning. Reflection can also help us to develop our emotional intelligence, particularly if we conclude a consideration of feelings as part of our reflections. Starting point

131 Finally, and most importantly, reflective practice is the key for improvement. If we do not think about, analysis and evaluate our professional practice we cannot improve. 3.4.1 Introduction : Stages of Learning : Learning occupies a very important place in our life.

An individual starts learning immediately after his births or in a strict sense even earlier in the womb of the mother. So, learning is definitely a vital thing to think about its mechanism and related aspects. It will be very clear if we see some definition

of learning. According to

crow and crow (1973), learning is the acquisition of habits, knowledge and attitudes. It involves new ways of doing things, and it operates in an

individual's attempts to overcome obstacles or to adjust to new situations.

It represents progressive changes in behaviour. It enables him to satisfy interests to attain goals. According to Hilgard (1958), learning is the process by which an activity originates or is changed through reaching to an encountered situation, provided that the characteristics of the changes in activity cannot be explained on the basis of native response, tendencies, maturation, or temporary states of the organism (e.g. fatigue or drugs etc.)

According to the above definitions we may say that learning is a process. As because of process it should have some stages with purpose and goal. 3.4.2 Stages of Learning : ● Acquisition : Acquisition refers to the first stage of learning when a response is established. It is the process of acquiring the skill. In classical conditioning, it refers to the period when the stimulus comes to evoke the conditioned response. Consider Pavlov's classical experiment with dogs. By associating the presentation of food with the sound of a tone, Pavlov was able to condition the dogs to salivate to the sound. The phase in which the dogs began to salivate to the sound is the acquisition period. ● How does it work ? How does acquisition occur? In classical conditioning, repeated pairing of the conditioned stimulus (CS) and unconditioned stimulus (UCS) eventually leads to acquisition. Remember, the unconditioned stimulus is one that naturally evokes the unconditioned response (UCR).

132 After pairing to (UCS) with the UCS repeatedly, the CS alone will come to elicit the response, which is now known as the conditioned response (CR). During acquisition, the conditioned stimulus and unconditioned stimulus are repeatedly paired to create an association. Multiple pairings are required, but the number of trials needed can vary depending on what is being learned.

For example, imagine that you are teaching a dog to fear the sound of a rattle- snake. This type of learning will occur much more quickly since the animal may already be primed to form such an association. As a result, the acquisition will happen much faster than if you are teaching your dog to play dead. The strength of the conditioned response will continue to increase up to a certain point before it begins to level off. Once the association between the CS and UCS has been established, the response is said to have been acquired. At this point, the behaviour is still often reinforced to strengthen the association. □ What factors influence acquisition ? A number of factors can affect how quickly acquisition occurs. First, the salient feature of the conditioned stimulus can play an important role. If the CS is too subtle, the learner may not notice it enough for it to become associated with the unconditioned stimulus. Stimuli that are more noticeable usually lead to faster acquisition. For example, if you are training a dog to salivate to a sound, acquisition will be more likely if the sound is noticeable and unexpected. The sound of a bell will produce a better result than a quiet tone or a neutral sound that the animal hears regularly. Secondly, timing plays a critical role. If there is too much of a delay between presentation of the conditioned stimulus and the unconditioned stimulus, the learner might not form an association between the two. The most effective approach is to present the CS and then quickly introduce the UCS so that there is an overlap between the two. As a rule, the greater the delay between the UCS and the CS, the longer time will be needed for acquisition. 3.4.4 Maintenance : Maintenance is a very important aspect of learning. The fundamental aim of maintenance in learning is retention of skills. It tries to maintain a high level of

133 performance over the time after reinforcement ends. It is necessary in order to build on the skills learned. 3.4.3 Generalization : 'Generalization' refers to the ability of an organism dealing with the perception of and response to similar stimuli. A child demonstrates this ability when he successfully subtracts four apples from nine apples after learning to subtract four oranges from nine oranges. In this way, generalization may be understood in terms of a learning process when the organism learns to provide similar operant responses, to stimuli similar to but not the same as the training stimulus. In helping the children to learn appropriate generalization due care should be taken by the parents and teachers to reinforce the behaviour of the children only after they demonstrate the ability to generalize correctly.

Over generalization like calling all four legged animals as cows should be immediately discouraged and they should be helped to learn correct generalization and discrimination for acquiring the proper concept of things and events surrounding them.

3.5.1 Introduction : Learning Environment : The term "learning environment" suggests place and space—a school, a classroom, a library. And indeed, learning takes place in physical location like these. But in today's interconnected can be virtual, online, remote; in other words, it does not have to be a place at all. Perhaps a better way to think of 21st century learning environments is as the support systems that accommodate the unique learning needs of every learner and support the positive human relationships needed for effective learning. Learning environments are the structures, tools and communities that inspire students and educators to attain the knowledge and skills.

3.5.2. Physical Learning Environment : A question definitely will come before setting up a building of an educational institution that what should be the physical learning environment. Studies about student academic achievement and building condition conclude that the quality of physical environment significantly affects student achievement, desirable designs include having 'friendly and agreeable' entrance areas, supervised private place for students as well

134 as public spaces that fosters a sense of community, with particular attention to the colour used.

- Physical environment refers to the level of upkeep, ambient noise, lighting, indoor, air quality and thermal comfort of the building and its location within the community. The physical environment of the school speaks to the contribution that safe, clean and comfortable surroundings make to a positive school climate in which students can learn.
- A well-maintained and safe physical environment fosters students' ability to learn, to show improved achievement scores, and to exhibit appropriate behaviour.
- Creating a positive environment is necessary in order for teachers to teach effectively and for students to be receptive to learning. Facilities in good conditions, including low noise levels, cleanliness, access to clean air and water and absence of overcrowding are not only conducive to learning, but essential for students and staff overall health and well-being.
- Dilapidated school buildings contribute to teacher despair and frustration, while building renovations can lead teachers to feel a renewed sense of hope and commitment. Overcrowding and heavy teachers workloads create stressful working conditions for teachers and lead to higher teacher absenteeism. Crowded classroom conditions limit the amount of time teachers can spend on innovative teaching methods and result in a constant struggle to simply maintain order. Thus the likelihood increases that teachers suffer from burnout earlier than might otherwise be the case.
- While the condition of school building and grounds are important, the neighborhoods surrounding our nation's schools are not isolated from exerting influence. The condition of a school's neighbourhood exerts a substantial influence on the school as well as the students it serves. Thus schools often inherit the difficulties present in their surrounding neighbourhoods. The conditions of a school often reflect the surrounding neighbourhood's condition. For example, schools with trash on the floors are more likely to be located in neighborhoods where litter and trash are prevalent; schools in which graffiti is evident are more likely to be in neighborhoods with graffiti; and schools with broken windows are more likely to be located in neighborhoods in poor condition. Though, there is a plethora of research that examines the effect of the physical conditions of teaching spaces (which includes seating, furnishings, spatial density, privacy, noise, climate and thermal control, air quality, windowless classroom,

135 vandalism and play-yards, light and colour) on student's engagement, attainment, attendance and well-being. Besides these, educational institutes and classrooms can be more than a place to inhibit. They can also acquire an emotional significance. One perspective is that educators play an important role in constructing classrooms and schools, and therefore, students' identities. An extension of this idea is that children's environment has an effect on their cognitive and behavioural development and on childhood vulnerability.

3.5.3 Psychological Learning Environment

All most all of us have spent a great deal of time in the classroom, beginning in kindergarten and extending for years beyond. Have you ever noticed what the teacher did to make learning more inviting? Was it colourful posters, clear and consistent rules, and fun and interesting teaching methods? If so, you were lucky to have a teacher who paid close attention to the learning environment, or the physical, psychological and instructional atmosphere. From the above discourse, it is obvious fact that learning environment is vital to student success and impacts students in many ways. A negative learning environment, adversely affects students learning, like low student achievement, poor behaviour, student anxiety, or depression, whereas a positive learning environment that allows students to feel comfortable and confident as learners. The psychological learning environment refers to positive learning environment. It is like how students feel about their learning. The psychologically motivated learner can promote their learning both intellectually and socially. The teacher should have positive control over the classroom by being a role model for kind words and actions. Because we know that students react negatively when they feel things are unfair, unclear or are worried about getting in trouble due to negative attitude of teachers. On the other hand while a teacher is clear about instruction and consistent, offers praise and gratitude, and sets a good example, then students are confident and comfortable in the classroom. □

The importance of Motivation on Educational Environment

Motivation is described as a state that energizes, directs and sustains behaviour. Motivations involves goals and require activity. Goals provide the impetus for and the direction of action while action entails effort, persistence in order to sustain

136 activity for a long period of time. There are recognized indices of motivation that are important to be aware of. Indices typically place a value or quantity on an idea; in this case, we can understand the value or quantify of motivation for an individual by these four indices. The selection of a task under free-choice conditions indicates motivation to perform the task, to engage in art activities during free time. This is indicative of being motivated by art and art-type activities. High effort levels, especially when working on different tasks and assignments, are also indicative of motivation. For example, if a student diligently works on a difficult algebra problem again and again this would indicate a higher level of motivation towards math activities. High effort levels, especially when working on different tasks and assignments are also indicative of motivation. For example, a student in physical education class, was able to master jumping rope, but he chooses to continue trying to jump rope during recess; this time on task indicates a high level of motivation toward that mastering the activity of jumping rope. Finally, level of achievement is affected by choice, effort and persistence. The higher these indices, the higher the motivation and the more like task achievement will occur. In the classroom, educators should be aware of these indexes in an effort to reinforce activities and interests that students already show an existing partiality for. There is an actual term for this—it is called situational motivation. Situational motivation is a phenomenon in which aspects of the immediate environment enhance motivation to learn particular things or behave in particular ways. Educators can do many things to create a classroom environment that motivates students to learn and behave in ways that promote their long-term success. □

How motivation Affects Learning & Behaviour

Motivation has several effects on students learning and behaviour. First : motivation directs behaviour towards particular—goals. Motivation determines the specific goals toward which people strive, thus it affects the choices student make. For example, whether to enroll in an art class or physical education class, whether to attend a school basketball game during the week or complete an assignment that's due to next day. 2nd : Motivation also leads to increase effort and energy. Motivation determines

137 whether a student will pursue a task (even a difficult one) with enthusiasm or a lackluster attitude. 3rd : Motivation increases the initiation and persistence of activities. In our first example, Erik continued with art-type activities in his free time and he also tried to perform these type of activities in relations to his other assignments. Motivation will increase students time on task and is also an important factor affecting their learning and achievement. 4th : Motivation enhances cognitive processing. Motivation actually affects what and how information is processed because motivated students are more likely to pay attention and try to understand the material instead of simply going through the motions of learning in a superficial manner. 5th : Motivation determines what consequences are reinforcing and punishing. For example : student with a high level of motivation for classroom achievement and high GPAs are reinforced by receiving a grade of "A" and they will feel punished if they receive a grade of "F". Finally, motivation leads to improve performance. Everything that we have just discussed--effort, initiation, persistence, cognitive processing and the impact of consequences--lead to improve performance. □ The importance of Attention in a Learning Environment : All learning takes place in a physical environment with quantifiable and perceptible physical characteristics. Whether sitting in a large lecture hall underneath a tree or in front of a computer screen, students are engulfed by environmental information. Specific targets within the environment draw the student's attention, such as armchairs, scarves, and teacups and they continuously monitor the ambient properties such as the light of the lamps, the smell of the kettle, and the warmth of the fire. In any learning environment students are in environmental information, only a small fraction of which constitutes the sights and sounds of instructions. So, learning environment should be arranged according to the psychological aspect for better attention of learner. □ The importance of Emotion in a Learning Environment : Emotional attachment is very much related with learning and teaching. The physical characteristics of learning environments can affect learners emotionally, with important cognitive and behavioural consequences. For example, most students probably find learning difficulty in a classroom that is stiflingly warm. It may become a place where student love to learn, a place they seek out when they wish to learn, and a place they remember fondly when they reflect on their learning experiences. In any learning environment, physical characteristics that cause discomfort can be expected to interfere with learning; environment that produce positive emotional states can be expected to facilitate learning and the development of place attachment. Beyond the physical arrangement of a classroom a psychological environment is also created, based on the interaction of key players in the classroom, namely students and teachers. Many teachers equate student engagement and on task behaviour with classroom participation, typically a top concern for teachers. The notion of feeling supported as students has also been extensively examined in the classroom environment literature. Helne Patrick et.al. (Partic, Ryan, & Kap (Cass 2007) found that there is a strong, positive relationship between students level of motivation and engagement and their perceptions of the classroom environment as being socially supportive. The perception of a climate of mutual respect is required in order for students to increase their use of effective study strategies and increase feelings of confidence about their ability to successfully complete assignments. Furthermore, when students perceive that they receive emotional support and encouragement from their teachers and academic support from their peers they are more likely to be on task in the classroom and use self-regulated strategies. 3.6.1.

Introduction : ■■■■■ Leadership

Role of Teacher : The notion of teacher leadership is not new, but recently it has been transformed. In the past, teacher leadership limited in scope and established at the prerogative of school administrators. Teachers have served long as team department chairs, association leaders and curriculum developers. In these roles teachers have often served as rather than "leaders" who enact change. In addition, leadership roles for teachers have traditional flexibility and required a lengthy, ongoing commitment of time and energy. Often the decision to take on leadership accompanied by a decision to get out of teaching and into administration. Recently, reports on the status of teacher education have issued strong and compelling pleas for dramatically different teachers and increased professional development. While recognizing the centrality reports emphasize

139 the need for teachers to extend their sphere of influence beyond the classroom and into school wide activities. Advocacy for teacher professionalism and expanded leadership roles is based on the understanding that teachers, have daily contacts with learners, are in the

best position to make critical decisions about curriculum and instruction are better able to implement changes in a comprehensive and continuous manner to expand teacher roles is also motivated by an ongoing need to attract and retain qualified teachers. ■■■■■

What is Teacher Leadership? Teachers typically define career satisfaction in terms of their ability to be of service to others and make a difference among their students. Similarly, the leadership considerations of teachers are grounded in their improvement in the quality of teaching and learning for all students. Studies have shown that teachers do not subscribe definitions of leadership as “higher” or “superior” positions within the organizational hierarchy but view leadership as a collaborative effort, a “banding together” with other teachers to promote professional development and the improvement of educational services. Today, leadership roles have begun to emerge and promise real opportunities for teachers to impact educational opportunities necessarily leaving the classroom. Teachers are now serving as research colleagues, working as advisor-mentors and facilitating professional development activities as master teachers. Teachers also act as members of school-teams, instructional support teams and leaders of change efforts. In addition, teachers are forging new and unique leadership roles through their own initiative by developing and implementing programs they personally result in positive change. ■■■■■

Teacher Leadership Role in Today’s Perspective: Expectations about the performance of education leaders have changed and expanded considerably in the last decade, extending far beyond the traditional definitions of administrative roles. Responsibilities of education leaders now exceed what individual administrators in educational institutions can be expected to carry out alone. In today’s requirements to increase student learning necessitate a shift in leadership, from managing orderly environments in which teachers work autonomously in their classrooms to one in which administrators, teachers, and others share leadership roles and responsibilities for student learning. Today more than ever, a number of interconnected factors argue for the necessity of teacher leadership in schools. Teaching

140 is a flat profession. In most professions, as the practitioner gains experience, he or she has the opportunity to exercise greater responsibility and assume more significant challenges. This is not true of teaching. The 20- year veteran’s responsibilities are essentially the same as those of the newly recruited novice. In many settings, the only way for a teacher to extend his or her influence is to become an administrator. Many teachers recognize that this is not the right avenue for them. The job of an administrator entails work that does not interest them, but they still have the urge to exercise wider influence in their schools and in the profession. This desire for greater responsibility, if left unfulfilled, can lead to frustration and even cynicism. Teachers’ tenure in schools is longer than that of administrators. In many settings, administrators remain in their positions for only three to four years, whereas teachers stay far longer. Teachers often hold the institutional memory; they are the custodians of the school culture. School that want to improve make a wise investment when they cultivate and encourage teacher leaders, because they are in a position to take the long view and carry out long-range projects. ■■■■■

Qualities and Skills of Teacher Leaders: Teacher leaders serve in two fundamental types of roles: formal and informal. Formal teacher leaders fill such roles as department chair, master teacher, or instructional coach. These individuals typically apply for their positions and are chosen through a selection process. Ideally, they also receive training for their new responsibilities. Formal teacher leaders play vital roles in most schools. In many cases, these teacher leaders manage curriculum projects, facilitate teacher study groups, provide workshops, and order materials. They may also evaluate other teachers, in which case their colleagues are likely to regard them as pseudo administrators. Informal teacher leaders, in contrast, emerge spontaneously and organically from the teacher ranks. Instead of being selected, they take the initiative to address a problem or institute a new program. They have no positional authority; their influence stems from the respect they command from their colleagues through their expertise and practice. Whether they are selected for a formal leadership role or spontaneously assume an informal role, effective teacher leaders exhibit important skills, values, and dispositions. Teacher leaders call others to action and energize them with the aim of improving teaching and learning. A hallmark of leadership, therefore, is the ability to collaborate with others. Teacher leaders must enlist colleagues to support their vision, build consensus among diverse groups of educators, and convince others of

141 the importance of what they are proposing and the feasibility of their general plan for improvement. They must be respected for their own instructional skills. They also understand evidence and information and recognize the need to focus on those aspects of the school's program that will yield important gains in student learning. A number of values and dispositions make certain individuals ideally suited for teacher leadership. Effective teacher leaders are open-minded and respectful of others' views. They display optimism and enthusiasm, confidence and decisiveness. They persevere and do not permit setbacks to derail an important initiative they are pursuing. On the other hand, they are flexible and willing to try a different approach if the first effort runs into roadblocks. Many attributes of good teacher leaders are fundamentally the same as the attributes of good teachers: persuasiveness, open-mindedness, flexibility, confidence, and expertise in their fields. Despite these similarities, however, working with colleagues is profoundly different from working with students, and the skills that teachers learn in their preparation programs do not necessarily prepare them to extend their leadership beyond their own classrooms. To assume a leadership role, they may need expertise in curriculum planning, assessment design, data analysis, and the like. They may also need to develop the abilities to listen actively, facilitate meetings, keep a group discussion on track, decide on a course of action, and monitor progress. These skills are not typically taught in teacher preparation programs. Not every school is hospitable to the emergence of teacher leaders, particularly informal teacher leaders. The school administrator plays a crucial role in fostering the conditions that facilitate teacher leadership, including the following: ■■■■■ A safe environment for risk taking Teachers must be confident that administrators and other teachers will not criticize them for expressing ideas that might seem unusual at first. Some of the most effective approaches to solving difficult issues in schools may not be intuitively obvious but may require that educators think creatively, which can only happen in a safe environment. School administrators should make it clear that teachers are safe to express ideas and take professional risks. ■■■■■ Administrators who encourage teacher leaders Administrators' commitment to cultivating teacher leaders plays an essential role in their development. Administrators must be proactive in helping teachers acquire the skills they need to take advantage of opportunities for leadership (data analysis, 142 meeting facilitation, and so on). Unfortunately, some administrators jealously guard their turf, apparently fearing that ambitious teacher leaders will somehow undermine their own authority. In fact, one of the enduring paradoxes of leadership is that the more an administrator shares power, the more authority he or she gains. ■■■■■ Opportunities to learn leadership skill : As noted earlier, the skills required for teacher leadership are not part of the preparation program for most teachers. If teacher leaders are to emerge and make their full contribution, they need opportunities to learn the necessary skills of curriculum planning, instructional improvement, assessment design, collaboration, and facilitation. Teachers can learn these skills through school-level professional development, of course, but they may also build these skills through district wide or university-based courses and seminars. Whatever the source, the opportunities must be available and sufficiently convenient for teachers to take advantage of them. ■■■■■ The Need for Teacher Leadership: Teacher leadership is an idea whose time has come. The unprecedented demands being placed on schools today require leadership at every level. Yet many schools are still organized as though all the important decisions are made by administrators and carried out by teachers. In the most successful schools, teachers supported by administrators take initiative to improve school wide policies and programs, teaching and learning, and communication. By understanding the phenomenon of teacher leadership and helping teachers develop the skills required to act as leaders, we will improve schools and help teachers realize their full potential. 3.6.2. Leadership Role of Teacher in Classroom: A classroom is a group of learners. Generally speaking, learning groups have at least two basic objectives: ● to complete learning tasks; ● to maintain positive and effective relationships among group members. Leadership consists of actions that help the group to complete its tasks successfully and maintain effective working relationships among its members. For any group to be successful, both task-leadership actions and group maintenance-leadership actions have to be provided. It is important to note that a) any member of a group may become a leader by taking these necessary actions (i.e., the teacher is not necessarily

143 the leader), and b) the various leadership actions may be provided by different group members. Teachers should know that, generally, groups function most effectively when leadership tasks are shared among group members. However, most students are accustomed to being in classes where the teacher plays all of the leadership roles; if you want students to play some of these roles, you must give them permission to do so, and perhaps provide guidance how to best take on these roles. When teachers neglect leadership and do not provide leadership themselves or invite students to take on leadership roles, students may themselves elect to play informal (and frequently inappropriate) leadership roles in the classroom, simply to pull the individuals together as a group. Leadership is a set of skills that anyone can acquire. Responsible leadership depends upon

- flexible behaviour;
- the ability to diagnose what behaviours are needed at a particular time in order for the group to function most efficiently; and
- the ability to fulfil these behaviours or to get other members to fulfil them.

To participate effectively in a group, especially in a leadership role, one must be able to :

- **Communicate** Communication is the first step in cooperating with others. There are two basic categories of skills - sending and receiving. Some essential skills are the ability to:
 - Clearly and unambiguously communicate ideas and feelings.
 - Make messages complete and specific.
 - Make verbal and nonverbal messages congruent with each other.
 - Ask for feedback concerning the way in which your messages are received.
 - Display openness, and maintain eye contact.
 - Listen without response until the other person has sent a full message.
 - Paraphrase accurately and non evaluative the essence of the sender's message.
 - Listen beyond words - that is to be aware of nonverbal messages and behavior

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- Listen for requests and intentions in others' messages, particularly in complaint These skills are ones well know to teachers as important classroom skills. They are skills needed by and leader, in any situation.
- **Build and Maintain Trust** : Acceptance and support are essential in building and maintaining trust. Acceptance is communicating to others that you have high regard for them. Support is communicating to others that you recognize their strengths and believe they are capable of productively managing their situation. Underlying all significant learning is the element of trust. Stephen Brookfield (1990) proposes that those playing the role of teacher in a learning group must pay attention to the balance between two important characteristics that make teachers more trustworthy in students' eyes: credibility and authenticity.
- **Manage Conflict** Since participation in a group will inevitably produce some conflicts, it is essential that members of learning groups have the skills required for managing controversies constructively, including the ability to:
 - Understand the point-of-view of another person in the group.
 - Approach controversy from a problem-solving perspective. First, explore all differences. Then, look for ways to integrate ideas. Recognize the legitimacy of different ideas and viewpoints and search for a solution that accommodates the needs of all group members.
 - Be critical of ideas, not persons.
 - When large societal problems are being played out in the classroom, keep returning to the course "text1 whenever possible—how can it help members of the learning group make sense of the conflict they are experiencing?"

The extended Role of a Teacher in the Classroom Situation:

- Facilitates the collection, analysis, and use of classroom- and school-based data to identify opportunities to improve curriculum, instruction, assessment, school organization, and school culture.
- Engages in reflective dialogue with colleagues based on observation of instruction, student work, and assessment data and helps make connections to research-based effective practices.

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- Supports colleagues' individual and collective reflection and professional growth by serving in roles such as mentor, coach, and content facilitator.
- Serves as a team leader to harness the skills, expertise, and knowledge of colleagues to address curricular expectations and student learning needs.
- Uses knowledge of existing and emerging technologies to guide colleagues in helping students skilfully and appropriately navigate the universe of knowledge available on the Internet, use social media to promote collaborative learning, and connect with people and resources around the globe.
- Promotes instructional strategies that address issues of diversity and equity in the classroom and ensures that individual student learning needs remain the central focus of instruction.
- **The specific functions of a teacher leader in the classroom:**
 - He has leadership qualities to perform different activities (pre-active, interactive and post active functions) in a classroom.
 - He guides the instructional process.
 - He plans and organizes the curricular and co-curricular programmes.
 - He selects the appropriate teaching strategy.
 - He prepares lessons plans, assignments and teaching aids, etc.
 - He creates an appropriate classroom climate for better learning.
 - He provides motivation and positive reinforcement.
 - He gets feedback from students and evaluates their learning.
 - He communicates with parents if necessary.
 - He maintains the cumulative records.
 - He organizes tutorials classes.
 - He maintains inter-personal relations.
 - He performs leadership role in co-curricular and extra-curricular activities and sets the tone of the schools.

From the above discussion, it may be concluded that teacher is not only confined within the role of teaching itself but perform as a leader as well as facilitator to

146 continue the instructional activities as better in the classroom situation. Because the teacher understand the principles of learning and knows how to develop a collaborative culture of collective responsibility in the classroom. The teacher uses this knowledge to promote an environment of collegiality, trust, and respect that focuses on continuous improvement in instruction and student learning. Therefore, a teacher not only performs as a role of leader but he is a friend, philosopher and guide in the classroom situation.

3.6.3. Leadership Role of Teachers in School : Leadership by teachers is essential to serving the needs of students, schools and the teaching profession. The teacher leadership as a vehicle to transform schools for the needs of the 21st century. The teacher leadership can be used to guide the preparation of experienced teachers to assume leadership roles such as resource providers, instructional specialists, and curriculum specialists, classroom supporters, learning facilitators, mentors and school team leaders. Leadership is the process of guiding and directing the behaviour of others to work enthusiastically toward achieving set objectives. A group flourish as a result of the efficient leadership. A school in the able hands of a headmaster can make tremendous progress. Leadership requires specific characteristics, which an effective leadership must possess. ■■■■■ Leadership of teacher must have the following qualities, characteristics and skills:

- He should be an able administrator in organizing the varied programmes of his institution with active cooperation of other members working under them.
- He must be known for his human relations. He must be kind, courteous and friendly. He must understand the problems of others and take steps to solve them.
- He should be a scholar. He should try to keep himself up to date with the knowledge of his profession and other allied problems.
- He should be democratic in outlook. He should also be the practitioner of the democratic principles.
- He should also be disciplined man. Self - confidence is a must for him.
- He should be really a model to others by his good words and deeds.
- He should enjoy an influential personality so as to execute the various policies and programmes of the institutions with cooperation from others.

147 ● As a supervisor he must be constructive and creative. ■■■■■ The Function of Teacher as a Leader in School :

- Collaborates with colleagues and school administrators to plan professional learning that is team-based, job-embedded, sustained over time, aligned with content standards, and linked to school/district improvement goals.
- Uses information about adult learning to respond to the diverse learning needs of colleagues by identifying, promoting, and facilitating varied and differentiated professional learning.
- Facilitates professional learning among colleagues.
- Identifies and uses appropriate technologies to promote collaborative and differentiated professional learning.
- Works with colleagues to collect, analyze, and disseminate data related to the quality of professional learning and its effect on teaching and student learning.
- Advocates for sufficient preparation, time, and support for colleagues to work in teams to engage in job-embedded professional learning.
- Provides constructive feedback to colleagues to strengthen teaching practice and improve student learning, and
- Uses information about emerging education, economic, and social trends in planning and facilitating professional learning.

3.6.4 Leadership Role of Teacher in Community :

The teacher leader understands that families, cultures, and communities have a significant impact on educational processes and student learning. The teacher leader works with colleagues to promote ongoing systematic collaboration with families, community members, business and community leaders, and other stakeholders to improve the educational system and expand opportunities for student learning. Teachers interact with parents, students mid other teachers regularly, affecting the lives of their students daily. In addition to the classes they teach, instructors often find themselves involved in many community projects and serving the community at large as leaders. They also regularly take leadership positions within their school districts, communities of teachers, parent-teacher organizations, and professional teacher organizations and teachers associations.

148 ■■■■■ Functions of the teacher leader in community: ● Uses knowledge and understanding of the different backgrounds, ethnicities, cultures, and languages in the school community to promote effective interactions among colleagues, families, and the larger community. ● Teaches effective communication and collaboration skills with families and other stakeholders focused on attaining equitable achievement for students of all backgrounds and circumstances. ● Facilitates colleagues' self-examination of their own understandings of community culture and diversity and how they can develop culturally responsive strategies to enrich the educational experiences of students and achieve high levels of learning for all students. ● Develops a shared understanding among colleagues of the diverse educational needs of families and the community. ● Collaborates with families, communities, and colleagues to develop comprehensive strategies to address the diverse educational needs of families and the community. ■■■■■ The Roles of a Teacher as a Community Leader: ● Local Government Teachers are active members of their local government and are regularly involved as leaders in the government, through running for the city council of their cities and towns and sitting on commissions and local government committees. Within the school setting, teachers encourage their students and colleagues to become involved in their local politics and to create positive change in the community at large. ● Political Action Teachers often take leadership roles for current political events affecting their lives, communities and school. When a bill dealing with schools and teachers is presented in Legislative Assembly, teachers mobilize to show their support for the bill. The leaders of many teachers' political action groups were teachers in the classroom at one time. ● Advisory Boards Teachers regularly sit on the boards of and are involved in community organizations and nonprofits centres such as the Red Cross, Salvation Army and Boys and Girls

149 Clubs etc. Their direct involvement in the leadership of community organizations allows teachers to help change the lives of students outside of the classroom. ■■■■■ The Roles of a Teacher outside the Classroom A teacher has a very diverse role within the educational environment. In the classroom she must be an instructor, critic, disciplinarian, motivator, role model and adviser. However, a teacher's job can expand to include other roles outside the classroom. Many teachers assume roles outside of the classroom to facilitate the development of a good rapport or for other reasons. Roles for a teacher outside of the instructional environment include: coach, club sponsor, tutor and counsellor. ● Teacher as a Counsellor Most schools employ counsellors to address non-instructional issues and problems that impact a student's progress through school. However, many teachers end up serving as counsellors to their students. Usually this is because a student feels more comfortable confiding in a teacher with whom she already has a rapport than the school counsellor. Since teachers interact on a daily basis with students, they may be the first to recognize a student's problem. ● Teacher as a Tutor In the light of increased emphasis on schools meeting minimum state and federal performance standards, many schools pay teachers for after-school tutoring. Teachers may agree to serve as after-school tutors to supplement their income or to provide additional instruction so that their students will pass standardized tests. After-school tutoring increases the likelihood that the students will succeed and also increases a teacher's class pass rate. After-school tutoring helps the student and the teacher. 3.7.1. Let Us Sum up The learning may be happened in both formal and informal way. When learning is concerned with formal way in the field of education a number of generalized notions, ideas, work mode and practices that can be properly employed for getting desired success in the tasks of teaching. In the language of educational psychology, these are referred to as maxims of teaching. The notable among them are: proceeding from known to unknown, from defiant to indefinite, from simple to complex, from

150 concrete to abstract, from actual to representation, from particular to general, from whole to parts, from analysis to synthesis, from empirical to rational, and from psychological to logical. In the class room situation when teaching is organized it maintains some basic steps. These steps or stages are known as the stages or phase of teaching. In general, a teaching task involve four such stages of phase, namely planning stage is also known as preactive phase, implement stage is known as interactive and evaluation and reflection stages are known as postactive phase of teaching. It is a sequential process which begins with planning and ended with evaluation as well as reflection.

The behaviour of an individual is changed through direct or indirect experiences. This change in behaviour brought about by experiences is commonly known as learning. In

the class room situation, it happens with some specific steps are known as acquisition, maintenance and generalization. In the process of acquisition the skill and knowledge are acquired through the direct instruction. The aim is accuracy of response. In the maintenance where learner retains accuracy and fluency....periodically evaluates and when necessary reinforce. Aim is retention of the skill. In the generalization, transfers skill to new situations and settings provide direct instruction in alternate setting when fails to generalize program for generalization. Aim is expansion of the skill across situations, behaviours and time. The learning environment means surrounding or atmosphere of learning where learning can take place such as a school, a class room, a library, etc. The learning environment may be different types but mainly we are concerned with physical and psychological learning environment. The physical learning environment consists of infrastructure such as building and available facilities as per requirements where as psychological learning environment refers positive learning environment where learner can promote their learning both intellectually and socially. Like other fields, in education leadership role is pivotal factor to continue the whole process of teaching, learning, evaluation, management and administration of education. In education leadership means teachers leading power or role of a teacher as a leader with desired goals and objectives to fulfil. Leadership by teachers is essential to serving the needs of students, schools and the teaching profession. The teacher leadership as a vehicle to transform schools for the needs of the 21st century. The teacher leadership can be used to guide the preparation of experienced teachers to assume leadership roles such as resource providers, instructional specialists, and

151 curriculum specialists, classroom supporters, learning facilitators, mentors and school team leaders. 3.8.1. Check Your Progres : 1. What is the maxim of teaching?

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..... 2. Explain at least four maxim of teaching with example?

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..... 3. Mention the four names of stages of teaching.

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..... 4. Why planning is important before beginning the lesson ? Define with your own language.

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152 5. Describe various stages of learning.

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..... 6. What do you understand by learning environment?

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..... 7. Discuss in brief the importance of psychological environment for effective teaching and learning.

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..... 8. Discuss in brief the importance of physical environment for effective teaching and learning.

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..... 9. What do you mean by leadership ?

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153 10. What kinds of leadership role are played by teacher in the classroom, school and community ?

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..... 3.9.1. Reference : 1. Bhatia, K.K. and J.N. Arora, Methodology of Teaching, Ludhina: Prakash Brothers, 1967. 2. Bloom, B.S., All our Children Learning, New York: McGraw-Hill, 1981. Knirk, R.G. and Chailds, w. John, General Method of Effective Teaching- Practical Approach, New York: Thomas Y. Browell, 1973. 3. Johnson, D.W. & Johnson, R.T. (1991). Learning together and alone. Englewood Cliffs, NJ: Prentice-Hall. 4. Carnegie Forum on Education and the Economy. (1986). A nation prepared: Teachers for the twenty-first century: Carnegie Forum on Education and The Economy's Task Force on Teaching as a Profession. 5. Washington, Devaney, K. (1987). The lead teacher: Ways to begin. New York: Carnegie Forum on Education and the Economy. 6. Dierks, K., Dillard, S., McElliot, K., Morgan, J., Schultz, B., Tipps, L., & Wallentine, K. (1988). Teacher leadership: challenge. Seattle: University of Washington, Puget Sound, Educational Consortium. 7. Fay, C. (1992). Empowerment through leadership: In the teachers' voice. In C. Livingston (Ed.), Teachers as leaders: roles. NEA School Restructuring Series. Washington, DC: National Education Association. 8. Hart, A. (1990). Impacts of the school social unit on teacher authority during work redesign. 9. Hargreaves, A.(1993), Collaboration: A key to Leadership for quality in education. The Practicing Administrator. -----

154 Unit 4 Over view

of Assessment and School System Structure 4.1.1 Introduction 4.1.2 Objectives 4.1.3 Conventional Meaning and Constructivist Perspective

of Assesment 4.1.4 Meaning and Difference of

Assessment of Learning and Assessment for Learning 4.1.5 Comparing and Contrasting Assessment, Evaluation,

Measurement, Test and Examination : 4.1.6 Formative and Summative Evaluation, Curriculum based Measurement 4.1.7

Revisiting Key Concepts in School evaluation 4.1.8 Let us Sum-up 4.1.9 Check Your Progress 4.1.10

References 4.1.1. Introduction: Assessment is the process of gathering and discussing information from multiple and diverse sources in order to develop a deep understanding of what students know, understand and can do with their knowledge as a result of their educational experiences. Assessment is indispensable component of curriculum practices in the school system. In system of education, one of the prime considerations of administrators, teachers and students alike are the outcomes of learning, what ability students can demonstrate because of increase in their knowledge and changes in understanding because of experience in school. In this aspect, Van Den Akker (2003) describes assessment as essential component of the curriculum practice, So, it may be said that assessment is a process for obtaining information in curriculum operation in order to make decisions about students learning, curriculum, and programme and on educational policy matters.

155 4.1.2. Objectives: Upon completion of the sub-unit, the student learners will be able to — ❖ Understand the conventional meaning and constructivist perspective of assessment. ❖ Identify the meaning and differences of assessment of learning and assessment for learning. ❖ Critically analyse, comparing and contrasting assessment, evaluation, measurement, test and examination, ❖ Explain formative and summative evaluation and curriculum based measurement. Elucidate key concepts in school evaluation

such as filtering learners, marks, credit, grade, choice, alternate certifications, transparency, internal- external proportion, improvement option. 4.1.3. Conventional Meaning and Constructivist Perspective of Assessment. Conventional Meaning of Assessment: Conventional, more traditional, assessment tools evaluate what skills students can perform with success. They are generally knowledge-based, versus hands-on or performance-based. Assessment is one of the most significant areas of an educational system. Assessment in education is mainly associated with the growth of learning of the students. How much learning experience a student has acquired at a particular point of time against the expected learning outcomes? What are the strengths and weaknesses of a learner in the stipulated area of learning? To what extent the results of assessment can be helpful in strengthening the learning? These are some of the usual questions associated with educational assessment. It defines what students take to be important, how they spend much of their academic time and in many ways how they value themselves. According to Rowntree, "if we wish to discover the truth about an educational system, we must look to its assessment procedures". In addition, assessment is important because students cannot avoid it, as Boud says.

156 Rowntree suggests that assessment procedures offer answers to the following questions : 1. What student's qualities and achievements are actively valued and rewarded by the system? 2. How are its purposes and intentions realized? 3. To what extent are the hopes and ideals, aims, and objectives professed by the system ever truly perceived, valued and striven for by those who make their way within it? From the above discussion it may be stated that assessment has two main purposes as mentioned below : 1. The first reason is to assist learning. When looking at this area we must always strive to make the assessment relevant to the overall goals of the unit and to make our assessment part of the learning process. 2. The second is to determine the effectiveness of the education system. Only with this can we as educators improve the education of our students. However we must be able to determine not only the overall learning but which areas are not effective and need modification. The overall purposes of assessment: Ø To determine pass or fail of a student, Ø To make grade or rank of a student. Ø To select for future course. Ø To predict success in future courses. Ø To provide a profile of what a student has learnt, Ø To diagnose students strengths and weaknesses. Ø To provide feedback to students to improve their learning. Ø To help students to develop their skills of self assessment, Constructivist Perspective of Assessment: Our instructional processes and practices are characterized largely by lectures where students are passive listeners. Such instructional processes contribute at best to lower order cognition, memorization and fragile learning; together, they make a grand nexus for large-scale failing in examination. Students lack problem-solving ability, higher order thinking and cognition,

157 and creativity. If the education system sets its target for students to be able to think critically, solve problems individually and collectively, be creative, instructional processes must undergo a paradigm shift as suggested in National Curriculum Framework 2005. Instructional processes must bring students at the centre of stage where they primarily learn to learn through peer interaction, problem-solving, experiential learning, etc. In this new instructional scenario, teachers will be facilitators of learning. This new instructional scenario is characterized by constructivist perspective of learning. Through constructivism, students will learn to construct their learning according to their own worldview that unfolds over the years of schooling. It is this learning to construct learning that will hold them into the adult life at work and later. In addition to these, the emerging constructivist approach as has been recognized in the NCF 2005 requires self-assessment, peer assessment, individual and group assessments also to be part of the school evaluation programme. In this context, the teacher educators need to be acquainted with new processes of learning assessment evolving with the technological interventions, so that, they can not only update their knowledge, but shall be capable enough to impart appropriate skills to the teachers for improving the quality of students learning. Comparatively, conventional education system, particularly school education is guided and controlled by concern for results in examination irrespective of the quality of learning –whether fragile or sustainable. The competition, though artificial, for securing percentage of marks in the final examination creates unusual stress in the students leading often to mental break down and suicides. This must be changed. Change in the mechanics of examination will be too simplistic a solution, amounting to treating the symptoms, not the disease itself. Examination-stress is directly related to facing the challenge of examination with ‘fragile’ learning due to memorizing huge stock of information. In order to manage the stress factor in examination it will be necessary to ensure sustainable learning. Yet, it will be necessary to reconstruct and redesign examination system with attributes like flexibility where a student can achieve mastery learning in a flexible time frame and accumulate credits; eliminating power tests (fixed duration), adopt continuous and comprehensive evaluation. The practice of mark sheets indicating marks in certain subjects must be replaced by a portfolio that would accommodate a student’s performance in a variety of domains like life skills, academic/non-academic and vocational subjects, personal qualities, etc. The portfolio should be comprehensive, revealing of the total being of the student (CABE Committee, 2005).

158 Standardized or teacher made achievement tests take relatively little time to administer and are inexpensive. In addition, the results are simple to report and understand. Often a single score, such as a percentile rank, standard score, or grade equivalent is reported for each student, and aggregate scores are reported for a classroom, school. Finally, and very significantly, standardized achievement tests are promoted as objective measures of achievements, meaning that the results are not affected by the personal values or biases of the person who scores the test. Standardized achievement tests are promoted as scientifically developed instruments which are valid and reliable measures of what a student knows and is able to do. They originated at a time when it seemed both necessary and logical to teach students a given body of subject matter content. Furthermore, many learning theorists believed that teaching and learning were most effective when concepts and ideas were broken into smaller and smaller components. Standardized achievement tests reflected these assumptions and practices, for they were specific to each discipline and typically used a set of multiple choice items to sample the scope of a particular discipline. Advocates of standardized testing assumed that a student who had a command of the pieces (e.g., specific knowledge and facts) also would have a good understanding of the larger content domain. As our focus has been shifted from behaviourist to constructivist approach and our National Curriculum Framework, 2005 has put paramount importance to this new paradigm of assessment from constructivist perspectives, there is an urgent need of bringing about a change in the system of assessment. In these circumstances, this sustainable learning is possible in the process of Continuous and comprehensive assessment of learning considered as inalienable part of the teaching learning process has acquired more significance in the emerging context of learning-centred education within the framework of the constructive approach to learning. Therefore, from the above discussion it may be understood that constructivist assessment means, “Students go beyond initial information levels (knowledge and comprehension) through elaboration doing in-depth analysis of big ideas, issues and concepts” (Brooks & Brooks, 1993). According to Zahorik, “assessments are tailored to specific modules and teaching situations”. In the same way, assessments include higher order thinking skills, i.e., application, evaluation, analysis, synthesis (Burry- Stock, 1995; Yager, 1991). From the above statement it is stated that assessment can be used to build understanding through reflection and -interaction. There is great promise for deeper understanding and appreciation of the creative, generative process we call learning

159 when a student is aware of scholastic expectations and understands how to effectively review and critique his or her own work. This process has three steps: 1. The teacher must help students understand from the outset the criteria by which their work will be judged. 2. Students must document their work process for the duration of the project or unit. 3. Through performance and feedback, students come to understand the complex nature of judging and improving upon one's work. Assessment and Constructivist Classroom : Constructivism is basically a theory - based on observation and scientific study - about how people learn. It says that people construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. When we encounter something new, we have to reconcile it with our previous ideas and experience, maybe changing what we believe, or maybe discarding the new information as irrelevant. In any case, we are active creators of our own knowledge. To do this, we must ask questions, explore, and assess what we know. In the classroom, the constructivist view of learning can point towards a number of different teaching practices. In the most general sense, it usually means encouraging students to use active techniques (experiments, real-world problem solving) to create more knowledge and then to reflect on and talk about what they are doing and how their understanding is changing. Constructivist teachers encourage students to constantly assess how the activity is helping them gain understanding. By questioning themselves and their strategies, students in the constructivist classroom ideally become "expert learners." This gives them ever-broadening tools to keep learning. With a well-planned classroom environment, the students learn how to learn. Constructivism transforms the student from a passive recipient of information to an active participant in the learning process. Guided by the teacher, students construct their knowledge actively rather than just mechanically ingesting knowledge from the teacher or the textbook. In the constructivist classroom, the focus tends to shift from the teacher to the students. The classroom is no longer a place where the teacher ("expert") pours knowledge into passive students, who wait like empty vessels to be filled. In the constructivist model, the students are urged to be actively involved in their own

160 process

of learning. The teacher functions more as a facilitator who coaches, mediates, prompts, and helps students develop and assess their understanding, and thereby their learning. One of the teacher's biggest jobs becomes asking good questions. As is the case with many of the current/popular paradigms, you're probably already using the constructivist approach to some degree.

Constructivist teachers pose questions and problems, and then guide students to help them find their own answers. They use many techniques in the teaching process. For example, they may be able to: Ø prompt students to formulate their own questions (inquiry), Ø allow multiple interpretations and expressions of learning (multiple intelligences), Ø encourage group work and the use of peers as resources (collaborative learning). Characteristics of Constructivist Assessment: In the context of constructivist approach, assessments need to gauge the progress of students in achieving the three major learning outcomes of constructivist approach: Ø conceptual understanding, Ø abilities to perform scientific inquiry, Ø and understandings about inquiry. All learners come to learning tasks with some relevant knowledge, feelings and skills. Meaningful learning occurs when the learners seeks to relate new concepts and propositions to relevant existing concept and propositions in her/his cognitive structure (Mintzes, Novak, Wandersee, 2000).

Constructivist approach to assessment is a formative rather than a summative. Its purpose is to improve the quality of student learning, not to provide evidence for evaluating or grading students. Assessment

has to respond to the particular needs and characteristics of the teachers, students and subject content. Assessment is context- specific: what works well in one class will not necessarily work in another. Assessment is ongoing process. Teachers get feedback from students of their learning. Teachers then complete the loop by providing students with feedback on the results of the assessment and suggestions for improving learning. Benefits of Constructivist Classroom: Ø Students learn more, enjoyably and are more likely to retain learning; Ø Students learn how to think and understand; 161 Ø It is a transferable skill to other settings; Ø Students have ownership of their own learning; Ø It applies natural curiosity to real world situations; Ø Promotes social and communication skill within a group setting. 4.1.4. Meaning and Difference of Assessment of Learning and Assessment for Learning. Meaning of Assessment of Learning: The purpose of this kind of assessment is usually summative and is mostly done at the end of a task; unit of work etc.

Assessment of Learning is the assessment that becomes public and results in statements or symbols about how well students are learning. It often contributes to pivotal decisions that will affect students' futures. It is important, then, that the underlying logic and measurement of assessment of learning be credible and defensible. Generally, Assessment of learning

is concerned with assessment of learners' performance after the completion of a course or more specifically at the end of an instructional unit, term or academic year. It is comprised of one or several combinations of different methods of assessment like oral, written and performance. They provide learners scope to synthesize their learning experiences up to the end of the stipulated period and demonstrate how well they have learned the essential skills, procedures and concepts to which they were exposed during the given instructional period. Assessment of learning is the most familiar and universally used mode. In spite of being the oldest practiced mode, this very often is teacher-dominated and becomes confined to the norm referenced quantitative approaches neglecting the evaluation of broader aspects of learning. The Role of Teacher

in Assessment of Learning: The consequences of assessment of learning are often far-reaching and affect students seriously,

teachers have the responsibility of reporting student learning accurately and fairly, based on evidence obtained from a variety of contexts and applications. Effective assessment of learning requires that teacher provide. Ø a rationale for undertaking a particular assessment of learning at a particular point in time.

Ø clear descriptions of the intended learning.

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Ø

processes that make it possible for students to demonstrate their competence and skill.

Ø

a range of alternative mechanisms for assessing the same outcomes. Ø public and defensible reference points for making judgements.

Ø transparent approaches to interpretation Ø descriptions of the assessment process Ø

strategies for recourse in the event of disagreement about the decisions

Planning for Assessment of Learning: Purposes of Assessment: The purpose of assessment of learning is to measure, certify, and report the level of students' learning, so that reasonable decisions can be made about students. There are many potential users of the information: Ø teachers (who can use the information to communicate with parents about their children's proficiency and progress) Ø parents and students (who can use the results for making educational and vocational decisions) Ø potential employers and post-secondary institutions (who can use the information to make decisions about hiring or acceptance) Ø principals, district or divisional administrators, and teachers (who can use the information to review and revise programming) Assessment of learning requires the collection and interpretation of information about students' accomplishments in important curricular areas, in ways that represent the nature and complexity of the intended learning. Because genuine learning for understanding is much more than just recognition or recall of facts or algorithms, assessment of learning tasks need to enable students to show the complexity of their understanding. Students need to be able to apply key concepts, knowledge, skills, and attitudes in ways that are authentic and consistent with current thinking in the knowledge domain.

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Method

of Assessment: In assessment of learning, the methods chosen need to address the intended curriculum outcomes and the continuum of learning that is required to reach the outcomes. The methods must allow all students to show their understanding and produce sufficient information to support credible and defensible statements about the nature and quality of their learning, so that others can use the results in appropriate ways. Assessment of learning methods include not only tests and examinations, but also a rich variety of products and demonstrations of learning—portfolios, exhibitions, performances, presentations, simulations, multimedia projects, and a variety of other written, oral, and visual methods.

Process of quality Assessment:

Assessment of learning needs to be very carefully constructed so that the information upon which decisions are made is of the highest quality. Assessment of learning is designed to be summative, and to produce defensible and accurate descriptions of student competence in relation to defined outcomes and, occasionally, in relation to other students' assessment results. Certification of students' proficiency should be based on a rigorous, reliable, valid and equitable process of assessment and evaluation. Reliability: Measuring reliability is very important task for assessment otherwise so many error may come.

Reliability in assessment of learning depends on how accurate, consistent, fair, and free from bias and distortion the assessment. Teachers might ask themselves: Ø Do I have enough information about the learning of this particular student to make a definitive statement? Ø Was the information collected in a way that gives all students an equal chance to show their learning?

Ø
Would another teacher arrive at the same conclusion? Ø Would I make the same decision if I considered this information at another time or in another way?

164 Reference Points:

Typically, the reference points for assessment of learning are the learning outcomes as identified in the curriculum that make up the course of study.

Assessment tasks include measures of these learning outcomes, and a student's performance is interpreted and reported in relation to these learning outcomes. In some situations where selection decisions need to be made for limited positions (e.g. university entrance, scholarships, employment opportunities), assessment of learning results are used to rank students. In such norm-referenced situations, what is being measured needs to be clear, and the way it is being measured needs to be transparent to anyone who might use the assessment results. Validity: Because assessment of learning results in statements about students' proficiency in wide areas of study, assessment of learning tasks must reflect the key knowledge, concepts, skills, and dispositions set out in the curriculum, and the statements and inferences that emerge must be upheld by the evidence collected.

Record-Keeping: Whichever approaches teachers choose for assessment of learning, it is their records that provide details about the quality of the measurement. Detailed records of the various components of the assessment of learning are essential, with a description of what each component measures, with what accuracy and against what criteria and reference points, and should include supporting evidence related to the outcomes as justification. When teachers keep records that are detailed and descriptive, they are in an excellent position to provide meaningful reports to parents and others. Merely a symbolic representation of a student's accomplishments (e.g., a letter grade or percentage) is inadequate. Reports to parents and others should identify the intended learning that the report covers, the assessment methods used to gather the supporting information, and the criteria used to make the judgement.

Guidelines for Grading: Ø Use curriculum learning outcomes or some clustering of these (e.g., strands) as the basis for grading.

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Ø
Make sure that the meaning of grades comes from clear descriptions of curriculum outcomes and standards. If students achieve the outcome, they get the grade, Ø Base grades only on individual achievement of the targeted learning outcomes. Report effort, participation, and attitude, for example, separately, unless they are a stated curriculum outcome. Any penalties (e.g., for late work, absences), if used, should not distort achievement or motivation.

Ø
Sample student performance using a variety of methods. Do not include all assessments in grades. Provide ongoing feedback on formative performance using words, rubrics, or checklists, not grades.

Ø
Keep records in pencil so they can be updated easily to take into consideration more recent achievement. Provide second-chance assessment opportunities (or more). Students should receive the highest, most consistent mark, not an average mark for multiple opportunities.

Ø
Crunch numbers carefully, if at all. Consider using the median, mode, or statistical measures other than the mean. Weight components within the final grade to ensure that the intended importance is given to each learning outcome.

Ø

Make sure that each assessment meets quality standards (e.g., there should be clear targets, clear purpose, appropriate target-method match, appropriate sampling, and absence of bias and distortion) and is properly recorded and maintained (e.g., in portfolios, at conferences, on tracking sheets). 8. Discuss and involve students in grading at the beginning and throughout the teaching and learning process.

Assessment and Feedback to Students: In assessment students' feedback is very important because assessment of learning comes most often at the end of a unit or learning cycle, feedback to students has a less obvious effect on student learning than assessment for learning and assessment as learning

rely on their marks and on teachers' comments as indicators of their level of success, and to make decisions about their future learning endeavours. Differentiating Learning: In assessment of learning, differentiation occurs in the assessment itself. It would make little sense to ask a near-sighted person to demonstrate driving proficiency

166 without glasses. When the driver uses glasses, it is possible for the examiner to get an accurate picture of the driver's ability, and to certify him or her as proficient. In much the same way, differentiation in assessment of learning requires that the necessary accommodations be in place that allow students to make the particular learning visible. Multiple forms of assessment offer multiple pathways for making student learning transparent to the teacher.

A particular

curriculum outcome requirement, such as an understanding of the social studies notion of conflict, for example, might be demonstrated through visual, oral, dramatic, or written representations. As long as writing were not an explicit component of the outcome, students who have difficulties with written language, for example, would then have the same opportunity to demonstrate their learning as other students. Although assessment of learning does not always lead teachers to differentiate instruction or resources, it has a profound effect on the placement and promotion of students and, consequently, on the nature and differentiation of the future instruction and programming that students receive.

Therefore, assessment results need to be accurate and detailed enough to allow for wise recommendations. Reporting:

There are many possible approaches to reporting student proficiency. Reporting assessment of learning needs to be appropriate for the audiences for whom it is intended, and should provide all of the information necessary for them to make reasoned decisions. Regardless of the form of the reporting, however, it should be honest, fair, and provide

sufficient detail and contextual information so that it can be clearly understood. Traditional reporting, which relies only on a student's average score, provides little information about that student's skill development or knowledge. One

alternate mechanism, which recognizes many forms of success and provides a profile of a student's level of performance on an emergent-proficient continuum, is the parent student- teacher conference. This forum provides parents with a great deal of information, and reinforces students' responsibility for their learning

In order to ensure comprehensive, valid and fair assessment of student learning, one need to take all possible

precautions, some of which are: Ø In order to provide an accurate picture of a student's achievement, one must gather enough evidence to determine "justifiable" grades across all aspects of achievement (Knowledge, Understanding, Thinking, Communication and Application).

167 Ø Evidence must be gathered using a variety of assessment strategies so that all students can find sufficient scope to demonstrate their learning. Ø There should be student choice within assessment tools/tasks to address individual needs.

Ø Prior to a final demonstration of learning, practice and feedback for improvement must be provided to the student. Ø Evaluator's (teacher's) professional judgment of on students' learning achievement should not be based on single incident of evaluation rather on several evaluation events conducted formally and/or informally over a period of time.

Assessment of learning should be based on the most consistent and more recent levels of evidence gathered. Ø

"Numerous" and "varied" opportunities contribute to the concept of most consistent as it helps to identify trends in student's learning. The grade should reflect the development of learning at any point in time. Ø Inconsistencies in

student's performance should be reviewed to determine the reason for their occurrence and whether they impact on the student's achievement. Ø Recent evidence should be used when looking for growth over time. Recent evidence may not be applicable to the acquisition of discrete facts and information. Meaning

of

Assessment for

Learning: Assessment for Learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where

the

learners are in their learning, where they need to go and how best to get there.

Assessment

for Learning is also known as formative assessment. Assessment for learning is best described as a process by which assessment information is used by teachers to adjust their teaching strategies, and by students to adjust their learning strategies. Assessment, teaching, and learning are inextricably linked, as each informs the others. Assessment is a powerful process that can either optimise or inhibit learning, depending on how it's applied. Teachers make professional judgements on learners' performance in every teaching and learning session undertaken, whether consciously or subconsciously. Using these

168 professional judgements and translating them into feedback on the quality of individuals' work is the focus of Assessment for Learning. Successful Assessment for learning strategies result in improved learner progress on a continual basis. The principal characteristic of Assessment for Learning is effective feedback provided by teachers to learners on their progress. The value of the feedback is dependent on two factors: ❖ the quality of the feedback ❖ how learners receive and ultimately use it. Teachers, therefore, need training and support to enable them to make valuable assessment decisions, to provide quality feedback to learners, and to teach learners to receive feedback positively and use the information contained within it effectively to improve their work. Assessment for Learning and quality feedback can and do promote increased learner progress. Assessment as part of classroom activities is a fundamental process required to promote learning and ultimately achievement. Learners need to know and understand the following before learning can take place: ❖ What is the aim of the learning? ❖ Why do they need to learn it? ❖ Where are they in terms of achieving the aim? ❖ How can they achieve the aim? When learners know and understand these principles, the quality of learning will improve. Sharing this information with learners will promote ownership of the learning aims and a sense of shared responsibility between the teacher and learner to achieve those aims. Improving learners' confidence and self-esteem reflects positively in learners' work and their motivation is improved. Assessment for Learning and Teacher: Assessment for learning helps teachers gather information to: ❖ plan and modify teaching and learning programmes for individual students, groups of students, and the class as a whole.

169 ❖ pinpoint students' strengths so that both teachers and students can build on them. ❖ identify students' learning needs in a clear and constructive way so they can be addressed. ❖ involve parents, families, and while in their children's learning. ❖ explain the learning aims to learners and check their understanding. ❖ demonstrate the standards learners are required to achieve and help them recognise when they have achieved that standard. ❖ give effective feedback on assessment decisions, so that learners know how to improve. ❖ demonstrate high expectations and make it obvious to learners that they believe that they can improve on their past performance. ❖ provide regular opportunities for teachers and learners to reflect on the last performance and review learners' progress. ❖ develop learners' self-assessment skills, so that they can recognise what aspects of their own work need to improve. Pattern of scale to measure learner performance of Learning in teaching and learning session: given below is six point scales. 1= excellent 2 = very good 3 = good 4 = satisfactory 5 = poor 6 = very poor Teachers need to; ❖ decide what is going to be learnt in a particular session. ❖ define the learning goals. ❖ communicate the learning goals to the learners.

170 ❖ compile questions and design tasks to check learner understanding of the learning goals. ❖ explain to the learners the criteria which will be used to assess their work. ❖ decide how feedback is going to be provided. ❖ define how learners will take an active part in the assessment process. ❖ plan opportunities for learners to use the feedback provided on the assessment decision to further progress. Effective session learning plans: Teachers need to make sure that every session learning plan includes: ❖ details of the learning intentions/outcomes ❖ how learning intentions/outcomes are going to be shared with learners and methods of checking their understanding ❖ information on the assessment criteria and marking ❖ assessment opportunities ❖ methods of feedback to be provided ❖ details of the differentiated range of learners making up the group ❖ information on teaching and learning styles incorporated into the session ❖ how review times are to be used ❖ the specifications of the differentiated teaching and learning materials to be used to meet individual learner needs and create effective learning opportunities ❖ an evaluation section for the teacher to complete to say what did or did not work well and why. Assessing learning: the effective use of questioning: No matter how well a teaching and learning session is planned, or how well a teacher may feel at the conclusion to the session, it is not how well the teacher has performed, but the reaction of the learners that matters. The real test is whether learners have learnt and ultimately progressed against the learning objectives defined at the start of the session. Testing learning is an important part of classroom practice, and questioning is one of the most common methods of checking learner understanding.

171 Feedback on assessment: Successful Assessment for Learning strategies hinge on the nature of feedback, its content and the way it is received and used by learners. ❖ Feedback is providing information to an individual who focuses on their performance or behaviour. ❖ The feedback provided should be delivered in a positive manner and lead to action to affirm or develop an individual's performance or behaviour. ❖ Feedback provided should not be of a personal nature and should focus on hard data, facts or observed examples of evidence. Differences of Assessment of Learning and Assessment for Learning: Why What How Ensuring Quality Assessment for Learning to enable teachers to determine next steps in advancing student learning and Information for teachers' instructional decisions each student's progress and learning needs in relation to the curricular outcomes range of methods in different modes that make students' skills and understanding visible accuracy and consistency of observations and interpretations of student learning ❖ clear, detailed learning expectations ❖ accurate, detailed notes for descriptive feedback to each student Assessment of Learning to certify or inform parents or others of student's proficiency in relation to curriculum learning outcomes and Judgments about placement, promotion, credentials, etc. the extent to which students can apply the key concepts, knowledge, skills, and attitudes related to the curricular outcomes range of methods range of methods in different modes that assess both product and process accuracy, consistency, and fairness of judgements based on high-quality information ❖ clear, detailed, learning expectations ❖ fair and accurate summative reporting 172 indicate each student's level of learning ❖ provide the foundation for discussions on placement or promotion ❖ report fair, accurate, and detailed information that can be used to decide the next steps in a student's learning descriptive feedback to further his or her learning ❖ differentiate instruction by continually checking where each student is in relation to the curricular outcomes • provide parents or guardians with descriptive feedback about student learning and ideas for support Using the Information 4.1.5. Comparing and Contrasting Assessment, Evaluation, Measurement, Test Examination: Comparing, and Contrasting Assessment, Evaluation and Measurement: Educational discourse has many words that relate to the broad task of judgement the way a person, programme, or piece of work, including, evaluating, measuring, assess appraising, examining, testing, marking, grading, and scoring. Such words are confused: one person's testing, is another person's assessing, making in one country grading in another. Nevertheless, these words are not all synonymous. In this area the discussion will be limited within assessment, evaluation and measurement Assessment: In education assessment is the process by which one attempts to measure the quality learning using various assessment techniques, assignments, project, continuous assess objective type tests. As far as possible, the term assessment should be reserved for application to people. It (activities included in grading (formal and non-formal) examining, certifying and ; Students' achievement on a particular course may be assessed according to (a critical dictionary of education in 1982). Assessment is a process by which information is obtained relative to some known objective or goal. Assessment is a broad term that includes testing. A test is a special form of assessment. Tests are assessments made under contrived circumstances especially so that they may be administered. In other words, all tests 173 are assessments, but not all assessments are tests. We test at the end of a lesson or unit. We assess progress at the end of a school year through testing. Whether implicit or explicit, assessment is most usefully connected to some goal or objective for which the assessment is designed. A test or assessment yields information relative to an objective or goal. In that sense, we test or assess to determine whether or not an objective or goal has been obtained. Assessment of skill attainment is rather straightforward. Either the skill exists at some acceptable level or it doesn't. Skills are readily demonstrable.

In the most general sense, assessment is the process of making a judgment or measurement of worth of an entity (e.g., person, process, or program). Learner assessment is best conceived as a form of two-way communication in which feedback on the educational process or product is provided to its key stakeholders (McAlpine, 2002). Specifically, learner assessment involves communication to teachers (feedback on teaching); students (feedback on learning); curriculum designers (feedback on curriculum) and administrators (feedback on use of resources). For teachers and curriculum/course designers, carefully constructed learner assessment techniques can help determining whether or not the stated goals are being achieved. According to Brissenden and Slater (n.d.), classroom assessment can help teachers answer the following specific questions: ❖ To what extent are my students achieving the stated goals? ❖ How should I allocate class time for the current topic? ❖ Can I teach this topic in a more efficient or effective way? ❖ What parts of this course/unit are my students finding most valuable ❖ How will I change this course/unit the next time I teach it? ❖ Which grades do I assign my students? For students, learner assessment answers a different set of questions (Brissenden and Slater, n.d.): Do I know what my instructor thinks is most important? ❖ Am I mastering the course content? ❖ How can I improve the way I study in this course? ❖ What grade am I earning in this course?

174 The Importance of Assessment: First and foremost, assessment is important because it drives students Learning (Brissenden and Slater, n.d.). Whether we like it or not, most students tend to focus their energies on the best or most expeditious way to pass their 'tests.' Based on this knowledge, we can use our assessment strategies to manipulate the kinds of learning that takes place. For example, assessment strategies that focus predominantly on recall of knowledge will likely promote superficial learning. On the other hand, if we choose assessment strategies that demand critical thinking or creative problem-solving, we are likely to realize a higher level of student performance or achievement. In addition, good assessment can help students become more effective self-directed learners (Angelo and Cross, 1993). Types and Approaches to Assessment: ❖ Formative - Summative ❖ Informal- Formal ❖ Continuous- Final ❖ Process- Product ❖ Divergent - Convergent Formative vs. Summative Assessment: Formative assessment is designed to assist the learning process by providing feedback to the learner, which can be used to identify strengths and weakness and hence improve future performance. Formative assessment is most appropriate where the results are to be used internally by those involved in the learning process (students, teachers, curriculum developers). Summative assessment is used primarily to make decisions for grading or determine readiness for progression. Typically summative assessment occurs at the end of an educational activity and is designed to judge the learner's overall performance. In addition to providing the basis for grade assignment, summative assessment is used to communicate students' abilities to external stakeholders, e.g. administrators and employers.

175 Informal vs. Formal Assessment: With informal assessment, the judgments are integrated with other tasks, e.g., lecturer feedback on the answer to a question or preceptor feedback provided while performing a bedside procedure. Informal assessment is most often used to provide formative feedback. As such, it tends to be less threatening and thus less stressful to the student. However, informal feedback is prone to high subjectivity or bias. Formal assessment occurs when students are aware that the task that they are doing is for assessment purposes, e.g., a written examination. Most formal assessments also are summative in nature and thus tend to have greater motivation impact and are associated with increased stress. Given their role in decision-making, formal assessments should be held to higher standards of reliability and validity than informal assessments. Continuous vs. Final Assessment: Continuous assessment occurs throughout a learning experience (intermittent is probably a more realistic term). Continuous assessment is most appropriate when student and/or instructor knowledge of progress or achievement is needed to determine the subsequent progression or sequence of activities. Continuous assessment provides both students and teachers with the information needed to improve teaching and learning in process. Obviously, continuous assessment involves increased effort for both teacher and student. Final (or terminal) assessment is that which takes place only at the end of a learning activity. It is most appropriate when learning can only be assessed as a complete whole rather than as constituent parts. Typically, final assessment is used for summative decision-making. Obviously, due to its timing, final assessment cannot be used for formative purpose. Process vs. Product Assessment: Process assessment focuses on the steps or procedures underlying a particular ability or task. i.e., the cognitive steps in performing a mathematical operation or the procedure involved in analyzing a blood sample. Because it provides more detailed information, process assessment is most useful when a student is learning a new skill and for providing formative feedback to assist in improving performance.

176 Product assessment focuses on evaluating the result or outcome of a process. Using the above examples, we would focus on the answer to the math computation or the accuracy of the blood test results. Product assessment is most appropriate for documenting proficiency or competency in a given skill, i.e., for summative purposes. In general, product assessments are easier to create than product assessments, requiring only a specification of the attributes of the final product. Divergent vs. Convergent Assessment: Divergent assessments are those for which a range of answers or solutions might be considered correct. Examples include essay tests, and solutions to the typical types of indeterminate problems. Divergent assessments tend to be more authentic and most appropriate in evaluating higher cognitive skills. However, these types of assessment are often time consuming to evaluate and the resulting judgments often exhibit poor reliability. A convergent assessment has only one correct response (per item). Objective test items are the best example and demonstrate the value of this approach in assessing knowledge. Obviously, convergent assessments are easier to evaluate or score than divergent assessments. Unfortunately, this "ease of use" often leads to their widespread application of this approach even when contrary to good assessment practices. Specifically, the familiarity and ease with which convergent assessment tools can be applied leads to two common evaluation fallacies: the Fallacy of False Quantification (the tendency to focus on what's easiest to measure) and the Law of the Instrument Fallacy (moulding the evaluation problem to fit the tool). Evaluation: According to the dictionary of education (1977), explains evaluation as "Value judgement on an observation, 'performance test,' or indeed any 'data' whether directly measured or inferred. For example, if a pupil gains a score of 32 on a test of education, this measure is evaluated by placing a meaning on it relative to a standard, norm or some other situation. Thus, the score may be 'above average', 'fail', or indicative of below or above average effort on the part of the individual, or again that the score is 'good' for his/her age, but 'average' for his/ her particular class." According to Dr.K. Sudha Rao (1986), "Educational evaluation is a process of estimating and appraising, the degree and dimension of appraising the proficiency level of the particular educational practice, which is being conducted. It is way of appraising the application of educational theory in practice."

177 Characteristics of Evaluation: 1. Evaluation is a continuous process. 2. Evaluation includes academic and non-academic subjects. 3. Evaluation is a procedure for improving the product. 4. Discovering the needs of an individual and designing the learning experiences. Main Generalizations about Evaluation; 1. Evaluation is function of the learner and instruction and therefore, good evaluation is one which is done by the teacher, of the taught as a individual. 2. Evaluation provides quality control at every stage of the teaching learning process. 3. Evaluation provides feed-back. 4. Remedial teaching is possible through this evaluation. The Purposes of Evaluation: According to Oguniyi (1984), educational evaluation is carried out from time to time for the following purposes: (i) to determine the relative effectiveness of the programme in terms of students' behavioural output; (ii) to make reliable decisions about educational planning; (iii) to ascertain the worth of time, energy and resources invested in a programme; (iv) to identify students' growth or lack of growth in acquiring desirable knowledge, skills, attitudes and societal values; (v) to help teachers determine the effectiveness of their teaching techniques and learning materials; (vi) to help motivate students to want to learn more as they discover their progress or lack of progress in given tasks; (vii) to encourage students to develop a sense of discipline and systematic study habits; (viii) to provide educational administrators with adequate information about teachers' effectiveness and school need;

178 (ix) to acquaint parents or guardians with their children's performances; (x) to identify problems that might hinder or prevent the achievement of set goals; (xi) to predict the general trend in the development of the teaching-learning process; (xii) to ensure an economical and efficient management of scarce resources; (xiii) to provide an objective basis for determining the promotion of students from one class to another as well as the award of certificates; (xiv) to provide a just basis for determining at what level of education the possessor of a certificate should enter a career. Measurement: International dictionary of education (1977), defines measurement as, "Act of finding dimensions of any object and the quality found by each act." Pantom, M.Q.(1985) states that measurement implies assigning a numerical quantity. While instruments such as rulers and stopwatches can be used to determine height, speed, and so on, any intellectual capacities or other quantities of educational interest must be measured indirectly. Thus, tests are typically used on measures such as dimensions and levels of intelligence. It may be included in an assessment. According to the dictionary of education, (1981) defines measurement as fundamentally, we can say that measurement entails certain rules and producers for assessing numbers represent the quantity of the attribute.

Measurement refers to the process by which the attributes or dimensions of some physical object are determined. One exception seems to be in the use of the word measure in determining the IQ of a person. The phrase, "this test measures IQ" is commonly used. Measuring such things as attitudes or preferences also applies. However, when we measure, we generally use some standard instrument to determine how big, tall, heavy, voluminous, hot, cold, fast, or straight something actually is. Standard instruments refer to instruments such as rulers, scales, thermometers, pressure gauges, etc. We measure to obtain information about what is. Such information may or may not be useful, depending on the accuracy of the instruments we use, and our skill at using them. There are few such instruments in the social sciences that approach the validity and reliability of say a 12" ruler. We measure how big a classroom is in terms of square feet, we measure the temperature of the room by using a thermometer, and we use Ohm meters to determine the voltage, amperage, and resistance in a

179 circuit. In all of these examples, we are not assessing anything; we are simply collecting information relative to some established rule or standard. Assessment is therefore quite different from measurement, and has uses that suggest very different purposes.

Proposition in Measurement: Thorndike and Hagen in (1979) list six propositions that seem to us to provide the foundations for a contemporary view of educational and psychological measurement procedures and their role in our schools and our society. 1. Various types of decisions have to be made. 2. The more relevant and more accurate the information, the better the decision. 3. Measurement instruments and procedures provide an important set of tools for improving the information available for decision making. 4. The use of any type of information for decision making needs to know what that information signifies and how far it can be trusted. 5. The facts and values involved in any decision are complex. 6. The wisdom of the decider is crucial. According to Thorndike and Hagen (1979), measurement in any field involves three common steps: 1. Identifying and defining the quality or attitude that is to be measured, 2. Determining a set of operation by which the attribute may be made manifest and perceivable, and 3. Establishing a set of procedures or definitions for translating observations into quantitative statements of degree or amount. Assessment versus Evaluation:

Depending on the authority or dictionary consulted, assessment and evaluation may be treated as synonyms or as distinctly different concepts. As noted above, if a distinction exists, it probably involves what is being measured and why and how the measurements are made. In terms of what, it is often said that we assess students and we evaluate instruction. This distinction derives from the use of evaluation research methods to make judgments about the worth of educational activities. Moreover, it emphasizes an individual focus of assessment, i.e., using information

180 to help identify a learner's needs and document his or her progress toward meeting goals. In terms of why and how the measurements are made, the following table (Apple & Krumsieg,1998) compares and contrasts assessment and evaluation on several important dimensions, some of which were previously defined. Dimension Assessment Evaluation

Timing	Formative	Summative	Focus of Measurement	Process -oriented	Product - oriented	Relationship between Administrator and Recipients	Findings and uses	Diagnostic	Judgemental	Modifiability of criteria
Flexible	Fixed	Standards	measurement	Absolute	individual	Comparative	Relation with objectives	Cooperative	Competitive	From: Apple, D.K. & Krumsieg. K.(1998). Process education teaching institute handbook.

Evaluation Vs Measurement: Evaluation and Measurement have similar meaning and are closely related with each other. Nevertheless, these terms are not synonymous. Measurement is a procedure for assigning numbers to specified attributes or characteristics of person in a manner that maintains the real world relationship among persons with regard to what is being measured." Whereas, evaluation involves judging the value or worth of a pupil on an instructional method or on an educational programme. Such judgements may or may not be based on information obtained from tests. Measurement they process of obtaining numerical description of the degree to which an individual possesses particular characteristics. Answer the question, how much?

181 Evaluation the

systematic process of collecting, analysing and interpreting information to determine. The context to which pupils are achieving instructional

objects. Answer the question how good? Measurement, for all practical purposes assessment and measurement can be considered synonymous. When assessment is taking place, information or data are being collected and measurement is being conducted. Evaluation, evaluation is a process that includes measurement and possibly testing but it also contains the notion of value judgement. Measurement is an act or a process that involves the assignment of a numerical index to whatever is being assessed. Whereas evaluation = quantitative description of learner's achievement + qualitative description of learner's abilities + value judgements about achievements and abilities. Test: To understand the concept of "test" you must recall the earlier definitions of "assessment" and "evaluation". Note that we said people use these terms interchangeably. But in the real sense, they are not the same. Tests are detailed or small scale task carried out to identify the candidate's level of performance and to find out how far the person has learnt what was taught or be able to do what he/she is expected to do after teaching. Tests are carried out in order to measure the efforts of the candidate and characterize the performance. Whenever you are tested, as you will be done later on in this course, it is to find out what you know, what you do not know, or even what you partially know. Test is therefore an instrument for assessment. Assessment is broader than tests, although the term is sometimes used to mean tests as in "I want to assess your performance in the course". Some even say they want to assess students' scripts when they really mean they want to mark the scripts. Assessment and evaluation are closely related, although some fine distinctions had been made between the two terms. Evaluation may be said to be the broadest. It involves evaluation of a programme at the beginning, and during a course. This is called formative evaluation.. It also involved evaluation of a programme or a course at the end of the course. This is called summative evaluation. Testing is part of assessment but assessment is more than testing.

182 Tests involve measurement of candidates' performance, while evaluation is a systematic way of assessing the success or failure of a programme. Evaluation involves assessment but not all assessments are evaluation. Some are reappraisal of a thing, a person, life, etc Purpose of Tests: This section discusses the reasons for testing. Why do we have to test you? At the end of a course, why do examiners conduct tests? Some of the reasons are outlined in this section. 1. We conduct tests to find out whether the objectives we set for a particular course, lesson or topic has been achieved or not. Tests measure the performance of a candidate in a course, lesson, or topic and thus, tell the teacher or course developer that the objectives of the course or lesson have been achieved or not. If the person taught performed badly, we may have to take a second look at the objectives of the course or lesson. 2. We test students in the class to determine the progress made by the students. We want to know whether or not the students are improving in the course, lesson, or topic. If progress is made, we reinforce the progress so that the students can learn more. If no progress is made, we intensify teaching to achieve progress. If progress is slow, we slow down the speed of our teaching. 3. We use tests to determine what students have learnt or not learnt in the class. Tests show the aspects of the course or lesson that the students have learnt. They also show areas where learning has not taken place. Thus, the teacher can re-teach for more effective learning. 4. Tests are used to place students/candidates into a particular class, school, level, or employment. Such tests are called placement tests. The assumption here is that an individual who performs creditably well at a level can be moved to another level after testing. Thus, we use tests to place a pupil into primary two, after he/she has passed the test set for primary one, and so on. 5. Tests can reveal the problems or difficulty areas of a learner. Thus, we say we use tests to diagnose or find out the problems or difficulty areas of a student

183 or pupil. A test may reveal whether or not a learner, for example, has a problem with pronouncing a sound, solving a problem involving decimal, or constructing a basic shape, e.g. a triangle, etc. 6. Tests are used to predict outcomes. We use tests to predict whether or not a learner will be able to do a certain job, task, and use language to study in a university or perform well in a particular school, college, or university. Examination: The dictionary of education (1959) by Good defines examination as "An appraisal of ability, achievement, or present status in any respect; or the instrument used in making such an appraisal." International Dictionary of Education (1978) by G. Tarry Page and J.B. Thomas explains the concept of examination as "(1) Assessment of ability, achievement or present performance in a subject. (2) Instrument of assessment can be long easy or mixed form of assessment. May be used for qualifying for entrance to professions and higher education" Functions of Examination: 1. To evaluate the achievement of the students. 2. To measure personality. 3. To measure the efficiency of the teacher and the school. 4. To help in diagnosis. 5. To act as incentive. 6. To help in prognosis 7. To provide uniformity of standard. 8. To help in guidance 9. To measure fitness for admission to higher course. 10. To help in selection by competition 11. Study of every subject. 12. Parent's point of view.

184 13. To certify competency. 14. To link schools with the world. Exam Vs Tests : The difference between exam and test is mostly in the usage of the terms. Test and exam are most of the times used as synonyms. That is not completely wrong as in the field of education test is a series of questions that measures the knowledge of the student on a particular lesson. Exam is a more formal form of test that measures the knowledge of a student on a number of lessons. As you can see, in the educational field, both are inspecting the knowledge of the student. However, depending on the seriousness or the formality of this examination you have to use the two words appropriately. The two terms are used frequently in other fields such as medical field too. Let us try to understand more about each term and the implied difference between both. According to the American Heritage Dictionary test means 'a series of questions, problems, or physical responses designed to determine knowledge, intelligence, or ability.' A test, as we discussed earlier, is a short exam that a teacher gives to his or her students at the end of a lesson. A teacher gives this test in order to understand how much of what he or she has taught has gone into the students' minds. A test is not very formal. Usually, this is held at the class level. A teacher usually takes a period of his or her teaching time to conduct this sort of test. The students have to answer some questions that evaluate the level of each student's understanding of the lesson. This can be a written test or an oral test. Other than in the field of education, the word test is also used in other field such as the field of medicine. For example, when you give your blood to a lab to check if everything is alright in your body by examining the blood, that procedure is called a blood test. Also, when you want to check your eyesight, the procedure involved is known as an eye test. Then, if you remember the procedure you had to follow when obtaining your driving license, there was a driving test involved. That test checked how much you could perform the activity of driving. So, a test can also be a test of actions.

185 Forms of Difference Exam Test Meaning Exam refers to a procedure Test refers to a procedure where your knowledge about where your knowledge is a number of lessons is tested. tested about a lesson. Nature Exams are more formal Tests are less formal in nature. in nature. Form Exam is usually written. Test can be a written, oral or Some written exams have a practical test in form. practical test attached to it too. Uses in the field Exam is usually used in the Test is used in fields such as educational field. medicine other than the educational field. As you can see, in the field of education, both exam and test refers to the activity that is given to you by your teacher to test your knowledge. With each word the formality changes. Test is used in more fields that the field of education. Basically both have same types of functions. 4.1.6. Formative and Summative Evaluation, Curriculum based Measurement: Assessment is the process of gathering data. More specifically, assessment is the ways instructors gather data about their teaching and their students' learning (Hanna & Dettmer, 2004). The data provide a picture of a range of activities using different forms of assessment such as: pre-tests, observations, and examinations. Once these data are gathered, you can then evaluate the student's performance. Evaluation, therefore, draws on one's judgment to determine the overall value of an outcome based on the assessment data. It is in the decision-making process then, where we design ways to improve the recognized weaknesses, gaps, or deficiencies. There are mainly two types of evaluation conduct in the class room situation namely summative and formative evaluation. This present discourse will discuss in details about summative and formative evaluation. Summative Evaluation: Summative assessment takes place after the learning has been completed and provides information and feedback that sums up the teaching and learning process.

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Typically, no more formal learning is taking place at this stage, other than incidental learning which might take place through the completion of projects and assignments. According to A.J. Nitko (1983), “summative evaluation describes judgements about the merits of an already completed programme, procedure or product”. In the words of Gilbert Sax (1989), “a summative evaluation can provide evidence that the programme is satisfactory and should be continued for next year’s students or that student learning and learning attitudes are so negative that a new programme is needed”. A perusal of the above definitions shows that the summative evaluation has the following chief elements: 1. There should be some instructional programme before summative evaluation, 2. The instructional programme should be for the attainment of some objectives. 3. Summative evaluation is done at the end or completion of a particular instructional programme whose duration may vary from a semester to whole year. 4. Summative evaluation should check whether there has been learning or not. If the answer is yes, then what is the quantity and quality of the learning in relation to predetermined objectives? 5. Summative learning provides feedback to the classroom teacher for the success or failure of the programme or and of the student. Chief Characteristics of the Summative Evaluation: 1. It lends to the use of well-defined evaluation designs. 2. It focuses on analysis. 3. It provides descriptive analysis. 4. It tends to stress local effects. 5. It is unobtrusive and non-reactive as far as possible. 6. It is concerned with broad range of issues. 7. Its instruments are reliable and valid.

187 Types of Summative Assessment: ❖ Examinations (major, high-stakes exams) ❖ Final examination (a truly summative assessment) ❖ Term papers (drafts submitted throughout the semester would be a formative assessment) ❖ Projects (project phases submitted at various completion points could be formatively assessed) ❖ Portfolios (could also be assessed during its development as a formative assessment) ❖ Performances ❖ Student evaluation of the course (teaching effectiveness) ❖ Instructor self-evaluation High-stakes summative assessments typically are given to students at the end of a set point during or at the end of the semester to assess what has been learned and how well it was learned. Grades are usually an outcome of summative assessment: they indicate whether the student has an acceptable level of knowledge-gain—is the student able to effectively progress to the next part of the class, to the next course in the curriculum, to the next level of academic standing. Summative assessment is more product-oriented and assesses the final product, whereas formative assessment focuses on the process toward completing the product. Once the project is completed, no further revisions can be made. If, however, students are allowed to make revisions, the assessment becomes formative, where students can take advantage of the opportunity to improve. Formative Evaluation: Formative assessment provides feedback and information during the instructional process, while learning is taking place, and while learning is occurring. Formative assessment measures student progress but it can also assess your own progress as an instructor. For example, when implementing a new activity in class, you can, through observation and/or surveying the students, determine whether or not the activity should be used again (or modified). A primary focus of formative assessment is to identify areas that may need improvement. These assessments typically are not graded and act as a gauge to students’ learning progress and to determine teaching effectiveness (implementing appropriate methods and activities).

188 In another example, at the end of the third week of the semester, you can informally ask students questions which might be on a future exam to see if they truly understand the material. An exciting and efficient way to survey students' grasp of knowledge is through the use of clickers. Clickers are interactive devices which can be used to assess students' current knowledge on specific content. For example, after polling students you see that a large number of students did not correctly answer a question or seem confused about some particular content. At this point in the course you may need to go back and review that material or present it in such a way to make it more understandable to the students. This formative assessment has allowed you to "rethink" and then "re-deliver" that material to ensure students are on track. It is good practice to incorporate this type of assessment to "test" students' knowledge before expecting all of them to do well on an examination. Following are the implications of the above definitions for the class room teacher: 1. Formative evaluation is done during an instructional programme. 2. The instructional programme should aim at the attainments of certain objectives during the implementation of the programme also. 3. Formative evaluation is done to monitor learning and modifying the programme if needed before its completion. 4. Formative evaluation is for current students.

Characteristics of Formative Evaluation: 1. It relatively focuses on molecular analysis. 2. It is cause seeking. 3. It is interested in the broader sense of experiences of the programme users. 4. Its design is exploratory and flexible. 5. It tends to ignore the local effects of a particular programme. 6. It seeks to identify influential variables. 7. It requires analysis of instructional material for mapping the hierarchical structure of the learning tasks and actual teaching of the course for a certain period. Types of Formative Assessment: ❖ Observations during in-class activities; of student's non-verbal feedback during lecture

189 ❖ Homework exercises as review for exams and class discussions. ❖ Reflections journals that are reviewed periodically during the semester. ❖ Question and answer sessions, both formal—planned and informal—spontaneous ❖ Conferences between the instructor and student at various points in the semester ❖ In-class activities where students informally present their results. ❖ Student feedback collected by periodically answering specific question about the instruction and their self-evaluation of performance and progress. Some of the instructional strategies that can be used formatively include the following: Criteria and goal setting : In order to be successful, students need to understand and know the learning target/goal and the criteria for reaching it. Establishing and defining quality work together, asking students to participate in establishing norm behaviours for classroom culture, and determining what should be included in criteria for success are all examples of this strategy. Using student work, classroom tests, or exemplars of what is expected helps students understand where they are, where they need to be, and an effective process for getting there. Observations: Observations assist teachers in gathering evidence of student learning to inform instructional planning. This evidence can be recorded and used as feedback for students about their learning or as anecdotal data shared with them during conferences. Questioning strategies: Asking better questions allows an opportunity for deeper thinking and provides teachers with significant insight into the degree and depth of understanding. Questions of this nature engage students in classroom dialogue that both uncovers and expands learning. When a comprehensive assessment program at the classroom level balances formative and summative student learning/achievement information, a clear picture emerges of where a student is relative to learning targets and standards. Students should be able to articulate this shared information about their own learning. When this happens, student-led conferences, a formative 1 assessment strategy, are valid. The more we know about individual students as they engage in the learning process, the better we can adjust instruction to ensure that all students continue to achieve by moving forward in their learning.

190 Difference between Summative and Formative Evaluation: Gloria, Hitchok and others (1986) state the difference between the summative and formative evaluation in these words, "it is fairly straight forward to produce an 'ideal' type of either a summative or a formative profile. It is far more difficult to combine the two into one unified system. The underlying of the two appears difficult to reconcile". Following are the main differences between these two types of evaluation: 1. They differ in purpose, nature and timing. 2. Summative evaluation is the terminal assessment of performance at the end of instruction but formative evaluation in the assessment made during the instructional phase to inform the teacher about progress in learning and what more is to be done, 3. The summative evaluation limits the use of profiles and record of achievement but they are regularly used informative evaluation. 4. The main consideration in summative evaluation is the determination of the extent to which the examinee has mastered the knowledge and skills associated with a course. On the other hand, the main consideration informative evaluation is to reveal the processes by which the examinee achieved these outcomes. 5. In summative evaluation, the assessment is done to test learning outcomes against a set of objective criteria without revealing the details of the route to the teacher which the student followed in reaching that point. Formative evaluation takes the form of a dialogue between the student and teacher in which the task is determined by both. 4.1.7. Revisiting Key Concepts in School evaluation Marks: Marking systems are frequent subjects of educational controversy because the process is difficult, because different educational philosophies call for different marking systems, and because the task is sometimes disagreeable. Claims that marks diminish the effectiveness of the educational system do not seem to be generally valid, and properly assigned marks to measure the degree of attainment of the basic objectives

191 of education. Two basic systems of marking, relative and absolute, are compared, and means of improving marking through institutional standardization are discussed. Pass-fail grading and other alternatives to conventional marking systems are evaluated. Weighting of various measures of achievement in assigning marks is discussed, and detailed computational procedures for assigning marks are developed. Credit: Credit Point refers to the 'Workload' of a learner. It is an index of the number of learning hours deemed for learning of a certain segment. These learning hours broadly classified into hours spent on attending actual lectures/tutorials/laboratory work/seminar etc and notional hours spent on reading, reflecting, discussing, attending counselling sessions, watching especially prepared videos, writing assignments, preparing for examinations, etc.. 1 credit point corresponds to 30 to 40 learning hours. A single course may be assigned between 2 to 8 credit points taking into account as to how many hours it would take for a learner to complete a single course successfully. The learner is said to have earned the credits on successful completion of the course including the evaluation. Credit completion and Credit accumulation: Credit Completion or Credit Acquisition takes place after the learner has successfully cleared all the evaluation criteria with respect to a single course. Thus, a learner who successfully completes a 4 CP (Credit Point) course will be considered to have collected or acquired 4 credits. His level of performance above the minimum prescribed level (viz, grades / marks obtained) has no bearing on the number of credits collected or acquired i.e. if, for a given course which carries 4 credits and the passing marks are 35 out of 100, then whether a student scores 40 out of 100 or 90 out of 100, the credits earned by both the students are 4. A learner keeps on adding more and more credits as he completes successfully more and more courses. Thus the learner 'accumulates' course wise credits. Credit Bank: The process of accumulating Credits over a period of time, leads to the idea of a "Credit Bank". In short, this would involve maintaining all the Credit-related transactions of an individual. Credit Banking, when practiced would facilitate learner mobility and credit transfers.

192 Credit transfer: Performance transfer: When a learner successfully completes a certain academic program, he/she is allowed to transfer his /her past performance to another academic program having some common courses and Performance transfer is said to have taken place. Block transfer: Block transfer refers to a group of courses, such as a completed certificate or diploma program that are accepted for transfer of credit into a degree program. Dimensions of Credit Transfer: When a learner successfully completes the courses included in an academic program at a certain level, he/she is allowed to transfer his/her credits in some of these courses to another same-level academic program having these courses in common. This is referred to as 'Horizontal or Lateral Credit Transfer'. 'Vertical Credit Transfer', sometimes is also referred to as 'Career Laddering' is said to occur when a learner's performance in some courses within a certain academic program at a particular level is carried over to a higher-level academic program having these or equivalent courses in common. Credit Transfer is conceived as operating along lateral (or horizontal) and vertical transfers. Grading: Grading in education is the process of applying standardized measurements of varying levels of achievement in a course. Another way the grade point average (GPA) can be determined is through extracurricular activities. Grades can be assigned as letters (generally A through F), as a range (for example 1 to 6), as a percentage of a total number of questions answered correctly, or as a number out of a possible total (for example out of 20 or 100). The grading system is a methodology by which the marks secured by a student are replaced by some grade which is an alphabet. The grading scale is a varying component which varies between countries and institutions also. For the implementation of grading system credit based system will be used i.e. the whole curriculum will be divided into various subjects to be studied in a semester or year.

193 Whereas each subject will have its own weightage in the semester or year; the weightage of a particular subject is known as credits. In the current scenario, every academic institution is trying to impose grading system and Ministry of Human Resource Development (MHRD) is also in the favour of grading system not only in higher education but in school education also. Central Board of School Education (CBSE) has already adopted grading system in their examination pattern. The major intention behind grading system is to reduce the mental stress among the students, reduction in the accident as well as depression cases, inclusion of choice based system etc. Since every coin has two sides therefore grading system is also having its pros and cons. Absolute v/s Relative Grading: These are the two types of grading systems where absolute grading system is a percentage based method for awarding grades. In this method there will be a specific range of percentage and each range associated with a particular grade. Whereas relative grading is a rank based or curve based method for providing grades i.e. the grades will be provided on the basis of the performance of the group or class in a particular subject or course. It encompasses standard deviation which is a statistical tool. Generally a university in India follows both types of grading systems i.e absolute and relative, The criterion behind choosing absolute or relative grading is the total number of the students in a group. If the group is having students less than twenty than absolute grading system will be followed whereas for the group above twenty; any one of the grading system can be followed preferably relative. GPA v/s CGPA: Semester Grade Point Average (SGPA) indicates the performance of the student in current semester whereas. Cumulative Grade Point Average (CGPA) indicates the overall performance of the student including current performance. Merits of Absolute Grading: ❖ Allows grade to be directly correlated to student's achievement. ❖ There is no chance of manipulation of grades.

194 ❖ Easy to understand as well as easy to implement. ❖ It can be applicable to any group irrespective of group's strength. ❖ It increases the tendency of labour within group because to attain the desirable grade one has to attain a minimum percentage of awards. ❖ Reduces competition between students as all students having marks between fixed ranges of percentage will get the same grade. For example all students having marks in a subject between 91 and 100 will be awarded with A+ grade. Demerits of Absolute Grading: ❖ It can allow all students to receive the same grade which creates problem in competitive circumstances for the judgment of the potential of the students. ❖ Since it's a static system for the award of grades irrespective of the nature of subject therefore sometime it becomes very challenging to get high percentage in theoretical subjects in comparison with practical or mathematical subjects. ❖ The grades are somehow influenced by the evaluation style of the instructor i.e. leniency or strictness in the award of marks will certainly affect the grade. Merits of Relative Grading: ❖ The students will get the grades based upon their performance relative to their peers. ❖ Useful as well as required for today's competitive environment. ❖ It will reflect the actual performance of the students irrespective of the nature of the subject. Demerits of Relative Grading: ❖ It cannot be applied to a small group of students.. ❖ It undergoes moderation of grads to obtain the normal bell shaped curve, which sometimes affects the actual performance of the students. ❖ The actual performance of the student in a particular subject remains hidden.

Alternate Certification:

Alternate certification is a process by which a person is awarded a teaching licence even “though that person has not completed a traditional teacher certification programme.

195 Alternative certification programme first appeared in the 1980s. A deadline in the number of students seeking a degree in education was creating a shortage of teachers in America elementary and high schools. States began to search for a way to recruit and train people who had already earned a four year degree and wanted to become teachers.

Transparency: Transparency means improvement of reporting to schools, families and students about student achievement and school performance and improved public reporting of individual and comparative school performance as well as reporting on the performance of schooling overall. Internal External Proportion: The internal external proportion means mix of assessment. It will be better understood through example, student A studies mathematics and sciences about one third of credits are likely to be internally assessed, and two thirds by external examinations. Student B studies mainly English and the social sciences (geography, history, and economics) - typically about half of the credits will be internally assessed, and half by externally examinations. Student C studies mainly the arts—about 60% of credits are likely to be internally assessed, and 40% externally assessed.

Impacts of standards alignment : Some of the changes will impact on the mix of internal and external assessment. ❖ Achievement standards only will be used to assess curriculum linked knowledge and skills. ❖ Unit standards will cover other skills and knowledge. ❖ In each subject there will be a maximum of three externally assessed standards. This will change the ratio of internally and externally assessed standards that are available in some subjects. There will be an examination for each externally assessed standard. Three externally assessed standards will be examined in a three hour examination. This

196 will give students sufficient time to complete the examination and ensure assessment is reliable. Mix of internal and external assessment and learning experiences: At the general level, not all students cope with the pressure of external examinations. The major benefit of internal assessment is assessment when students are ready, used in inspects of learning that simply cannot be assessed adequately by external examination. Many of these could, of course, be externally assessed by having outsiders in to look at performance. examine things being produced or to watch demonstrations. This approach carries considerable cost and disruption to programmes without adding a significant increase in confidence in the accuracy of the assessment. We are happy to have our internal assessment moderated and find it reassuring and useful. Governance and Implementation: The common policy challenges that emerge concerning governance and implementation are: ensuring articulations within the evaluation and assessment framework; developing competencies for evaluation and for using feedback; securing links with classroom practice; and overcoming the challenges of implementation. Student Assessment: Several common policy challenges arise concerning student assessment: aligning educational standards and student assessment; balancing external assessments and teacher-based assessments in the assessment of learning and integrating student formative assessment in the evaluation and assessment framework. Teacher Evaluation: Common policy challenges in teacher evaluation are: combining the improvement and accountability functions of teacher evaluation; accounting for student results in evaluation of teachers; and using teacher evaluation results to shape incentives for teachers. School Evaluation: School evaluation presents common policy challenges concerning: aligning external evaluation of schools with internal school evaluation; providing balanced public reporting on schools and improving data handling skills of school agents.

197 System Evaluation: Common policy challenges for evaluation of education systems are: meeting information needs at system level; monitoring key outcomes of the education system; and maximising the use of system-level information. Improvement option is the basic criteria in the assessment and evaluation for updating all elements of education. 4.1.8 Let us Sum-up: Assessment means basing decisions about curriculum, pedagogy, staffing, advising, and student support upon the best possible data about student learning and the factors that affect it. A process that involves 1) establishing goals for student learning, 2) gathering qualitative and quantitative evidence for how well students meet those goals, and 3) uses the information to improve. Assessment is the very important aspect of school system because without assessment we cannot understand the learning outcomes. We can see this assessment from the existing point of view and from the conventional point of view. The conventional assessment means summative types of assessment. Whereas updated assessment means formative assessment supported by constructivist point of view.

Assessment for Learning offers an alternative perspective to traditional assessment in schools. Simply put, Assessment for Learning shifts the emphasis from summative to formative assessment, from making judgments to creating descriptions that can be used in the service of the next stage of learning.

Whereas assessment of learning refers to

the predominant kind of assessment in schools is Assessment of Learning. Its purpose is summative, intended to certify learning and report to parents and students about students' progress in school, usually by signalling students' relative position compared to other students

Assessment:

The process of gathering information to monitor progress and make educational decisions if necessary. An assessment may include a test, but also includes methods such as observations, interviews, behaviour monitoring, etc.

Evaluation:

Procedures used to determine whether the subject (i.e. student) meets preset criteria, such as qualifying for special education services. This uses assessment (remember that an assessment may be a test) to make a determination of qualification in accordance with a predetermined criteria.,1

198 Measurement, beyond its general definition,

refers to the set of procedures and the principles for how to use the procedures in educational tests and assessments. Some of the basic principles of measurement in educational evaluations would be raw scores, percentile ranks, derived scores, standard scores, etc.

Test: A method to determine a student's ability to complete certain tasks or demonstrate mastery of a skill or knowledge of content. Some types would be multiple choice tests, or a weekly spelling test. While it is commonly used interchangeably with assessment, or even evaluation, it can be distinguished by the fact that a test is one form of an assessment.

Examination: The dictionary of education (1959) by Good defines examination as "An appraisal of ability, achievement, or present status in any respect; or the instrument used in making such an appraisal."

Formative Assessment: Formative assessment provides feedback and information during the instructional process, while learning is taking place, and while learning is occurring. Formative assessment measures student progress but it can also assess your own progress as an instructor.

Summative Assessment: Summative assessment takes place after the learning has been completed and provides information and feedback that sums up the teaching and learning process.

Typically, no more formal learning is taking place at this stage, other than incidental learning which might take place through the completion of projects and assignments. There is different aspect of assessment such as grading, credit, improvement option etc. According to the situation and suitability anything may be used. 4.1.9. Check your progress: 1.

What is meant by assessment?

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199 2. What is meant by conventional meaning of assessment?

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..... 3. What is the constructivist approach of assessment?

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..... 4. What are the difference between conventional meaning and constructivist meaning of assessment.

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..... 5. What are the differences between evaluation and measurement?

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..... 6. What are the difference between measurement and test?

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200 7. What is meant by summative evaluation?

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..... 8. What is meant by formative evaluation?

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..... 9. What are the differences between summative and formative evaluation?

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..... 10. What is meant by grading? Explain the necessity of grading in today's perspective of education.

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..... 11. What is credit?

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201 12. What is meant by alternate certification?

..... 4.1.10. Reference: 1. Harris D, Bell C (1994). Evaluating and assessing for learning. Routledge Palmer. 2. Assessment Reform Group (2002). Assessment for learning: Principles - research-based principles to guide classroom practice. 3. Black P, William D. Assessment and classroom learning (1998) Assessment in education, 4. Carroll, J. B. (1983) Psychometric Theory and Language testing in Oiler, J. W (ed) Issues in Language Testing Research Rowley, Mass: Newbury House. 5. Overview of Alternative Routes to Teacher Certificate. National Centre for Alternative Certification. 6. Cook, T. d and C. s. Reichardt (eds) (1979) Qualitative and Quantitative Methods in Evaluation Research. Beverly Hills, Calif... Sage. 7. Licingston, S. A. and M. J. Zeiky (1982) Passing Scores: A Manual for setting standards of Performance on Educational and Occupational Tests. Princeton N. J: Educational Testing Services.

202 UNIT 5 Assessment : Strategies and Practices Structure : 5.1 Introduction 5.2 Objectives 5.3 Assessment Strategies and Practices 5.4 Typology and Levels of Assessment Items 5.5 Analysis, Reporting ,Interpretation ,Documentation ,Feedback and Pedagogic Decisions 5.6 Assessment of Diverse Learners 5.7 School Exam 5.8.1 Unit End Exercises 5.8.2 Answers to Check Your Progress 5.9

Refererences 5.1 Introduction : The word "assessment" has taken on a variety of meanings within education. The term can refer to the process teachers use to grade student course assignments, to standardize testing imposed on institutions as part of increase pressure for external accountability, or to any activity designed to collect information on the success of a program, course, or curriculum. Definition:

Assessment is the systematic collection and analysis of information to improve student learning.

Why Assess? .. To Improve Student Learning Assessment can facilitate improvement of pupils in classes and in their programs Or constantly variety of venues. When faculty members are directly considering what worked well and what didn't, and involved in the development, implementation, and using those observations and impressions to make analysis of assessment activities, a number of specific changes is ushered in the curriculum. What formal assessment benefits can result are as follows:

203 Potential Benefits of Assessment: Because Assessment can provide information about the knowledge and skills students have as they enter a course Because Assessment can provide reliable data on student learning and information from student evaluations Because Assessment can make available richer data about the effects of the curriculum or teaching methods Because Assessment can yield more reliable data about instruction Because Assessment can provide evidence that faculty members make a difference in student learning. Because Assessment can offer a larger view of student needs and accomplishments Teachers Can design instruction to target the knowledge and skill levels students should have upon finishing a course and better determine the levels of thinking or reasoning appropriate for the course. Teachers Can rely less on the comments that appear on student evaluations as indicators of success in teaching. Teachers Can engage in more productive conversations about the status of student achievement and make better decisions about how it might be improved. Teachers Can make reliable decisions about innovations or experimental projects in instruction and share successes more easily Teachers Can enjoy greater satisfaction in their work as educators. Teachers Can identify directions for future instructional development.

204 5.2

Objectives After studying this unit one will be able to : • Explain the concept of

Assessment and its beneficial effect on education. • Enlist the different Assessment Strategies and Practices. • Differentiate between the typology and levels of Assessment. • Elucidate the processes of analysis, reporting, interpretation, documentation, feedback and pedagogic decisions. • Understand the needs of diverse learners and their assessment. • Describe different forms of school exam.

5.3 Assessment: Strategies and Methods

The different types of Assessment strategies that are in use in the present constructivist teaching learning scenario are being discussed briefly:

Observations
Description : Observation as a method of assessment is an unobtrusive tool that can yield significant information about how and why students learn. You may choose to observe any relevant interactive event, such as classes, club meetings, or social gatherings. This tool is generally used when you are interested in how students study, are concerned about the effectiveness of study sessions or other supplementary activities, or when you are focusing on the relationship between out-of-class behavior and in-class performance. Data collected through observation can be correlated with test scores and/or course grades to help provide further insight into student learning.

Strengths and Weaknesses: Data collected through observation can yield important insight into student behavior that may be difficult to gauge through other assessment methods. This method is typically designed to describe findings within a particular context and often allows for interaction between the researcher and students that can add depth to the information collected. It is especially useful for studying subtleties of attitudes and behavior. Observed data, however, is not precise and cannot be generalized to larger populations. Conclusions may be suggestive rather than definitive, and others may feel that this method provides less reliable data than other collection methods.

205 Performance Assessment
Description: Performance assessment uses student activities to assess skills and knowledge. These activities include class assignments, auditions, recitals, projects, presentations and similar tasks. At its most effective, performance assessment is linked to the curriculum and uses real samples of student work. This type of assessment generally requires students to use critical thinking and problem-solving skills within a context relevant to their field or major. The performance is rated by faculty or qualified observers and assessment data collected. The student receives feedback on the performance and evaluation.

Strengths and Weaknesses: Performance assessment can yield valuable insight into student learning and provides students with comprehensive information on improving their skills. Communication between faculty and students is often strengthened, and the opportunity for students' self-assessment is increased. Performance assessment, like all assessment methods, is based on clear statements about learning objectives. This type of assessment is also labor-intensive, is sometimes separate from the daily routine of faculty and student, and may be seen as an intrusion or an additional burden. Articulating the skills that will be examined and specifying the criteria for evaluation may be both time-consuming and difficult.

Portfolio Evaluations
Description: Portfolios are collections of student work over time that are used to demonstrate student growth and achievement in identified areas. Portfolios can offer information about student learning, assess learning in general education and the major, and evaluate targeted areas of instruction and learning. A portfolio may contain all or some of the following: research papers, process reports, tests and exams, case studies, audiotapes, videotapes, personal essays, journals, self-evaluations and computational exercises. Portfolios are often useful and sometimes required for certification, licensure, or external accreditation reviews.

Strengths and Weaknesses: Portfolios not only demonstrate learning over time, but can be valuable resources when students apply to graduate school or for jobs. Portfolios also encourage students to take greater responsibility for their work and open lines of discussion between faculty and students and among faculty involved in the evaluation process. Portfolios are, however, costly and time-consuming and require extended effort on the part of both students and faculty. Also, because portfolios contain

206 multiple samples of student work, they are difficult to assess and to store and may, in some contexts, require too much time and effort from students and faculty alike.

Pre-test/Post-test Evaluation Description: This method of assessment uses locally developed and administered tests and exams at the beginning and end of a course or program in order to monitor student progression and learning across pre-defined periods of time. Results can be used to identify areas of skill deficiency and to track improvement within the assigned time frame. Tests used for assessment purposes are designed to collect data that can be used along with other institutional data to describe student achievement

Strengths and Weaknesses: Pre-test/post-test evaluations can be an effective way to collect information on students when they enter and leave a particular program or course, and provide assessment data over a period of time. They can sample student knowledge quickly and allow comparisons between different students groups, or the same group over time. They do, however, require additional time to develop and administer and can pose problems for data collection and storage. Care should be taken to ensure that the tests measure what they are intended to measure over time (and that they fit with program learning objectives) and that there is consistency in test items, administration and application of scoring standards.

Reflective Essays Description: Reflective essays may be used as an assessment tool to gauge how well students are understanding class content and issues. They are generally short essays (5 to 10 minutes) on topics related to the course curriculum and may be given as in-class assignments or homework. Reflective essays may be voluntary or required, open-ended questions on surveys required in student portfolios or capstone composition courses.

Strengths and Weaknesses: Reflective essays as an assessment tool can offer data on student opinions and perspectives at a particular moment in a class. Essays will provide a wide array of different responses and might lead to increased discussion among faculty and students. On the other hand, poorly worded, ambiguous questions will yield little, and opinions and perceptions may vary in accuracy. Analysis of essay content also takes additional time and expertise.

207 Standardized and Local Test Instruments Description: Selecting a standardized instrument (developed outside the institution for application to a wide group of students using national/regional norms and standards) or a locally-developed assessment tool (created within the institution, program or department for internal use only) depends on specific needs and available resources. Knowing what you want to measure is key to successful selection of standardized instruments, as is administering the assessment to a representative sample in order to develop local norms and standards. Locally-developed instruments can be tailored to measure specific performance expectations for a course or group of students.

Strengths and Weaknesses: Locally-developed instruments are directly linked to local curriculum and can identify student performance on a set of locally-important criteria. Putting together a local tool, however, is time-consuming as is development of a scoring key/method. There is also no comparison group and performance cannot be compared to state or national norms. Standardized tests are immediately available for administration and, therefore, are less expensive to develop than creating local tests from scratch. Changes in performance can be tracked and compared to norm groups and subjectivity/misinterpretation is reduced. However, standardized measures may not link to local curricula and purchasing the tests can be expensive. Test scores may also not contain enough locally-relevant information to be useful.

Student Surveys and Exit Interviews Description: Surveys and interviews ask students to respond to a series of questions or statements about their academic experience. Questions can be both open-ended (respondents create answers) and close-ended (respondents answer from a list of simple and unambiguous responses). Surveys and interviews can be written or oral (face-to-face) or phone. Types of surveys include in-class questionnaires, mail questionnaires, telephone questionnaires, and interviews. Interviews include structured, in-person interviews and focus group interviews.

Strengths and Weaknesses: Surveys can be relatively inexpensive and easy to administer, can reach participants over a wide area, and are well suited for short and non-sensitive topics. They can give you a sense of what is happening at a given moment in time and can be used to track opinions. Data is reasonably easy to collect and tabulate, yet the sample may not be representative of the population (particularly with a low response rate). Ambiguous, poorly written items and insufficient responses may not generate enough

208 detail for decision making. An interview can follow-up on evasive answers and explore topics in-depth; collecting rich data, new insights, and focused details. It can, however, be difficult to reach the sample and data can be time-consuming to analyze. Information may be distorted by the respondent, who may feel a lack of privacy and anonymity. The success of the interview depends ultimately on the skills of the interviewer.

Group Discussions Description: These are structured discussions among homogeneous groups of 6-10 individuals who respond to specific open-ended questions designed to collect data about the beliefs, attitudes and experiences of those in the group. This is a form of group interview where a facilitator raises the topics for discussion and collects data on the results. Emphasis is on insights and ideas.

Strengths and Weaknesses: Focus groups can provide a wide variety of data about participants' experiences, attitudes, views and suggestions, and results can be easily understood and used. These groups allow a small number of individuals to discuss a specific topic in detail, in a non-threatening environment. Data collected in this way, however, is not useful for quantitative results, and qualitative data can be time-consuming and difficult to analyze because of the large amount of non-standardized information. Ultimately, the success of this method depends on a skilled, unbiased moderator and appropriate groups of participants.

Open Book Assignments Description: Such assignments offer students the opportunity to put together the knowledge and skills they have acquired in the major, provide a final common experience for majors, and offer teachers a way to assess student achievement across a number of discipline-specific areas. Open Book assignments are generally designed for seniors in a major or field to complete in the last semester. Their purpose is to integrate knowledge, concepts and skills that students are expected to have acquired in the program during the course of their study. This is obviously a curricular structure as well as an assessment technique and may consist of a single test (a "capstone" test) or a small group of tests designed to measure competencies of students who are completing the program. A senior assignment is a final culminating project for 209 seniors such as a performance portfolio or a thesis that has the same integrative purpose as the capstone test.

Course-embedded Assessment -Projects, Surprise tests, Untimed tests Description: Course-embedded assessment refers to methods of assessing student learning within the classroom environment, using course goals, objectives and content to gauge the extent of the learning that is taking place. This technique generates information about what and how students are learning within the program and classroom environment, using existing information that instructors routinely collect (test performance, short answer performance, quizzes, essays, etc.) or through assessment instruments introduced into a course specifically for the purpose of measuring student learning.

Strengths and Weaknesses: This method of assessment is often effective and easy to use because it builds on the curricular structure of the course and often does not require additional time for data collection since the data comes from existing assignments and course requirements. Course-embedded assessment does, however, take some preparation and analysis time and, while well documented for improving individual courses, there is less documentation on its value for program assessment.

OTHER INNOVATIVE MEASURES Scoring Rubrics Description: Scoring rubrics are typically grids that outline identified criteria for successfully completing an assignment or task and establish levels for meeting these criteria. Rubrics can be used to score everything from essays to performances. Holistic rubrics produce a global score for a product or performance. Primary trait analysis uses separate scoring of individual characteristics or criteria of the product or performance.

Strengths and Weaknesses: Scoring rubrics allow the instructor to efficiently and consistently look at complex products or performances and to define precise outcomes and expectations. They also are easily shared with students. However, developing an effective rubric can be time-consuming and often requires ongoing edits to fine tune criteria and anticipated outcomes. Training raters to use the scoring rubrics in a consistent manner also involves a significant time commitment.

210 Alumni Surveys Description: Surveying department alumni can provide a wide variety of information about program satisfaction, how well students are prepared for their careers, what types of jobs or graduate degrees majors have gone on to obtain, starting salaries for graduates, and the skills that are needed to succeed in the job market or in graduate study. These surveys provide the opportunity to collect data on which areas of the program should be changed, altered, improved or expanded. Strengths and Weaknesses: Alumni surveying is usually a relatively inexpensive way to collect program data from individuals who have a vested interest in helping you improve your program as well as offering the opportunity for improving and continuing department relationships with program graduates. However, without an easily accessible and up-to-date directory of alumni, they can be difficult to locate. It also takes time to develop an effective survey and ensure an acceptable response rate. Institutional Data Description: A variety of departmental and student data are routinely collected at the university level. These data can enhance and elaborate on data you collect in the department. Institutional data can tell you whether the program is growing, what the grade point average is for majors in the program, and what the retention rate is for your students. Strengths and Weaknesses: Institutional data are generally easily accessible and readily available .. Student and departmental data are collected on a systematic and cyclical schedule that can offer you both current and longitudinal information. On the other hand, these data sets are generally large and may be difficult to sort through, particularly for those individuals who are not used to working through large databases. The data may be less useful to specific departments or programs because the information collected is very often general (age, gender, race, etc.) and may not directly relate to program goals and objectives. Transcript Analysis Description: Transcript analysis involves using data from student databases to explore course-taking or grade patterns of students. This tool can give you a picture of students at a certain point in their academic careers, show you what classes students took and in what order, and identify patterns in student grades. In sum, transcript 211 analysis gives you a more complete picture of students' actual curricular experiences. Specific information can be drawn from transcripts to help answer research questions, and course pattern sequences can be examined to see if there is a coherence to the order of courses taken. Strengths and Weaknesses: Transcript analysis is an unobtrusive method for data collection using an existing student database. This information can be linked to other variables such as sex or major, or used to measure outcomes. It is important to keep in mind, however, that course patterns may be influenced by other variables in students' lives that don't show up on their transcripts. Also, solutions that arise from results of the analysis may not be practical or easily implemented. It is critical to have specific questions whose answers can lead to realistic change before conducting the analysis. 5.4 Typology and Levels of Assessment Item : Assessment can be either formal or informal depending upon the level and nature of activities designed to assess students' achievement. The different types and levels of assessment are: Direct method "require students to display their knowledge and skills as they respond to the instrument itself. Objective tests, essays, presentations, and classroom assignments all meet this criterion Indirect methods such as surveys and interviews ask students to reflect on their learning rather than to demonstrate it" (Palomba and Banta, 1999, pp. 11-12). Qualitative measures "rely on descriptions rather than statistical interpretation. The different types of Qualitative Assessment Techniques are - ethnographic studies - participant observations - open-ended questions on surveys and interviews - writing sample - exit interviews - formal recitals Quantitative measures assess teaching and learning by collecting numbers" and analyzing numeric data using statistical techniques. The different types of Quantitative Assessment Techniques are- -GPA -primary trait analysis scores - exam scores

212 5.5 Assessment of Diverse Learners. Examples of Learning Needs to be Assessment Learning Context Nature of Learner Assessed Techniques Self-reports classroom assessment alumni employers Perceptions about: focus groups interviews enrolled students campus climate phone faculty graduating perceived learning surveys/interviews students entering evaluate processes reflective essays students off-campus value-added educational surveys (home-grown supervisors parents outcomes attitudes or standardized) staff values Achievement Tests test score analysis competitions embedded mastery and knowledge content analysis scoring questions on exams of principles, skills rubrics locally developed value-added exams oral thesis defenses oral exams, recitals standardized tests Observations case studies campus events (sports, attitudes campus observations theater) classes club climate interactions meetings faculty offices processes services fieldwork sites student student involvement services offices student learning Student Academic content analysis scoring capstone course mastery and knowledge Work rubrics products homework of principles, skills papers portfolios values processes value- presentations, added performances publications research reports term papers, theses videotapes Campus Documents course x program administrative units accuracy objectives matrix departments programs cohesion/consistency course assignment x student services offices efficiency structure for program objectives course syllabi, etc. promoting objectives matrix content analysis student transcripts processes analysis of forms Examples of Assessment Tool Who or What is What Can Be Assessment Analyzed? Assessed? Approaches Available Data

213 Self-reports classroom assessment alumni employers Perceptions about: focus groups interviews enrolled students campus climate phone faculty graduating perceived learning surveys/interviews students entering evaluate processes reflective essays students off-campus value-added educational surveys (home-grown supervisors parents outcomes attitudes or standardized) staff values Achievement Tests test score analysis competitions embedded mastery and knowledge content analysis scoring questions on exams of principles, skills rubrics locally developed value-added exams oral thesis defenses oral exams, recitals standardized tests Observations case studies campus events (sports, attitudes campus observations theater) classes club climate interactions meetings faculty offices processes services fieldwork sites student student involvement services offices student learning Student Academic content analysis scoring capstone course mastery and knowledge Work rubrics products homework of principles, skills papers values processes value- portfoli.presentations, added performances publications research reports term papers, theses videotapes Campus Documents course x program administrative units accuracy objectives matrix departments programs cohesion/consistency course assignment x student services offices efficiency structure for program objectives course syllabi, etc. promoting objectives matrix content analysis student transcripts processes analysis of forms

5.6 Analysis, Reporting, Interpretation, Documentation, Feedback and Pedagogic Decisions The American Association of Higher Education (AAHE) asserts in its "Nine Principles of Good Practice for Assessing Student Learning" (1992) that ...

214 ... Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about. An assessment plan's value to the department lies in the evidence it offers about overall department or program strengths and weaknesses, and in the evidence it provides for change (Wright, 1991). The key factors in attaining the real value of all your work is to make the most out of the information you collect through appropriate analysis and interpretation.

5.5.1. Best Ways to Analyze, Report, Interpret and Document Assessment Information are: In its faculty handbook on program assessment, the University of California at Chico (1998) recommends:

- Presenting data in relation to identified goals and objectives
- Selecting and using appropriate procedures for data analysis
- Using qualitative and quantitative methods to present a well-balanced picture of the program
- Keeping in mind the audiences who will access and use the data, and varying your analysis and reporting procedures according to the identified audience
- Preparing written statements that identify and elaborate on the pros and cons of the academic program
- Developing recommendations based on analysis of data, and using identified goals as a framework within which to accomplish these changes

Also consider the extent to which your findings can help you answer the following questions :

- What do the data say about your students' mastery of subject matter, of research skills, or of writing and speaking?
- What do the data say about your students' preparation for taking the next step in their careers?
- Are there areas where your students are outstanding? Are they consistently weak in some respects?

215 • Are graduates of your program getting good jobs, accepted into reputable graduate school. 5.5.2 Feedback - The Feedback approach to assessment practices addresses the following issues: 1. Did you have a positive or negative experience implementing your assessment methods? 2. What were students' reactions to the assessment process? 3. What did you find especially effective in the assessment process? 4. What did you particularly dislike about the process? 5. What would you change about the process? Why? 6. What will you do again? Why? 5.5.3 Pedagogic Decisions: In designing Pedagogic Decisions consider and include the following Learning Processes To what learning experiences and strategies will students be exposed to achieve these learning objectives? Assessment Methods By what measure(s) will you know that students are meeting learning objectives? From whom, and at what points, will you gather data? How will the information be collected? Assessment Processes When will you conduct the assessment? Who will be responsible for each component? What is the overall timeline for the assessment plan? Status, Outcomes and What did you find out? How do the data support these Resultsfindings? Decisions, Plans and Based on your findings, what do you plan to do now? Recommendations

216 5.7 School Exam: Examination according to H.C. Barnard and J.A. Lauwreys is "A test of knowledge acquired ,or more generally a means of intellectual capacity or ability There are three types of examination 1) a set of questions to check a pupil's progress on the result of a course of instruction; 2) A mean of qualifying candidates for a certificate or degree in which they are required to attain a certain standard;3)a competitive test on the strength of which a scholarship or award is made to the successful candidate. Examination may be conducted by means of written answer to set questions or by local methods. " School Exams is used to connote the process of estimating learning on the basis of a few questions posed to learners under specified conditions. Specifications in respect of time, duration, mode of questioning. The two landmark in recent school scenario that have exerted potential influence in school system are NCF 2005 and RTE 2009. 5.7.1 Salient Features of NCF 2005. The NCF 2005 emphasizes a National System of Education with special focus on: 1) Values enshrined in the Constitution of India. 2) Reduction of Curriculum Load. 3) Ensuring quality Education For All(EFA) 4) Systemic Changes 4) Common School System The NCF 2005 has recommended five guiding principles for curricular development: a) Connecting Knowledge to life outside school b) Ensuring that learning shifts from rote method. c) Enriching curriculum so that it goes beyond text books. d) Making examination more flexible and integrating them with classroom life. e) Nurturing an overriding identity informed by caring concerns within the democratic polity of the country.

217 Apart from these five guiding principles ,NCF 2005 also emphasizes Learning without Burden. It emphasizes on learning and construction of knowledge. • Correspondence between learner development and learning is intrinsic to curricular practices. • Knowledge is different from information • Organising learning experiences for construction of knowledge and creativity • Connecting knowledge across disciplinary boundaries for insightful construction of knowledge. • Learning experiences for developing critical perspectives on social issues. • Plurality of textbooks and other material incorporating local knowledge mediated through constitutional values and principles. 5.7.2

RTE ACT 2009

The Right of Children to Free and Compulsory Education Act (2009)

or Right to Education Act (RTE) enacted on 4th August 2009, describes the modalities of the importance of free and compulsory education for children between 6 and 14 in India under Article 21A of the Indian Constitution.

The important features are: v Free and Compulsory Education -It is obligatory for the Government to provide free and compulsory elementary education up to class 8th to each and every children. The free education includes the provision of textbooks, uniforms, writing materials, special materials for children with disabilities. v Minimum Standards for Teaching Learning-RTE Act lays down norms and standards relating to Pupil - Teacher Ratios, classrooms, separate toilets for girls, drinking water facility.number of school-working days, working hours of teachers etc. • Admission for all-The Act mandates that every student irrespective of their abilities and disabilities be admitted to school to enable them to come up to age appropriate learning level. v Quantity and Quality of Teachers-It provides for rational deployment of teachers

218 by ensuring the specified Pupil-Teacher Ratio is maintained ,appointment of trained teachers and also ensures that there is no urban-rural imbalance . v No Discrimination and Harassment -The Act prohibits physical punishment and mental harassment, discrimination based on gender, religion, caste, class etc. v All Round Development-RTE emphasizes building child's knowledge ,human potential and talent.. v No Detention-RTE Act mandates that no child can be held back or expelled from school until class 8th. It mandates Continuous Comprehensive Evaluation(CCE) method of assessment. v Justiciable-The RTE Act is justiciable and is backed by a Grievance Redressal Mechanism that gives opportunity to people to take action against non compliance of various provisions of the act. v Establishment of School Management Committees (SMC) to strengthen participatory democracy and governance in elementary education. v Reservation -According to this Act all private schools to reserve 25 percent of the seats for children belonging to socially disadvantaged, economically weak to ensure better inclusion. 5.8.1 Unit End Exercises. 2) Long Answer Type i) Explain the concept of Assessment with special reference to teaching learning situation. ii) Write down the salient features ofNCF 2005. 2) Short Answer Type. i) Differentiate between Portfolio And Open Book Assessment. ii) Enlist four types of assessment mentioning the category of learners 3) Objective Type. i) EF A stands for

219 ii) ----- is an assessment strategy suited for higher education learners. iii) RTE 2009 was enacted under ----- of the Constitution. 5.8.2 Check Your Progress. 1) Name two innovative strategies of Assessment.

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..... 2) Enumerate two important clauses of RTE 2009

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..... 3) Identify two guiding principles ofNCF200S.

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..... 4) State two pedagogic skills that can be assessed.

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220 Answers To Check Your Progress. 1) Transcript Analysis, 2) Free and Compulsory Education, No Detention 3) Connectin g Knowledge to life outside school, Ensuring that learning shifts from rote method 4) Status, Outcome and results, Decisions, plans and recommendations 5.9. References Armstrong, M. A. (1989). The Delphi technique. Princeton Economic Institute. hll:/ /www.pei-intl.com/Research/MARKETS/DELPHI.HTM Assessment in Practice. San Francisco: Jossey-Bass. Southern Illinois University website: www.siu.edu/~deder/assess Converse, J. M. & Presser, S. (1986). Survey questions: Handcrafting the standardized questionnaire. Newbury Park: SAGE Publications.Dyke, J. V., & Williams, G. W. (1996). Involving graduates and employers inassessment ofa technology program. In Banta. T. W., Lund, J. P., Black, K. E., &Oblander, F. W. (eds.) Julian, F. D. (1996). The capstone course as an outcomes test for majors. Banta, Morgan, D. L., & Krueger, R. A. (1997). Thefocus group kit (Vols. 1-6).Thousand Oaks, CA: SAGE Publications OAPA Handbook PROGRAM-Based Review and Assessment· UMass Amherst 43 T. W., Lund, J. P., Black, K. E., & Oblander, F. W. (Eds.). In Assessment in practice, pp. 79-81. San Francisco: Jossey- Bass Publ ishcrs. Upcraft, M. L., Gardner, J. N., & Associates. (1989). The freshman year experience: Helping students survive and succeed in college. San Francisco: Jossey-Bass Publishers

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1 B. Ed. Spl. Ed. (M. R. / H. I. / V. I)- ODL Programme AREA - A A - 4 (PART-I) : PEDAGOGY OF TEACHING SCIENCE A COLLABORATIVE PROGRAMME OF NETAJI SUBHAS OPEN UNIVERSITY AND REHABILITATION COUNCIL OF INDIA Chairman Prof. Subha Sankar Sarkar, Vice Chancellor, Netaji Subhas Open University, Kolkata-64 Convenor Prof. Atindranath Dey, Director, School of Education, Netaji Subhas Open University, Kolkata-64 Course Writers Unit - 1 Sub-Unit-1.1 Dr. Papiya Upadhyay Sub-Unit-1.2 Dr. Papiya Upadhyay Sub-Unit-1.3 Shri. Palash Das Sub-Unit-1.4 Shri. Palash Das Sub-Unit-1.5 Dr. Papiya Upadhyay Unit - 2 Sub-Unit-2.1 Shri. Palash Das Sub-Unit-2.2 Dr. Papiya Upadhyay Sub-Unit-2.3 Shri. Palash Das Sub-Unit-2.4 Shri. Palash Das Sub-Unit-2.5 Dr. Papiya Upadhyay Unit - 3 Sub-Unit-1 to 5 Dr. Papiya Upadhyay Unit - 4 Sub-Unit-1 to 5 Dr. Papiya Upadhyay Unit - 5 Sub-Unit-5.1 Shri. Palash Das Sub-Unit-5.2 Shri. Palash Das Sub-Unit-5.3 Shri. Palash Das Sub-Unit-5.4 Shri. Palash Das Sub-Unit-5.5 Dr. Papiya Upadhyay Editor Dr. Bijan Sarkar Processing General and Format Editing Dr. Papiya Upadhyay & Ms. Swapna Deb In-house Processing In-charge Ms. Swapna Deb & Mr. Samir Chakrabarti The Self Instructional Material (SIM) is prepared keeping conformity with the B.Ed.Spl. Edn.(MR/Hi/VI) Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session. AREA - A CROSS DISABILITY AND INCLUSION COURSE CODE - A4 (PART-I) PEDAGOGY OF TEACHING SCIENCE All rights reserved. No part of this work can be reproduced in any form without the written permission from the NSOU authorities. Sri Mohan Kumar Chattopadhyay Registrar

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA -

A A-4 (PART-I) : PEDAGOGY OF TEACHING SCIENCE

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7 Netaji Subhas Open University AREA -

A A-4 (PART-I) : PEDAGOGY OF TEACHING SCIENCE A-4 (Part-I) Pedagogy of Teaching Science UNIT - 1 : NATURE

AND SIGNIFICANCE OF SCIENCE 9-35 UNIT - 2 : PLANNING FOR INSTRUCTION 36-65 UNIT - 3 : APPROACHES AND METHODS OF TEACHING SCIENCE 66-110 UNIT - 4 :

LEARNING RESOURCES WITH REFERENCE TO CHILDREN WITH DISABILITIES FOR TEACHING SCIENCE 111-139 UNIT - 5 : EVALUATION 140-162

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9 Unit - 1 Nature & Significance of Science Structure : 1.1 Introduction 1.2 Objectives 1.3 Nature, Scope, Importance & Value of Science 1.4 Science as an integrated area of study 1.5 Science & Modern Indian Society : Relationship of Science & Society 1.6 Impact of Science with Special reference to issues related with environment, industrialization & Disarmament 1.7 Role of Science for sustainable Development 1.8 Let us sum up 1.9 Check Your Progress 1.10 References 1.1 Introduction Nature implies two things, one is the natural world & the other is character of an individual or a thing. It is the usual way in a person's behavior, i.e, a part of their character & the basic qualities of a thing. It is this meaning of nature with which we are concerned when we deal with the nature of science. When we talk about the nature of all Sciences, we are concerned with their characteristic features. To understand the nature of Sciences, we have to see how Science works. Science is a particular way of understanding the natural world. It extends the intrinsic curiosity with which humans are born. The world in which we live is by and large the same as it has been always. It is the world of sun, light and darkness; the world of earth, land, sea plants and animals; the world of seasons, climate; the world of being born, growing and dying. The world also has the simplest of tools and the most complicated of equipments. There are infinite things and events like these which are governed by science. Human beings have learnt how to live in this world by adjusting to the nature. They explore, understand and change the surroundings according to their needs and requirements. This process of diligently observing, describing, exploring and using the world is science. Children often try to find answers to their questions which begin with "what is it?". Science as a process involves various stages of an activity, establishing steps for gathering information and then retaining it. Two types of skills are required through the process of science-basic skills and special skills. Through these skills, students learn about nature and adjust to it according to their needs and requirements. Thus, a systematic process of learning takes place. Science is an accumulated and systematized learning in general usage restricted to natural phenomenon.

It is an endless series of empirical observations which result in the formation of concepts and theories subject to modification in the light of further empirical observations. Hence Science is both a body of knowledge and the process of acquiring it. Learners should be able to appreciate the contribution of science in the progress of civilization. The appreciation must come as an outcome of science teaching and the teacher must make the learners conscious of the benefits bestowed by science for the comforts of the mankind. The adventures of scientists in exploring the truth should be told by the teachers. The objectives of teaching science have been changing from time to time. The rapid progress of science and technology in recent years and the stress from mere knowledge of facts was shifted to the development of concepts, abilities attitudes, skills, appreciation etc. Since education is a dynamic process, the whole life in the school constitutes the curriculum that plays an important role in the evolution of balanced personality of the child. There is an increasing trend in science teaching in some developed countries to emphasize the social implications of science. In addition to being an integral part of general Education, whole science programme at secondary stage should prepare the learners for some vocation and specialization in the individual subjects. So, a different type of knowledge and training should be given to those learners who intend to go for higher studies or want to enter some profession. This should form a basis for further pursuit in the field of science. 1.2 Objectives Upon completion the learners will be able to- 1) gain an in depth knowledge of nature, scope, importance and value of science 2) analyse science as an integrated area of study 3) relate science and modern Indian society 4) explain the impact of science on different socio-cultural issues 5) comprehend the role of science pertaining to sustainable development 1.3 Nature, Scope, Importance & Value of Science Definition of Science : In the words of J.W.N. Sullivan, "Science is the activity where truthfulness is obviously an essential condition for success. Its success in fact is measured by its truthfulness. Henri Poincare explains, "Science is built of facts as a house is built of stones; but an accumulation of facts is no more a science than a heap of stones." In another way it could be said that science is more a verb than it is a noun. Science is an accumulated & systematized learning in general usage restricted to natural phenomenon. The progress of Science is marked not only by an accumulation of fact, but by the emergence of Scientific method & of the Scientific attitude. Science is a cumulative & endless series of empirical observations which result in the formation of concepts & theories,

with both concepts & theories being subjects to modification in the light of further empirical observation. Science is both a body of knowledge & the process of acquiring it.

The Structure of Science : It consists of the following— Facts are the basis of all knowledge. They are said to be grass-roots for any theory or law. The whole process of the Scientific enterprise is continuously replenished by new facts & discoveries. **Concepts :** is a generalized idea suggested to the individual by object, symbol or situation. It is an understanding of almost undefinable something. **Generalization :** are very helpful in deriving useful conclusions regarding the scientific facts. Actually, the facts, concepts & generalizations are inter- related & interdependent. **Theory :** is based on facts, it is precise & clear & it must be grounded in empirical data. It follows the law of parsimony & open to interpretation & verification. It has applicability & a meaningful structure as well.

12 How : A scientific law may be defined as a factual statement of what always happens in certain circumstances. **Nature of Science :** learning of science is a lengthy & continuous process Knowledge acquired through this is referred to as product. The following are the criteria of nature of Science. **Science is a process :** A process involves planning various stages of an activity, establishing steps for gathering information & then retaining it. In Science, gathering information, thinking, solving problems, etc. are called the 'processes of Science.' Two types of skills are acquired through this—basic skills & special skills. **Basic Skills** **Observation :** It is not merely 'looking' at or 'seeing' something. Through observation they come to know their environment. **Classification :** What ever is observed by the students is grouped on the basis of similarities. **Communication :** Students observe & learn many things. This learning is transmitted to others through some means of communication. Communicating the knowledge could be in the form of a name, label, sign, symbol etc. **Measurement :** It is recording the precise & accurate observation. **Estimation :** are made by the learners whenever accuracy is not required. **Predictions :** This skill enables to know the behaviour of a particular object or phenomenon before it happens. **Inferences :** On the basis of above mentioned skills, ability to draw inferred develops, inferences can be made about any process or phenomenon. **Special Skills :** Along with basic skills, certain special skills are needed for an experiment or to solve any problem. These skills are as under— **Identification & control of variables :** There are dependent independent & extraneous variables in any experimental set up. So, identification & control of these variables, (excepting the constants) are an important parameters. **Hypothesis formation :** Science students acquire a basic skill of prediction. If the predictions are tested, they are called hypothesis. They are the guess about the result of an experiment. **13 Experimentations :** Experiments are conducted to test a hypothesis. The effects of various variables are studied here. **Tabulation :** Data collected in the experiments is tabulated in an organized manner. **Interpretation :** The analysis of the tabulated data leads to the interpretations & conclusion. Through these basic & Special skills, students learn about nature & adjust to it according to their needs & requirements. Thus a systematic process of learning takes place. **Science as a product :** The information that is acquired through the process of sciences or the body of knowledge formed is called 'product of science'. Knowledge of any form consists of development of facts, concepts, principles, theory & ultimately law. **Importance & values of Science :** Science helps to develop a scientific temper, scientific outlook & a Scientific attitude. There are certain values (Fig 2) attached to science which are as follows : **Intellectual value :**

The great value of science is that it has introduced us to new ways of thinking & reasoning.

The chief part played by Science in helping to develop consciousness of man is to be found in the new thoughts that it has made us think. Science helps us to understand, evaluate & solve the problems of life. It enables the students to become more logical, develop reasoning ability & creativity. Students get various opportunities to develop the power of observation, reasoning, thinking, analysis, synthesis and evaluation. **Utilitarian value :** of Science need not be emphasised. Science has entered in our life & daily activities to such an extent that our existence would become impossible without it. Its achievements in almost all spheres are marvellous science has wrested from nature almost all the hidden treasures. If we look around ourselves & will see that somehow or the other connected with sciences. No subject can claim to be as utilitarian as science. Modern age is the age of scientific inventions & we are surrounded with electrical gadgets, everything is guided by Science. **Vocational Value :** In today's world, many Science based interdisciplinary vocations have come up, eg, poultry, dairy, agriculture etc. knowledge of science is needed for research work as well. Amongst all, mobile repair & cyber cafe are the latest vocations which are based on science & technology.

14 Disciplinary value : Science promoter team work, healthy exchange of thoughts, spirit of enquiry & a balanced judgement. Science promotes organized behaviour & systematisation in every work. Study of Science enables an individual to live a confident & disciplined life. Moral & aesthetic value : Science inculcates moral & aesthetic values in the students. A highly moral person is honest, truthful & has an integrated personality. By studying Science, qualities of punctuality, patience, Self-control, self respect & determination are developed in students, making them highly moral individuals. In the words

of Keats, "Truth is Beauty". In nature everywhere we come across what Einstein calls 'Pre-established harmonies', which is beautiful & the discovery

of such harmonies is the concern of Science. So, again there is a compromise between the artist & the man of Science or in other words science & art are basically the same. Social & cultural value :

Science has played an important role in determining the culture & civilization of a country from time to time. It has affected

our way of thinking & way of living. The effect of Science is

multifarious. It has a direct influence in dispelling many traditional beliefs & the adoption of others suggested by the success of scientific method.

As a result of which the social organizations have been amply changed & hence there is corresponding political changes.

Science has its own literatures which makes an appeal is no way less powerful & elevating than the humanistic studies.

The cultural & social aspect of science should, be fully appreciated by science students. Indian Education Commission, 1968, documents, "If science is to

be pursued with full vigour & zest & is to become a mighty force in the Indian renaissance, it must draw its 'nourishment' from our cultural & spiritual heritage & not

by pass

it. Science must become an integral part of our cultural & spiritual heritage."

Psychological Value :

The teaching of Science is based on sound psychological footing. The principle of activity is the main basis of teaching of Science & satisfies the instincts of curiosity, creativeness, self-assertion, self-expression etc. of the pupils.

It is quite clear that science has a subject which is closely connected with our daily life, is justified to be included in the curriculum. Science is the result of an intense struggle of human intellect & has wrested from nature not only her secrets but processes also which underline them. It has emerged as almost a decisive force & its role in education needs to be adequately understood.

15 Training in the Scientific method : This comprises of

the following steps : Making an accurate survey of the problem. Setting up the method of attacking the problem.

Collecting data regarding the problem. Drawing conclusions from the collected data.

It is

due to this scientific method of attacking a problem that has achieved wonders in all fields of human activity.

Development of Scientific attitudes : This value is monopolised involve critical observation, open-mindedness, suspended judgement, free from superstition & false belief etc., The attitude once developed in the student proves useful in later life of the child. Fig : 1—Values of Science

1.4 Science as an integrated area of study Background Science

Education in India has suffered from an inherited separation of the study of natural worlds (material & biotic) & the human worlds. As a result, natural Intellectual values Scientific method Social & cultural values Psycho- logical value

Utilitarian value Moral & aesthetic value disciplinary value Vocational values Values of Science Scienti- fication attitudes

16 sciences and humanities & social sciences. Insulated spaces have developed in India as two insulated spaces, each with its exclusive and narrow focus. However our experiences of the 'real world' show us repeatedly that the real world is

never split into two restricted worlds - the natural and the human; these two worlds are far from separate; they are interconnected, inter-related and often flows into each other; such that natural science studies are not just studies of

natural phenomena; they have to them large elements of the human world. Hence, at the level of knowledge production what we need is an integrated approach - integrating objects of enquiry and methodologies emanating from the hitherto

separate study of both worlds. Given the separation and the divide, the Integrated Science Education needs an integrated approach connecting not just natural and social sciences but also:- (i) Extant disciplines within the natural/social

sciences, (ii) Material, biotic and human worlds, (iii) Experiences and knowledge (iv) Service delivery and the recipient (v)

Technology and technology user (vi) Interests of stakeholders. Fig. - 2 : Concept of Integrated Science

17 Historical basis of Integration efforts in India & abroad It is not that in India, we have not had anxieties about this separation. Our best attempts at attending to this separation - the setting up of Humanities and Social Science (HSS) departments, in a largely techno-scientific atmosphere in the IITs - have not solved the problem of the inherited separation. Instead, science students have found HSS courses to be an unnecessary and alien addition to their already demanding science-technology courses. In this model of integration HSS departments are in effect never integrated within the science- technology institution. Here social science and humanities questions and methods are seen not as offering anything fundamental to science but merely imparting some version of value-based education to science students. The other model of integration is one where primarily three social science subjects, namely philosophy, sociology and history emerge as gatekeepers or final arbiters of what science is doing, through philosophy of science, sociology of scientific knowledge and history of science. Here social science subjects emerge as critiques of science, of scientific knowledge production and of laboratory life. Social sciences in this case seem to be judgemental in establishing its credibility. The 20th century in the USA has witnessed a continuous discussion about integrated Science education. Intertwined with this discussion has been a discussion of progressive education based on Dewey's ideas. The demand for integrated education reached its climax in 1970 when the U.S. Advisory Committee for Science Education of the National Science Foundation recommended a curriculum that related Science and Technology to human and social affairs. During the same time period, two large international organisations started a continuous mapping and development of integrated Science education. One of these organisations is UNESCO, which publishes the report series 'New trends in integrated Science teaching' and the other is CASE, the International Council of Associations for Science Education, an association of teacher organisations with the goal of integrating Science education. Science Education : Integration, content & structure: The Science education community expresses different views about how Science education should be organised. The relative merits of integrated versus subject- specific Science in compulsory schools are disputed among teachers, scientists and teacher educators. Fensham gives a comprehensive description of a problem area in Science education. First, Fensham points to the social changes of the 1960's that gave Science new groups of learners, with all the difficulties entailed. Arbitrarily, the academic disciplines have developed over the years in response to the expansion of knowledge. However, this nature of disciplines is not a justification for the destruction or elimination of disciplinary boundaries. Every discipline possesses characteristics that are clearly unique to that discipline. Integrated and thematic curriculum/ instructional approaches ignore the conceptual, procedural, and epistemological differences that exist between the various areas of mathematics and the sciences. For example, problem solving is quite different among the various sciences let alone across mathematics and science in general. Within an interdisciplinary approach, the unique and valuable aspects of the various academic disciplines can be maintained while still developing students' understanding of interconnectedness. Fig-3 : Inter-relationship of Science subject Inter-relatedness of science & other subjects: It is always said that science cannot be taught in isolation. All the branches of science are inter dependent upon each other & there are a number of facts & principles which are common to various science subjects. As a result of this new subjects like

19 physical chemistry, Geo-physics, Bio- Physics, Bio-Chemistry, Soil- Chemistry etc have been introduced. One of the most important factors that is responsible for the ineffectiveness in teaching in teaching science is the lob-sided specialization of teachers. For eg, a teacher while teaching the sense organs say, eye, should be able to make a parallelism with a camera, which the students have learnt in Physics. In Basic Scheme of education, inter-relationship of subjects occupies the pivotal position & it is not the craft that makes the school basic but it is this relationship that makes it really basic. For over all development of the students, various subjects are included in the curriculum. These subjects are selected on the basis of decision taken after proper consideration and analysis. Usually those subjects are included in the curriculum that are complementary to each other, as the main objective of all of them is to achieve a given set of objective of education that is over all development of the students. Science is quite a complex and a vast kind of subject, because of which the task of correlating it with other subjects of curriculum seems to be quite an easy task. Deliberate effort should be made by the science teacher to bring about co-relation in between the science and other subjects of the curriculum, that are being imparted to the students. By the help of this, students will find the opportunity to relate the knowledge which they have already gained, with the knowledge which they are gaining. This kind of relation activity leads to development of interest among the students. While imparting knowledge of one subject, teacher gets much help in communicating her ideas if she makes use of examples or reference of concepts covered by other subjects. Although it is not very easy to co-relate various subjects with the complex subject like science, but it is not impossible. This can be done in the following manner: - Science and Language: Since science is a practical subject, it is very important for the learners to be able to express their views and ideas in clear and attractive form. For this purpose, it is necessary that they should have thorough knowledge of language which they use. Student who does not have good control over the language cannot express his views

20 and various scientific laws and principles in front or others and especially in front of teacher. Today, as a result of adoption of uniform technical terms and symbols, vocabulary of different languages have been enriched to considerable extent. In making students able to give answers of various scientific queries, in effective manner, either in written form or orally, science teacher and language teacher should take up a joint responsibility on their shoulders. To co-relate science with language subjects, students can be asked to write essays on some scientific topic. If student make any kind of grammatical mistake, then the teacher can ask him to make correction in his language. Likewise, language teacher can give the task of writing about some scientific happening in the assignment designed for them. In this manner, he can correlate science with the language. Science with Mathematics : A large number of scientific principles and rules are represented in the form of mathematical expressions, for which it is very necessary for the student or person intending to get advanced study of science subjects to have sound mathematical basis. Without making use of mathematical expressions and rules, it is not possible for any teacher to conduct science teaching in effective manner. The significance of mathematics in the science can be proved by the views of the experts that mathematics has given sound footing to the scientific laws and principles. Before beginning any topic in the science, it is essential for the teacher to make sure that mathematical basis of all the students is strong and vast. Probably, mathematics is considered to be sole language of science because of which real understanding of science is considered to be impossible without adequate knowledge of mathematics. Some of the useful mathematical tools which are generally used in the science teaching are Algebraic equations, Geometrical formulas, Graphs etc. Correlation existing in between one of the subject of science and mathematics can be understood. Astrology is an advanced branch of science in which it is predicted or enumerated that which planet revolves at which speed and when it will get appeared to the people of earth.

21 This is quite complex area, and no one can enter into this complex area without having a sound mathematical basis. Likewise, mathematical rules and theories are also applied to considerable extent in physics, in which no one can intend to take even single step without relying on the subject of mathematics. Thus, it can be said that science teacher should make all efforts by which she can establish co-relation in between the subjects of science and mathematics. It will not be improper in any way to consider both of these subjects as complementary to each other, which can be studied simultaneously or at the same time. Hence, it can be said that without making use of examples from mathematics, it is not possible for a science teacher to explain various scientific principles and concepts properly to the students. To make it possible, sincere and deliberate efforts should be made by science as well as mathematics teacher to co-relate both the subjects in accordance with the syllabus. Science and History : It sounds quite amazing that some kind of correlation can exist in between the science and history as earlier subject is practical in nature while nature of later subject is purely theoretical. However, it is possible to co-relate these subjects with each other. While mentioning about the various scientific discoveries taken place in the earlier periods, teacher can relate with the major events of the world history. Students should be told about that what was the situation of science at the time of various kings or rulers. Teacher should narrate to the incidences which inspired various scientists to find out the medical remedies of various diseases. Not only this, the function of co-relating science with history can be done by mentioning the kind of standard of living people used to experience at different parts of the human history. With such knowledge, they will become aware of the scientific concepts like sanitation and healthy living. Science and Geography : Geography is the subject in which various concepts relating to earth on which we live are dealt with. Everything existing on earth, on different planets of the universe are also main subjects of geography. Which kind of crop should be sown in which kind of soils, how many kinds of rocks are found on the earth are some

22 of the main topics which are covered by Geography. One will be surprise by this fact as these topics are also covered by the subject of Science. In science, various concepts relating to the atmosphere and earth in which living and non-living beings exist are made. For this reason, temperature, wind directions and measurement of rainfall are conducted in the subject of science by making use of various apparatus. Results obtained by science in terms of climate and the manner in which it affect the human beings and earth are being interpreted by subject of Geography. The manner in which it is mentioned by the geography that how soil gets produced through crushing process of rocks, it makes the subject a special branch of science. Therefore, geography lessons on these subjects will be best understood and appreciated if they have been discussed in length by the science teacher. There are various topics which are of common interest for geographers and scientists. Thus, it can be said that both of these subjects are complementary to each other. Both of these subjects are very near to each other, thus science teacher will not find any kind of problem in relating science with the subject of geography. Science and Social Studies : If one explores the history of development of human society, he will find various incidences in which human got victory over forces of nature, by which he got control over the land, sky and seas. As said that an important impact of science teaching is that outlook and perspective of students or people become scientific in nature, as a result of which, various kinds of changes take place in their way of living. Scientific thinking affects the standard of living of human beings to considerable extent, as through such information, outlook and perspective of human beings become more wide and they can free themselves successfully from the clutches of superstitions and false beliefs. Various evidences can be found in our life which can show the significant way in which life style of human beings have got affected by inclusion of scientific developments in their life. Today, we can find various kinds of machines for performing different functions, about which primitive men even did not think. As a result of these machines, our life has become very easy and smooth and now we can accomplish complex functions within short period of time, which were considered to be very time consuming. Not only this, various research works has led

23 to development of various medicines with the help of which physicians have found the remedies of various diseases, which were once considered to be incurable and were responsible for bringing about heavy loss of life in earlier times. Not only this, earlier a large number of manpower was being engaged in the agricultural sector, but now we are moving towards industrialization era, as a result of which we are ready to participate in the competition taking place in global market. We have third highest number of professionals engaged in different areas of the world. Now a large number of students intend to get education from foreign universities, but they want to serve their own nation and want to play effective role in bringing about development of the nation with greater pace. Earlier people were not provided with the developments taking place in the scientific area, as a result of which they used to accept all the orders imposed on them. But now, in a scientific advanced time, people have learned that being human beings, they have certain rights, and if any attack is being made on their rights, they begin to agitate. This can be the possible reason that why women of our nation has attained those rights which were not permitted to them in the earlier time. Another change which has taken place in our society through such reasoning ability is the manner in which people belonging to minority section of the society are asking or reservations in various spheres of the life. They are asking about reservations in educational institutions and even in parliament of the nation. Thus it can be said that science and social sciences are two subjects which can be co-related with each other without much problem. A science teacher can correlate science with social studies on different occasions by providing suitable relations of relevance. Science and Civics : The main objective of imparting information of both the subjects is to create good and useful citizens for the nation, thus it is possible to correlate both of these subjects with each other. Through science, students become able to understand the utility of scientific inventions in their life, by which they become more responsible. They begin to realise a sense of responsibility, which help them in playing important role in development of the nation. Through information of scientific facts, students get to know about various kinds of diseases and the role which they can

24 play in creating a healthy and clean atmosphere around them. Through this kind of information, they become more responsible citizens and play an important role in creating an ideal civic life in the society and nation as a whole. Science and Art: It is considered by the majority of people that it is science who has contributed a great deal in developing the field of art, but this is not true, as both of these subjects or areas has played important roles in enriching each other. All types of arts have got enriched as a result of scientific developments, but it is not possible for a science teacher to impart information relating to various scientific facts and principles without having thorough control over the art. As known that science is a practical subject, as a result of which, science teacher is required to draw various kinds of diagrams, models and charts, which cannot be performed unless he does not have sound artistic skills. Not only this, it is equally important for an artist to have thorough knowledge of scientific principles, as without it, he will find it difficult to keep the colour contrast of his images in attractive and controlled position. An artist should know the principles of light and shade, objects and background for drawing or keeping the colour contrast in attractive condition. Thus, it can be said that some common features are found in the subjects of science and art, because of which they can be co-related with each other effectively. Science and Music : In our nation, music has its own importance as different kinds of songs are found in different parts of the nation. There are songs and theories of music in different languages. Various musical stars got born in our nation, but the number of persons engaged in musical area has diminished to considerable extent as now people consider it as wastage of time and efforts. To encourage people and especially students to get involve themselves in professions having their roots in music, this has been accepted as an independent subject in various schools and institutions and it forms an integral part of school curriculum. For the students of music, knowledge of resonance, vibration systems in strings and air columns is very necessary and important. To make improvements in their voice and manner of singing, various scientific equipments are being used today, which could not come into being without scientific

25 developments. Thus, it is only through the utilization of scientific developments in the real life that led to the development of various apparatuses used in the musical field. Science teacher can relate subject of science with the music by narrating the students that what led to development of various equipments used by the musicians and on which principles do they operate or function. Science and Craft Works : Some people will find it quite unsound to relate science and craft works with each other, but various kinds of improvements can be brought about in ability of students to understand various scientific principles and facts. During craft periods, students can be provided with the task of designing various pieces of scientific apparatuses and equipments. Through such step, scientific interest can be developed in the students, which will help in arousing the interest of students in various scientific incidences. An urge will get developed in them to see or observe the equipments or apparatuses designed by them in reality, by which they will be motivated to get more and more information regarding the research functions conducted in the scientific field through various means and sources. Thus, it can be said that if a science teacher can relate science with other subjects of the curriculum, then more justifiable and satisfactory results will be obtained. 1.5 Science and Modern Indian Society : Relationship of Science and Society Science : Accordingly to J.W.N. Sullivan "Science is the activity where truthfulness is obviously an essential condition for success. Its success in fact is measured by its truthfulness." Actually there is no one definition of science which is universally accepted.

What is Science and how does it grow are the basic questions which all students of science must understand.

26

Modern Indian Society : The society in which more dramatic changes occurs, specially in the area such as Urbanization, liberalization, globalisation of the economy, the IT revolution, the affirmation of religions identities and reaffirmation of ancient world views and new political landscapes denote some of these processes. As the world's largest democracy emerges as an economic and cultural super power, there is a pressing need for a more sophisticated and renewed understanding of Indian culture and Society. So the science plays an important role for the development of Indian society. Relationship between Science and Society : Actually without science, our society would not be able to function. Science has allowed us to take control of and develop the world where we live intoday. Nobody can deny that science has rendered invaluable service to mankind in various spheres. It is due to discovery of science that we have been able to find a cure of most diseases and prevent the out break of epidemics, thereby vastly increasing life expectancy. Science gives to mankind the supreme self confidence. It has given man the assurance that instead of being a slave to his environment, he can control and modify it to suit his needs in the environment. With the help of Science we have built huge dams to supply waters through Perennial canals, manufactured fertilizers which enormously increase agriculture production, produced effective pesticides, learnt how to prevent soil erosion, introduced multiple cropping and devised other ways to improve output. Population control would still be needed if food production is to keep pace with the growth in numbers, but the Spectral progress with scientific cultivation has made possible in the field of agriculture. So thanks to the application of science to industry. The machine has not only relieved man of heavy burdensome tasks, but has also provided him with ample leisure in which he can engage himself in cultural pursuits, cultivate various kinds of hobbies and travel. It is through science that has been able to invent new sources of entertainment and education, such as cinema, radio, television and etc.

27 Democracy would have been impossible without the printing press. The modern media of mass communication is another fruitful source of education, are being spent on manufacturing weapons on mass annihilation and space exploration. The rapid increase of communication like railways, the telegraph, internet has developed by the enhancement of science progress. By the application of science we can create a rule of law which compels all organisation to submit their disputes to negotiate, mediate and arbitrate rather than settle them by strikes which paralyse national life and put the community to get inconvenience. 1.6 Impact of Science with special reference to issues related with Environment, Industrilisation and Disarmament. Impact of Science on Environment : Science has the Universal impact on different areas. By relating science education with the environment of a learner has been the prime concern of educationists. In science we learn about the environmental phenomena of both natural and man made interventions affecting the environment. The science education should be made to integrate science with learning environment. So the Science curriculum should address issues and concerns related to environment such as climate change, acid rain, growth of water eutrophication and varions types of pollution etc though teaching- learning of science at all stages. Learner will be attracted towards science when they realise its significance to society and relevance to their lives. They should be engaged to construct the knowledge of science though an interdisciplinary approach appreciating its relation and impact on the social and natural environment. The significance of Chemical Science to society can be high lighted by discussing the chemical components used in products that have altered agriculture, food, health, medicine, electronics, transportation and the natural environment. Similary importance of physical Science to different areas like agriculture, transportation, household products electronics, define communication, cugineering menufacturing and environment. To understand to relevance to home economics, one can think what happens to the electricity bill if solar cooker solar heater and

28 compact Fluorescent lamp (CFL). Activities such as use of pressure cooker and greasing the moving parts of a vehicle reduce energy loss. So the role of science education has very much impact on the environment. Impact of Science on Industrilisation : Industrialisation means the development of big equipment and application of industrial management methods to Scientific activities them selves. The industrial Revolution was not closely linked to Science at the outset, but rather was produced by craftsmen and engineers, often trained on the job. The most famous example is the steam engine, which was invented almost a century before the principles thermodynamics were understood. It is important to realise that the industrial developments depends on the special condition is that the concept of science should be properly integrated between the scientists and the laboratories into the production process. The impact of science on industrialisation also altered and extended the scientist's role in the different institution. The innovation process in the industrial development has become increasingly dependent on the findings and methodology of science. So the knowledge of science has a great impact on the industrialisation. 1.7 Role of Science for Sustainable Development Understanding of sustainable development : Role of the sciences should be to provide information to better enable formulation and selection of environment, it will be essential to enhance scientific understanding, improve long-term scientific assessments, strengthen scientific capacities in all countries and ensure that the sciences are responsive to emerging needs. Scientists are improving their understanding in areas such as climatic change, growth in rates of resource consumption, demographic trends, and environmental degradation. Changes in those and other areas need to be taken into account in working out long-term strategies for development. A first step towards improving the scientific basis for these strategies is a better understanding of land, oceans, atmosphere and their interlocking water, nutrient and biogeochemical cycles and energy flows which all form part of the Earth system. This is essential if a more accurate estimate is to be provided of the carrying capacity of the planet Earth and of its resilience under the many stresses placed upon it by human activities. The sciences can provide this understanding through increased research into the underlying

29 ecological processes and through the application of modern, effective and efficient tools that are now available, such as remote-sensing devices, robotic monitoring instruments and computing and modelling capabilities. The sciences are playing an important role in linking the fundamental significance of the Earth system as life support to appropriate strategies for development which build on its continued functioning. The sciences should continue to play an increasing role in providing for an improvement in the efficiency of resource utilization and in finding new development practices, resources, and alternatives. There is a need for the sciences constantly to reassess and promote less intensive trends in resource utilization, including less intensive utilization of energy in industry, agriculture, and transportation. Thus, the sciences are increasingly being understood as an essential component in the search for feasible pathways towards sustainable development. Scientific knowledge should be applied to articulate and support the goals of sustainable development, through scientific assessments of current conditions and future prospects for the Earth system. Such assessments, based on existing and emerging innovations within the sciences, should be used in the decision-making process and in the interactive processes between the sciences and policy-making. There needs to be an increased output from the sciences in order to enhance understanding and facilitate interaction between science and society. An increase in the scientific capacity and capability to achieve these goals will also be required, particularly in developing countries. Of crucial importance is the need for scientists in developing countries to participate fully in international scientific research programmes dealing with the global problems of environment and development so as to allow all countries to participate on equal footing in negotiations on global environmental and developmental issues. In the face of threats of irreversible environmental damage, lack of full scientific understanding should not be an excuse for postponing actions which are justified in their own right. The precautionary approach could provide a basis for policies relating to complex systems that are not yet fully understood and whose consequences of disturbances cannot yet be predicted. Recommendations of the International conference : The programme areas, which are in harmony with the conclusions and recommendations of the International Conference on an Agenda of Science for Environment and Development into the 21 st Century are categorized as : (a) Strengthening the scientific basis for sustainable management;

30 (b) Enhancing scientific understanding; (c) Improving long-term scientific assessment; (d) Building up scientific capacity and capability. Scientific as well as relevant indigenous and local knowledge play a critical role in helping to meet the development challenges of today and tomorrow. Based on progress achieved towards the Millennium Development Goals, the post 2015 agenda should be built in an inclusive manner, so as to take into account not only increased economic wealth but also equitable access to education for all (including in the sciences), reducing the gap in the availability and transfer of sustainable technologies between developing and developed countries, and the need to ensure social inclusion in an era of major social transformation. Analysis of Science and Sustainable Development Science is critical to help meet the challenges for sustainable development, as it lays the foundations for new approaches and technologies to identify, clarify and tackle global challenges for the future. Science can thus significantly contribute to sustainable development, but requires to that end a broad understanding of science as such. Basic science and applied science complement each other, they are the two sides of the same coin. Science is universal. It does not only bring about progress on the way towards a more sustainable world; it is also in itself away of crossing national, cultural and mental borders and thus helps lay the foundation for a sustainable world. Science possesses a strong educational component. Science literacy provides the basis for solutions to everyday problems, generally, in uncontroversial ways. Science education and capacity building in science need to be strengthened to make the most of the transformational power of science. Science is a public good and has to be considered as such. Science can also further democratic practices. Sustainable Development: Its priority in the Society The conservation, sustainable use of, and equitable access to natural resources and the sharing of benefits arising thereof, the need to adapt to climate change, the promotion of inclusion on the basis of the universal declaration of human rights and ethical principles constitute the main imperatives guiding the work of UNESCO in the areas of natural, social and human sciences and their contribution to sustainable development. An effective science-policy interface will require a regular and systematic

31 assessments of scientific and other relevant knowledge in relation to social transformation and intercultural dialogue, climate change, biodiversity and key ecosystems such as fresh water and the ocean. Through normative and technical assistance for ethically based inclusive public policies, UNESCO will accompany countries' efforts to develop their own innovative solutions to the challenges and opportunities posed by sustainable development and cultural diversity. Hence, the highest priority needs to be given to the promotion of capacity development in the sciences, especially at the national level, and to the enhancement of the capacity of societies to take informed decisions about their future. Science is part of almost every aspect of our lives. Although we rarely think about it, science makes extraordinary things possible. At the flick of a switch, we have light and electricity. When we are ill, science helps us get better. It tells us about the past, helps us with the present, and creates ways to improve our future. Scientific endeavor is as much about us as it is for us. Its place in society, therefore, is not to unfold quietly at the sidelines but to become a fundamental part of the game. Now more than ever, science must engage with us, and we must engage with science. There are times when science can seem to lose its connection to society and its needs, and sometimes its objectives are not fully understood, even if they are well intended. The lack of a common language and rapid progress in many areas of research has increased the public's concern or contributed to ambivalence about the role that science and technology play in everyday life. But science cannot work in isolation, and advances in science and technology are not an objective in their own right. The Science in Society (SIS) Programme addresses societal engagement from many perspectives, such as encouraging dialogue between scientists and other members of the public, by promoting an adherence to ethical standards, and by developing better ways for the results of research to be accessed by all. The SIS Programme also supports new ways to interest young people in science and in research careers, and new ways to achieve greater gender equality in science. The SIS Programme has also been charged with the responsibility of supporting the following specific research activities: the connection between science, democracy and law; ethics in science and technology; the reciprocal influence of science and culture; the role and image of scientists; gender aspects; science education methods; and science communication.

32 Significance of science and technology for sustainable development Sustainable development is probably the most daunting challenge that humanity has ever faced, and achieving it requires that the fundamental issues be addressed immediately at local, regional and global levels. At all scales, the role of science and technology is crucial; scientific knowledge and appropriate technologies are central to resolving the economic, social and environmental problems that make current development paths unsustainable. Bridging the development gap between the North and the South, and alleviating poverty to provide a more equitable and sustainable future for all, requires novel integrated approaches that fully incorporate existing and new scientific knowledge. The Scientific and Technological (S&T) community can make a leading contribution to tackling major problems identified in the Millennium Declaration - "Freedom from want" and "Sustaining our future". These issues include: i) fighting against disease; ii) population growth and urbanization; iii) the digital/information divide; iv) coping with climate change; v) confronting the water crisis; vi) defending the soil; vii) preserving forests, fisheries and biodiversity and viii) building a new ethic of global stewardship. Whatever the cultural, geographical, socio-economic and environmental setting, a strong partnership between the Science & Technology community and other members of civil society, the private sector and governments is a fundamental prerequisite for sustainable development.

1.8 Let Us Sum Up : The process of diligently observing, describing exploring & using the world is science.

Science is both a body of knowledge & the process of acquiring it.

It consists of facts, concepts, generalisations, theory & Law.

33 It possesses basic skills as well as special skills as predicted by its nature. Science is a process as well as a product. Science accumulates various values & has significance to the existence of human mankind. Current levels of investment in S&T for sustainable development are far too low in both developed and developing countries. This is true both with respect to the scope of the problems and with respect to the promising rate of return on S&T investments. Larger investments in S&T should be seen primarily as increased investment in a country's socio-economic development and in preserving natural life-support systems for the present and future generations, rather than simply as research expenditures. For this reason, public sector funding for S&T activities targeted on sustainable development goals should be augmented significantly in both all corners of the world. The private sector should reorient its S&T investments in a manner, which integrates sustainable development objectives and should increase its S&T investments generally. Strategic partnerships should be forged between the public and private S&T sectors at national and regional levels. 1.9 Check Your Progress-1 1. What is science?

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..... 2. What is Sustainable development?
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..... 3. Delineate the structure of science. Give the points
only.
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34 4. Give examples to prove Science as an integrated area of study.
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..... 5. What is the importance of Science to the society?
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..... 6. Mention any four values of science towards the
society.
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..... 7. What is the relation between Science &
industrialisation.
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..... 8. Give the steps of training in the Scientific method.
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..... 9. Name any four attributes of development of
Scientific attitude among learners.
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..... 10. Mention some of the key areas of Science
regarded as its scope of study.
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36 Unit 2 Planning for Instruction Structure : 2.1 Introduction 2.2 Objectives 2.3 Aims and Objectives of Teaching Science in Elementary and Secondary School. 2.4 Blooms

Taxonomy of Educational objectives and writing objectives in Behavioural terms 2.5

Lesson planning, importance and basic steps. 2.6

Unit Planning-Format of a unit plan 2.7 Pedagogical Analysis : Meaning and need, Guidelines for conducting Pedagogical analysis. 2.8 Let Us Sum Up 2.9 Check Your progress 2.10 Reference 2.1 Introduction Good science education is true to the child, true to life and true to science.

This simple Observation leads to the following basic criteria of validity of a science curriculum & its teaching-learning perspective there

to: a)

Cognitive validity requires that the content, process, language and pedagogical practices of the curriculum are age appropriate, and within the cognitive reach of the child. b) Content validity requires that the curriculum must convey significant and correct scientific content. Simplification of content, which

is necessary to adapt the curriculum to the cognitive

level of the learner, must not be so trivialized as to convey something basically

flawed and/

or meaningless.

37 c) Process validity requires that the curriculum engage the learner in acquiring

the methods and processes that lead to generation and validation of scientific knowledge,

and nurture the natural curiosity and creativity of the child

in science.

Process validity is an important criterion since it helps the student in 'learning to learn' science.

d)

Historical validity requires that science curriculum be informed by a historical perspective, enabling the learner to

appreciate how the concepts of science evolve with time. It also helps the learner to view science as a social enterprise

and to understand how social factors influence the development of science.

e)

Environmental validity requires that science be placed in the wider context of the learner's environment, local and global, enabling him/her to

appreciate the issues at the interface of science, technology and society

and preparing him / her with the requisite knowledge and skills to enter the world of work.

f) Ethical validity requires that the curriculum promote the values of honesty, objectivity, co-operation, freedom from fear and prejudice, and develop in the learner a concern for life and preservation of environment.

Looking at the complex scenario of science education in India, three issues stand out noticeably. First, science education is still far from achieving the goal of equity enshrined in our constitution. Second, science education, even at its best,

develops competence but does not encourage inventiveness and creativity. Third, the overpowering examination system

is basic to most, if not all, the fundamental problems of science education. 2.2 Objectives Upon completion, the students will be able to : 1. delineate the aims and objectives of teaching Science in Elementary and Secondary school 2.

comprehend Bloom's Taxonomy of Educational objectives 3. explain and design lesson planning and related areas 4.

format and demonstrate unit planning 5. gain an understanding of pedagogical analysis & apply skills to design it

38 2.3 Aims and Objectives of Teaching Science in Elementary and Secondary School. Many students often say, 'why should I study science'? Then we might ask ourselves, 'why teach science'? The typical answer for these frequent questions is 'Because science is all around us, so we need to know about it. However pupils hardly find its relevance in their day to day life. As a result we observe a declining trend in the enrolment of children opting science at higher levels. To address this issue, first we need to understand the aims and objectives of learning science at the elementary and secondary level, because to reach at the higher studies, the concept about the science should be developed from the initial stages. Since teachers are the key agents to implement the curriculum, so they need to have a clear vision of the rationals, needs, aims and objectives of learning science to help them plan the stages to specify the proper teaching learning strategies for its effective transaction. The origin of the aims of science follows essentially from the nature and structure of science and its interrelation to the society. So the teaching learning process of science education should convey the significant aspects of science content at appropriate level and engage the child in the learning process of scientific knowledge at the elementary level. Harmonious development of child's personality and social efficiency etc. are the general aims of education. If science teaching is to be made effective, then its aims should be in consonance with the general aims of education. We deal with the following main objectives of science teaching.

A. Knowledge. This aim has received the top priority as compared to other aims. Pupils studying general science should acquire the knowledge of :

- (i) Fundamental principles and concepts useful in daily life.
- (ii) Facts for science study.
- (iii) Inter-dependence and relationship of different branches of science.
- (iv) Knowledge of plants and animals.
- (v) Natural phenomena going on.

39 (vi) Knowledge of general rules of health and human body etc.

B. Skills. Science students should acquire skills in experimentation, construction, observation, drawing etc. Experimentation and construction skills include handling, arranging, preserving, and repairing scientific instruments.

C. Abilities. The general science teaching should develop certain abilities such as ability to

- (i) Sense a problem
- (ii) organize and interpret
- (iii) Analyse
- (iv) Generalise
- (v) Predict
- (vi) Organise exhibitions, excursions and fairs
- (vii) Discuss, argue and express scientific terminology
- (viii) Improvise and manipulate instruments using his acquired knowledge.

D. Attitudes. Science teaching directly inculcates the scientific attitudes among the students. So the students should be taught directly and systematically and every individual should be paid heed to ascertain that he develops the desired attitudes and practices them. A man with the scientific attitude is

- (a) Critical in observation and thought
- (b) Open-minded
- (c) Respectful of others' view point and is ready to discuss his problems with others and accepts what appears correct.
- (d) In search of the answers to 'What's' and 'Whys' and 'How's' of the things he observes and accepts the natural things as such.
- (e) Objective in his approach to problems.
- (f) Not a believer of superstitions and misbelieves.
- (g) Follower of cause and effect relationship.

40 (h) Truthful in his experimentation and conclusions.

- (i) Impartial and unbiased in his judgments.
- (j) Adopts planned procedure in solving a problem.

E. Reflective Thinking. With the above attitudes developed, a science student will handle a problem scientifically. He will sense a problem, define it, collect evidence, organize and interpret the data, formulate the hypothesis, test its validity and finally draw conclusions impartially. The training in the scientific method should be one of the important aims of teaching science. All these attributes leads to reflective thinking.

F. Habits. Certain socially desirable habits like honesty, truth, tolerance, self-confidence, self-reliance etc. should be inculcated through the science teaching.

G. Interests.

The teaching of science should also aim at developing some interests in reading scientific literature, in scientific hobbies, in activities of clubs, excursions, in natural phenomena; in drawing, in leadership, etc. The motivational techniques like rewards and punishments, praise and blame, rivalry and emulation etc. should be implied by the teacher.

H. Appreciation. The appreciation of natural beauty, scientific inventions, scientists' endeavour is the outcome of science teaching. For such purpose, the teacher should arrange outings, should relate the life histories of scientist and should keep the students in touch with the new inventions in science.

I. Providing Work for Leisure. As the empty mind is devil's workshop, a science student should not waste his leisure. He can prepare inks, soaps, boot polishes and other daily useful things or he can keep hobbies of stamp collecting, coin collecting, photography, drawing, gardening, study of plants and animals or of minerals etc. He can learn to improvise certain

41 instruments, learn to play for musical instruments along with its construction knowledge, etc. J. Training for Better Living. A science student should know the ways and means of prevention and eradication of diseases to maintain good health, and should be able to adjust himself with his own domestic, social environment and economic and cultural conditions. K. Forming Basis for Career. The attitudes and interests of the students should well be adjudged by the science teachers and they should impart them the knowledge accordingly so that they may prosecute the desired professions. An artist can never be a doctor. So nothing should be forced into the minds of the students. Acceleration should be provided in his own direction to get a suitable vocation and fit himself well in society and prove an asset to it. Aims & Objectives of Teaching Science Primary Level The aims and objectives of Teaching Science at Primary School level should be: 1. Arousing and maintaining interest in nature and in the physical and social environment, arousing love for nature and its sources. 2. Developing the habit of observation, exploration, classification and systematic way of thinking. 3. Developing the child's powers of manipulative, creative and inventive faculties. 4. Developing neat and orderly habits. 5. Inculcation of habits of healthful living. 2. Middle School Level In addition to the above, the following aims and objectives are suitable for inculcation at the Middle School, level. 1. Acquisition of a kind of information concerning nature and science which may also serve as the basis for a late General Science Course. 2. Developing the ability to reach generalisation and to apply them for solving every problem.

42 3. Understanding the impact of science upon one way of life. 4. Developing interest in scientific hobbies. 5. Inspiring children by stories about scientists and their discoveries. 3. Higher Secondary Levels At the higher secondary stage, the aims of General Science teaching should be, 1. To familiarize the pupil with the world in which he lives and to make him understand the impact of science on society so as to enable him adjust himself to his environment. 2. To acquaint him with the 'scientific method' and to enable him to develop proper scientific attitude. 3. To give the pupil a historical perspective, so that he may understand the evolution of the scientific development. The Indian Education Commission (1964-66) has suggested the aims and objectives of teaching science at various levels: 1. Lower Primary Stage (i) At the lower primary stage the accent should be on the child's environment- social, physical and biological. (ii) In classes I and II, the accent should be on cleanliness and formation of healthy habits. (iii) Development of power of observation. (iv) In classes III and IV the study should also include personal hygiene and sanitation. (v) In classes IV and V children should be taught the roman alphabets. This is essential as the internationally accepted symbols for the units of the scientific measurement and the symbols for chemical elements and compounds are written in the Roman alphabet. (vi) Developing proper understanding of the main facts, concepts, principles and processes in the physical and biological environment. 2. Upper Primary Stage (i) At this stage emphasis may shift to the acquisition of knowledge together with the ability to think logically, to draw conclusions and to make decisions at a higher level.

43 ii) Science should be taught as physics, chemistry, biology, and astronomy. A disciplinary approach to science learning instead of general science would be more effective in providing the necessary scientific base to young people. 3.

Secondary stage (i) At the secondary stage science should be taught as a discipline of the mind and a preparation for higher education. (ii) At the lower secondary class physics, chemistry, biology and earth sciences should be taught as compulsory subjects. (iii) At the higher secondary stage there should be diversification of courses and provision for specialisation.

2.4 Bloom's Taxonomy of Educational Objectives & Writing Objectives in behavioral terms. Bloom's Revised Taxonomy Taxonomy of Cognitive Objectives-1950s-developed by Benjamin Bloom is a means of expressing qualitatively different kinds of thinking. It was adapted for classroom use as a planning tools continues to be one of the most universally applied models to organize thinking skills into six levels, from the most basic to the more complex levels of thinking. Lorin Anderson (former student of Bloom) revisited the taxonomy, as a result, a number of changes were made. Original Domain New Domain Fig: 1. Revised Bloom's Taxonomy of Educational Objectives Source : tip'uark.edu

44 Revised Bloom's Taxonomy of Educational objectives
The names of six major categories were changed from noun to verb forms. As the taxonomy reflects different forms of thinking and thinking is an active process, verbs were used rather than nouns. The subcategories of the six major categories were also replaced by verbs and some subcategories were reorganized. The knowledge category was renamed. Knowledge is an outcome or product of thinking

and
not a form of thinking per se. Consequently, the word knowledge was inappropriate to describe a category of thinking and was replaced with the word remembering instead. Comprehension and synthesis were

renamed
to understanding and creating respectively, in order to better reflect the nature of the thinking defined in each category.

The Cognitive Dimension Process LEVEL 1 Categories & Alternative Definition Cognitive Processes Names Remember Retrieve knowledge from long- term memory Recognizing Identifying Locating knowledge in long-term memory that is consistent with presented material Recalling Retrieving Retrieving relevant knowledge from long-term memory

45

LEVEL 2 Categories & Alternative Definition Cognitive Processes Names Understand Construct meaning from instructional messages, including oral, written, and graphic communication Interpreting Clarifying Changing from one form of Paraphrasing representation to another Representing Translating Exemplifying Illustrating Finding a specific example or Instantiating illustration of a concept or principle Classifying Categorizing Determining that something belongs Subsuming to a category Summarizing Abstracting Abstracting a general theme or Generalizing major point(s) Inferring Concluding Drawing a logical conclusion from Extrapolating presented information Interpolating Predicting Comparing Contrasting Detecting correspondences Mapping between two ideas, objects, and the Matching like Explaining Constructing Constructing a cause and effect models model of a system

46 LEVEL 3 Categories & Alternative Definition Cognitive Processes Names Create Put

elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure Generating

Hypothesizing Coming up with alternative hypotheses based on criteria Planning Designing Devising a procedure for accomplishing some task Producing Constructing Inventing a product Source :

Anderson, Lorin W. & Krathwohl, David R. (2001).

A

Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy.

New York.

Longman

Publishing. BEHAVIORAL OBJECTIVES An objective is an intent communicated by a statement describing a proposed change in a learner. Is a statement of what the learner is to be like when he/she has successfully completed a learning experience. A behavioural or instructional objective describes an intended outcome. A usefully stated objective is stated in behavioral, or performance, terms that describe what the learner will be doing when demonstrating his/her achievement of the objective. An instructional objective must. Describe what the learner will be doing when demonstrating that he/she has reached the objective; i.e., What should the learner be able to do? (Performance)

47 Describe the important conditions under which the learner will demonstrate his/her competence; i.e., Under what conditions do you want the learner to be able to do it? (Conditions) Indicate how the learner will be evaluated, or what constitutes acceptable performance; i.e., How well must it be done? (Criterion) A behavioral objective, or an Instructional objectives, which is student-oriented, places the emphasis upon what the student is expected to do, not upon what the teacher will do. Sometimes teachers use instructional goals which emphasize what they are expected to do rather than what they expect of their students. Instructional objectives may also be called performance objectives, behavioral objectives, or simply objectives. All of these terms are used interchangeably. Objectives are specific, outcome based, measurable, and describe the learner's behavior after instruction. Behavioral objectives that are useful in the classroom must meet certain criteria. The four essential elements of a well-written behavioral objective are outlined below. When writing a behavioral objective, evaluate it using these criteria. 1. Good behavioral objectives are student-oriented. A behavioral objective, which is student-oriented, places the emphasis upon what the student is expected to do, not upon what the teacher will do. Sometimes teachers use instructional goals which emphasize what they are expected to do rather than what they expect of their students. Such teacher- oriented objectives only have the value to the extent that they direct the teacher to do something, which ultimately leads to student learning. 2. Good behavioral objectives describe learning outcomes. The important thing to keep in mind here is that we are interested in what the students will learn to do. In other words, it is the learning outcome that is important, not the learning activities that should lead to that outcome. It may be helpful to you as a teacher to determine what kind of learning activities you may want your students to carry out. However, determining which learning experiences and activities are most appropriate for your students can only be made after you have decided what it is you want your students to

48 accomplish. Once learning outcomes are identified and described, then activities that are appropriate for attaining those outcomes can be determined. 3. Good behavioral objectives are clear and understandable. The first prerequisite for a clear and understandable objective is explicitness. It should contain a clearly stated verb that describes a definite action or behavior and, in most cases, should refer to an object of that action. 4. Good behavioral objectives are observable. The evaluation of learning outcomes hinges on the ability to observe those outcomes. The key to an observable objective is an observable verb. Consequently, when selecting behavioral objectives for use in your teaching, watch the verbs! The verb must describe an observable action or an action that results in an observable products. Course objective: What a successful learner is able to do at the end of the course. Is a description of a product, of what the learner is supposed to be like as a result of the process. The statement of objectives of a course/programme must denote measurable attributes observable in the graduate of the program; otherwise it is impossible to determine whether or not the program is meeting the objectives. Undesirable words Desirable words (open to many interpretations) (open to fewer interpretations) To KNOW To WRITE To UNDERSTAND To RECITE To ENJOY To IDENTIFY To APPRECIATE To DIFFERENTIATE To GRASP THE SIGNIFICANCE OF To SOLVE To COMPREHEND To CONSTRUCT To BELIEVE To LIST To COMPARE

49 Steps to Write Behavioural Objectives : Steps to write objectives that will describe the desired behavior of the learner:

1. Identify

the terminal behavior or performance by name; i.e., specify the kind of behavior that will be accepted as evidence that the learner has achieved the objective. 2. Define the desired behavior further by describing the important conditions under which the behavior will be expected to occur. 3. Specify the criteria of acceptable performance by describing how well the learner must perform to be considered acceptable.

Performances may be visible, like writing, repairing, or painting; or invisible, like adding, solving, or identifying. If a statement does not include a visible performance, it isn't yet an objective. An Example: Stated in behavioral terms Stated in performance terms "To develop an appreciation for music" "The learner correctly answers 95 multiple choice questions on the vibration mechanism in music" "To be able to recall various factors of To be able to write a summary of the factors environmental degradation" leading to the environmental degradation" To state an objective that will successfully communicate your educational intent, you will sometimes have to define terminal behavior further by stating the conditions you will impose upon the learner when he/she is demonstrating his/her mastery of the objective.

2.5 Lesson Planning, importance and basic steps

Lesson plan is an out line

of important points of a

lesson arranged in a order in which they are to be presented.

It includes objectives, points to be presented, question to be asked, references, assignments etc. Importance for planning a lesson : Lesson planning makes the teaching regular, well organised, and systematic. It enhances the Self-confidence and self-reliance of the teacher. It facilitates appropriate use of aids of appropriate places. It is economical in terms

of time, as every step has been planned with fore thought. Repetition is hence avoided.

50

It

establishes proper connection between different lessons of study, the teaching learning process

to be continued in a proper way. Student's

interest can be retained by planning suitable activities and assignments, according to the mental level of the students.

A good lesson plan must contain three components : 1. Objectives : (

Why should this lesson be taught?) 2. Content : (What should be taught?) 3. Method : (How should be taught?) Steps :

According to J.F. Herbart, six formal steps should be followed during the development of a lesson plan. 1. Introduction / Motivation 2. Presentation 3. Comparison / Association 4. Generalisation 5. Application 6. Recapitulation

51 Differences between Unit Plan & Lesson Plan
 Unit Plan Lesson Plan
 Time : The time span of planning Time Span is relatively short. is relatively long.
 Objective : It includes relatively more It includes specific objectives general objectives.
 Activity : Teacher's activity and pupils In this plan, both activities expected activities are not written are written briefly.
 Model : Here, we just write about Here we should prepare the model and demonstration, where experiment if any used and when used it any.
 Examples : Examples and Illustration, are Illustrations and examples are not included with content included with content in planning in planning
 Flexibility : Unit plan is mere flexible Lesson plan is comparatively than lesson plan. less flexible than unit plan.
 How to prepare a good lesson? Step-I Consider your overall objectives. Step-II Consider the group. Step-III Consider the time available. Step-IV Consider the Resources available. Step-V Plan and Schedule the subject matter.

Lesson Plan format Name of the student teacher : ----- Name of the School :
 ----- Class : -----

Date : Subject : ----- Period : Topic : ----- Lesson No.- Entry Behaviour :
 Objectives :

52 Method : Media : Introduction Presentation : Teaching Point Instructional Teachers Students Evaluation objectives
 Activity Activity 1. 2. 3. Recapitulation : Home Assignment : Summary of Black Board work : 2.6 Unit Planning : Format of a Unit Plan

According to Samford, '

a

unit is an outline of carefully selected subject matter which has been isolated because of its relationship to pupil's needs and interests."

The unit plan gives an idea about how to go about instructional or daily lesson plan. It is an overview of number of lessons or periods required, audio-visual aids to be used, objectives to be achieved, methods or strategies to be adopted, reference books for further studies for the teachers and students. Every unit is a substantial part of text book and every unit is a set of several concepts and related skills and can be taken up in subsequent days. Criteria for a good unit plan : During preparing of a unit plan, the following points should be kept in mind : It should be related to the social and physical environments, of the students. It should be based on the need, capabilities and interest of the students. It should be as a result of co-operative planning between teacher and pupil. It should provide project work, excursions, film viewing, demonstration etc.

53 Students should be provided with enough time to plan, organise and work on their own. Provision should be there for evaluation and follow up. It should be flexible so as to allow the above average pupils to go beyond the limits of the units. It should help in anticipating and satisfying the future needs of the students. Steps of Unit Planning : During planning of a unit the following factors should be kept in mind. 1.

Content Analysis (the what of the unit) 2. Objectives with specifications (the why of the unit) 3. Learning activities (the now of the unit) 4. Testing Procedures (evidence of Achievement)

Format of a unit plan :

Subject : Class : Name of the Unit : Date : No. of Classes : 1.

Content Analysis. 1. 2. 3. 2. Objectives with specification. 1. 2. 3. 3. Learning activities. 4. Evaluation and testing Procedures. Student activities Teaching Strategies

54 Example of Unit Planning : Subject : Chemistry Name of the Unit : Chemical Compounds Class : IX No. of classes : 08

1. Content Analysis : * Washing Soda * Baking Soda * Bleaching Powder * Cement
 2. Learning Objectives : The students will : develops an awareness of various chemical compounds. recalls the formulae for washing soda, baking soda, bleaching powder and cement. recognises the properties of the above mentioned salts. describes with a clearly labeled diagram of solvey process. interprets the bleaching effect of bleaching powder. illustrates the manufacture of port land cement.
 3. Learning activities Students activities : The students will Perform experiment to find out the reaction of Na_2CO_3 with acid. Sketches the diagram of solvey process with reactions. Develops skill in using washing soda, bleaching powder etc.
 Teaching strategies : Dmonsration on a) reaction of Na_2CO_2 with acid. b) bleaching action of bleaching powder. c) application of chosen salt in daily life.

55 Drawing on the Black Board : Solvey Process Manufacture of Portland cement Visit to a neighbour cement factory. Valuation and Testing Procedures : Problems at the end of the chapter in Prescribed Text Book. Test framed with questions in relation to content mentioned on the basis of their learning objectives. Exercises to evaluate whether the student can :— i) balance equations ii) Identify the different salts. iii) List the composition of cement. 2.7 Pedagogical Analysis : Meaning and need, Guidelines for conducting Pedagogical analysis Previously, pedagogy was defined as a study of the methods of teaching a subject or methods of instructions given to the students to change their behaviour. But at present pedagogy is perceived not merely as a science of instruction, but also as a culture or set of cultures which reflect different context and different teaching behaviours-inside and outside the classroom. Using culture-sensitive pedagogy would mean incorporating different aspects of students' cultural background into the teaching-learning Process. In the National Curriculum Framework of Teacher Education (NCFTE, 2009), it was pointed out : Pedagogical analysis of school teaching subjects has been thought of as an essential component of practice teaching. By way of pedagogical analysis, a pupil-teacher becomes conversant with the objectives of teaching a unit, the entry behaviour of students, classroom management and evaluation strategies. With this background of having looked into the pedagogical aspects of school teaching subjects, the pupil-teacher is likely to become more effective and confident in the classroom.

1. Pre-active stage 2. Interactive stage
56 3. Post-active stage The basic element of the model is pedagogical analysis, sometimes referred to as 'task analysis', which is a major part of pre-active (planning) stage. It emphasizes the need to undertake separate but linked investigations of the learners' and teachers' tasks, and proposes helpful procedures for affecting both of these. The analysis of the teaching task hinges the teacher's ability to identify the 'type of learning' involved in the learning task. This requires sound knowledge and understanding of the learning theories. With the employment of procedures stipulated in the model, knowledge can be gained through a reasoned inquiry into the relevance and usefulness of such theories. The interactive (implementation) stage is subsequently directly assisted by -this analysis because it has 'classroom reality'.

Major Steps in Pedagogical Analysis While performing pedagogical analysis of a unit, topic or content, we proceed with the help of the following steps : Step 1 : Identification of major concepts and their inclusive concepts, i.e. sub- concepts. Step 2 : Translate them into behavioural objectives. Step 3 : Teaching methods to be used. Step 4 : Learning experiences to be given. Step 5 : Type of learning which will take place. Step 6 : Pupil's response pattern. Step 7 : Evaluation strategies to be adopted. Example of Pedagogical Analysis Pedagogical analysis of the topic 'Flower' Step 1: Identification of major concepts and their inclusive concepts or sub- concepts : 1. The meaning of flower

57 2. Different types of flower 3. Parts of flower (a) Calyx (sepals) (b) Corolla (petals) (c) Androecium (stamens) (d) Gynoecium (carpels) 4. Functions of a flower and its various parts 5. Floral symmetry (a) Actinomorphic or regular flower (b) Zygomorphic or irregular flower (c) Assymetrical flower 6. Position of floral whorl on the thalamus Step 2: Objectives specification in behavioural terms After the class is over, the students should be able to : Recall the definition of flower. Recognize different types of flowers. Discriminate between different parts of a flower, such as calyx, corolla, androecium, and gynoecium. Draw a labelled diagram of a flower. Dissect the flower easily and classify the parts on the basis of floral symmetry. Illustrate the position of floral whorl on the thalamus. Show interest in knowing about parts and functions of flowers grown in the school botanical garden. Step 3: Teaching method to be used Lecture-cum-demonstration Group activity with the samples of flowers Constructive approach

58 Step 4: Learning experiences to be given Discussion and activity-based learning experiences will be given, which are briefly described here: 1. Discussion will be supported with: (a) Demonstration of an actual flower (b) Group activity with flowers (c) Sketching and drawing on blackboard (d) Charts and pictures of different kinds of flowers, see Figure 6.1. Figure 7.1 Diagram showing a typical flower and its parts. 2. The main points will be highlighted and concepts explained properly with suitable support system such as: (a) Definition of flower, its structure and functions (b) Providing diagram, pictures, models to show internal parts of flower (see Figure 7.2) (c) Providing points of differences between different types of flowers

59 Figure 7.2 Showing the internal parts of a flower. Through this diagram the students will be able to understand parts and functions of a flower. 3. Different types of flowers will be discussed and demonstrated properly, as given here: (a) Dioecious, e.g. mulberry (b) Complete flower, e.g. rose (c) Incomplete flower, e.g. raspberry, strawberry (d) Bisexual flower, e.g. mustard, china rose (e) Unisexual flower, e.g. papaya (f) Sessile flower, e.g. Ficus, Trillium 4. Flowers will be distributed to all the students to help them understand floral symmetry and they will be instructed to observe and dissect them to analyse the features. (a) Actinomorphic, e.g. mustard. The flower can be divided into two equal

60 halves by any plane. (b) Zygomorphic, e.g. pea. The flower can be divided into two equal halves by one plane only. (c) Assymetrical, e.g. canna. The flower can not be divided into two equal halves along any plane. 5. The position of floral whorl on thalamus. After the students dissected the flower, diagram will be made and pictures used for their understanding (Figure 6.3). The students will be asked to write their observation and give examples of hypogynous, perigynous and epigynous flowers. Figure 7.3 Types of flowers on the basis of the position of thalamus. 6. Students will be provided opportunities to examine the structures of flowers by dissecting them. They will be told to note down the specific characteristics found in the flowers and compare them with the flowers of other students. Step 5: Type of learning which will take place Activity-based constructive learning will occur. Students will dissect their flowers and form knowledge by exploring parts of flowers, floral symmetry, position of the floral whorl on thalamus as shown in Figure 6.3. Step 6: Students response pattern Students will listen to the lecture, participate in discussion and activities. They will observe and 'dissect the given flowers and try to analyse their structure and functions. The pupils will then draw diagrams and compare various flowers with regard to their structures and functions of different parts.

61 Step 7: Evaluation strategies to be adopted Evaluation will be based on objective and short answer-type questions. For example: 1. Give answers in one word for the following: (a) A modified shoot having condensed nodes and internodes with leaves modified into floral parts. (b) Male and female parts in the same flower. (c) Part of flower which receives pollen grains. (d) A flower in which ovary occupies the highest position, and all whorls arise below it. 2. Complete the following sentences : (a) When a flower is divided into two equal halves in one plane, the flower is said to be (b) Petals and sepals are collectively called as (c) Thalamus is also known as (d) Flowers lacking stalks are called (e) Part of flower which protects essential whorl during bud stage is called 3. See Figure 7.4 and give answers to the following questions: Figure 7.4 Parts of a flower indicated by numbers from 1 to 8. (a) Label the parts 1 to 8.

62 (b) Name the floral symmetry of the flower shown in Figure 6.4. (c) Name the position of floral whorl on thalamus. (d) List one function of any two parts from the above diagram. 2.8 Let us sum up

The general aims of science education follow directly from the six criteria of validity : cognitive, content, process, historical, environmental and ethical. To summarize,

science education should enable the learner

to : know the facts and principles of science and its applications, consistent with the stage of cognitive development, acquire

the

skills and understand

the methods and processes that lead to generation and validation of scientific knowledge,

develop a historical and developmental perspective of science and to enable her to view science as a social enterprise, relate to the

environment (natural environment, arti facts and people), local as

well as global, and

appreciate the issues at the interface of science, technology and society,

acquire the requisite theoretical knowledge and

practical technological skills to enter the world of work, nurture the natural curiosity, aesthetic sense and creativity in science and technology, imbibe the values of honesty, integrity, cooperation,

concern for life and preservation of environment, and cultivate 'scientific temper' -objectivity, critical thinking and freedom from fear and prejudice.

Within the frame of reference of general aims, the objectives, content, pedagogy and assessment would differ across different stages on the scope and gradation of the school curriculum. While deciding on gradation of science curriculum, it must be borne in mind that a majority of students learning science as a compulsory subject up to Class X are not going to train as professional scientists or technologists in their

63 later careers; yet they need to become 'scientifically literate', since several of the social, political and ethical issues put forward by contemporary society increasingly revolve around science and technology. As a result, the science curriculum up to Class X should be oriented more towards developing awareness among the learners about the interface of science, technology and society & especially to the issues of environment and health, and enabling them to acquire practical knowledge and skills to enter the world of work. It should stress not only the content of science, but, more importantly, the process skills of science, that is, the methods and techniques of learning science. This is necessary since the process skills are more enduring and enable the learner to cope with the ever changing and expanding field of science and technology. This does not mean that the content can be ignored. Facts, principles, theories and their applications to understand various phenomena are at the core of science and the science curriculum must obviously engage the learner with them appropriately. However, science up to Class X should be learnt as a composite subject and not as separate disciplines such as physics, chemistry and biology. At the higher secondary stage, however, the requirements of different disciplines of science become important and they need to be learnt in depth and with rigor appropriate at that stage.

- 2.9 Check Your Progress 1. What is the difference between aims & objectives?

 2. Define behavioural objectives.

 3. Mention the revised Bloom's Taxonomy of Educational objectives by help of a schematic diagram.
 64

 4. Define lesson plan & unit plan & state any 3 differences between the two concepts.

 5. State the importance of lesson planning.

 6. What is meant by action verb?

 7. Define Pedagogical analysis according to NCFTE 2009.

 8. Mention the major steps of pedagogical analysis.

 9. Enumerate the basic steps of unit planning.
 65

 10. What is the need of pedagogical analysis of a content in science teaching.

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66 Unit 3 Approaches & Methods of Teaching Science Structure : 3.1 Introduction 3.2 Objectives 3.3 Different approaches & methods 3.4 Lecture, Demonstration, Discussion & other teaching methods 3.5 Project method & Heuristic method 3.6 Creating different situations of learning engagement 3.7 Constructivist approach & its use in Teaching Science 3.8 Let us sum up 3.9 Check Your Progress 3.10References 3.1 Introduction About 3000 BC, with the advent of writing, education became more conscious or self-reflecting, with specialized occupations such as scribe and astronomer requiring particular skills and knowledge. Philosophy in ancient Greece led to questions of educational method entering national discourse. In his literary work, 'The Republic', Plato described a system of instruction that he felt would lead to an ideal state. In his dialogues, Plato described the Socratic method, a form of inquiry and debate intended to stimulate critical thinking and illuminate ideas. Comenius, in Bohemia, wanted all children to learn. In his 'The World in Pictures', he created an illustrated textbook of things children would be familiar with in everyday life and used it to teach children. Much later, Jean-Jacques Rousseau in his 'Emile', presented methodology to teach children the elements of science and other subjects. During Napoleonic warfare, the teaching methodology of Johann Heinrich Pestalozzi of Switzerland enabled refugee children, of a class believed to be unteachable, to learn.

67 The Prussian education system was a system of mandatory education dating to the early 19th century. Parts of the Prussian education system have served as models for the education systems in a number of other countries, including Japan and the United States. The Prussian model required classroom management skills to be incorporated into the teaching process. Newer teaching methods may incorporate television, radio, internet, multimedia and other modern devices. Some educators believe that the use of technology, while facilitating learning to some degree, is not a substitute for educational methods that encourage critical thinking and a desire to learn. Inquiry learning is another modern teaching method. A popular teaching method that is being used by a vast majority of teachers is hands on activities. Hands-on activities are activities that require movement, talking, and listening, it activates multiple areas of the brain. School science programs are traditionally designed to give children lots of information, have them memorize that information, and then ask them to recall the information on written tests. That approach may be a significant reason for students' less-than-enthusiastic response to science, because that type of instruction does not allow for the active involvement of students in their own learning, nor does it allow children's opportunity to think creatively about what they are learning. Yet, teachers and parents intuitively know that when students, no matter what their abilities or interests, are provided with opportunities to manipulate information in productive ways, learning becomes much more meaningful. This is a process approach to learning - an approach which provides students with an abundance of projects, activities, and instructional designs that allow them to make decisions and solve problems. Through this approach students get a sense that learning is much more than the commission of facts to memory. Rather, it is what children do with that knowledge that determines its impact on their attitudes and aptitudes. A teaching method comprises the principles and methods used for instruction to be implemented by teachers to achieve the desired learning in students. These strategies are determined partly on subject matter to be taught and partly by the nature of the learner. For a particular teaching method to be appropriate and efficient it has to be in relation with the characteristic of the learner and the type of learning it is supposed to bring about. Davis (1997) suggests that the design and selection of teaching methods must take into account not only the nature of the subject matter but also how students learn. In today's school the trend is that it encourages a lot of creativity. It is a known fact that human advancement comes through reasoning. This reasoning

68 and original thought enhances creativity. The approaches for teaching can be broadly classified into teacher centered and student centered. In Teacher-Centered Approach to Learning, Teachers are the main authority figure in this model. Students are viewed as "empty vessels" whose primary role is to passively receive information (via lectures and direct instruction) with an end goal of testing and assessment. It is the primary role of teachers to pass knowledge and information onto their students. In this model, teaching and assessment are viewed as two separate entities. Student learning is measured through objectively scored tests and assessments. In Student-Centered Approach to Learning, while teachers are an authority figure in this model, teachers and students play an equally active role in the learning process. The teacher's primary role is to coach and facilitate

student learning and overall comprehension of material. Student learning is measured through both formal and informal forms of assessment, including group projects, student portfolios, and class participation. Teaching and assessments are connected; student learning is continuously measured during teacher instruction. Commonly used teaching methods may include class participation, demonstration, recitation, memorization, or combinations of these. Science teachers have an exciting opportunity to teach kids about how science makes the world work. Unfortunately, reduced teaching budgets and apathy on the part of students sometimes makes it difficult to get students interested in topics like biology, earth science, anatomy, physics, and chemistry. Some teachers are now using techniques such as peer learning, role-playing, and incorporating current events in science lesson plans. These techniques help engage students and help them understand the importance of science. They also make it fun to teach scientific concepts and help students understand common topics in the scientific world.

3.2 Objectives Upon completion of the subunit, the students will be able to-

- 1) Know the various approaches and methods of teaching sciences
- 2) Understand the different strategies of teaching sciences
- 3) Create different situations of learning engagement

69 3.3 Different approaches & methods Process approach Educators' emphasis to improve students' learning experience, to enrich such experience has led them to search for more effective instructional strategies, strategies that can be described as student centered and that students are the main focus of the learning process, especially those processes that enable the student to use and practice higher level thinking skills and to train him to obtain knowledge, use critical thinking skills in assessing this knowledge and to implement the acquired knowledge in the different life situations. Educators emphasized that one of the goals of science education is to teach students how to think and not to memorize the learning material without understanding it or how to employ it in their daily life. To achieve such an objective, science instruction must focus on assisting students acquire scientific thinking skills, focus on science methods and processes. Students' acquisition of science processes is a priority in science instruction where, if students are fully trained how to use them, enable students to be more practical in their thinking. Therefore; science teachers have the responsibility of providing students with scientific opportunities and effective learning situations, activities leading to the practice of higher order thinking skills such as the use of problem solving skills, using science processes. A process approach to science is one in which children do something with the concepts and generalizations they learn. It implies that students can manipulate, decide, solve, predict, and structure the knowledge of science in ways that are meaningful to them. When teachers and parents provide opportunities for students to actively process information - particularly information related to nature, then learning becomes more child-centered. This results in attitudes, perceptions, and beliefs that the natural world can be actively explored and personally investigated - and that the environment, both near and far, is full of incredible learning possibilities along with a whole lot of fun. Science processes are divided into :

- Basic science processes
- : Simple processes relatively and include observation, classification, measurement, communication, prediction, using space and time relationships and using figures and inferences. Integrated science processes :

70 These are advanced processes and more progressive than basic science processes in the scientific processes hierarchy and include data interpretation and procedural definitions, variables control, testing hypotheses and experimentation. The objective of science teaching are constantly changing, developing and they arise from the science attributes, society needs and its characteristics. The most important objectives of science teaching include. Help students functionally acquire concepts, facts and scientific thinking skills. Help students functionally acquire and develop science processes. To develop students' skills in scientific thinking and problem solving. To help students develop and promote their science attitudes and tendencies. The great challenge in modern instructional methods has become to give learners a greater part in the learning- teaching process to acquire the different experiences and develop his thinking skills as this contributes in raising individuals' sense of responsibility for self -learning and not just a recipient of information. Process Approach based science teaching method is one of the teaching method that can help in achieving as this approach help on providing the individual learner with the necessary skills helping him make solutions and make the suitable decisions for the problem he faces at present and in the future. In light of this, the main objective of this approach is to provide the learner with the adequate competencies in science methods and scientific skills. This approach enables the learner develop a desire to learn. Direct Experience Approach Direct Experience approach has its roots in Experiential Education that paved the way for progressive Education. Experiential education is a philosophy of education that describes the process that occurs between a teacher and student that infuses direct experience with the learning environment and content. The term is not interchangeable with experiential learning; however experiential learning is a sub- field and operates under the methodologies of experiential education. The Association for Experiential Education regards experiential education as "a philosophy that informs many methodologies in which educators purposefully engage with learners

in direct experience and focused reflection in order to increase knowledge, develop skills, clarify values, and develop people's capacity to contribute to their communities Johnn Dewey was the most famous proponent of experiential education, compiling

71 Experience and Education (1938). Dewey advocated that education be based upon the quality of experience. The methodologies reflected in experiential education have evolved since the time of Hahn and Dewey. For experiential education to become efficient Pedagogy, physical experience must be combined with reflection. Direct Experience approach in Science Education informs many educational practices underway in schools (formal education) and out-of-school (informal education) programs. Many teaching methods rely on experiential education to provide context and frameworks for learning through action and reflection. They can be listed as follows : Outdoor education uses organized learning activities that occur in the outdoors, and uses environmental experiences as a learning tool. Service learning is a combination of community service with stated learning goals, relying on experience as the foundation for meaning. Cooperative learning alters homogeneous groupings in order to support diverse learning styles and needs within a group. Active learning, a term popular in US education circles in the 1980s, encourages learners to take responsibility for their learning, requiring their experience in education to inform their process of learning. Environmental education is based in educating learners about relationships within the natural environment and how those relationships are interdependent. Students participate in outdoor activities as part of their learning experience. Direct Experience serves as an umbrella for linking many diverse practices into a coherent whole. Its philosophy is closely linked to numerous other educational theories, but it should not be conflated with progressive education, critical pedagogy, youth empowerment, feminist-based education, and constructivism. Inductive-Deductive Approach

Two very distinct and opposing instructional approaches are inductive and deductive. Both approaches can offer certain advantages, but the biggest difference is the role of the teacher. In a deductive classroom, the teacher conducts lessons by introducing and explaining concepts to students, and then expecting students to complete tasks to practice the concepts; this approach is very teacher-centred.

72 Conversely, inductive instruction is a much more student-centred approach and makes use of a strategy known as 'noticing'.

What is deductive instruction This method is just opposite of Inductive method. In this method, facts are being deduced by application of established formula or experimentation. In this method,

one proceed from general to particular principles, from unknown to known and from abstract to concrete facts. A deductive approach to instruction is a more teacher-centered approach. This means that the teacher gives the students a new concept, explains it, and then has the students practice using the concept. For example, when teaching a new Science concept, the teacher will introduce the concept, explain the rules related to its use, and finally the students will practice using the concept in a variety of different ways. According to Bob Adamson, "The deductive method is often criticized because: a) it teaches concept in an isolated way; b) little attention is paid to meaning; c) practice is often mechanical." This method can, however, be a viable option in certain situations; for example, when dealing with highly motivated students, teaching a particularly difficult concept, or for preparing students to write exams. What is inductive instruction Inductive method is an important procedure to prove a universal law. In this method, this is done by showing that if the law is true in a particular condition, then it will also prove to be true in other similar condition at any place of the world. This method proceeds from concrete to abstract and from a specific example to the universal law. As all the scientific principles and conclusions are result of induction, thus this method is considered to be one of the most important methods of teaching science. In contrast with the deductive method, inductive instruction makes use of student "noticing". Instead of explaining a given concept and following this explanation with examples, the teacher presents students with many examples showing how the concept is used. Source : www.sasked.gov.policy.in

Generalization (or Rule) Specific Examples or Activities Specific Examples or Activities Generalization (or Rule)

73 Using any learning situation from above, the teacher would present the students with a variety of examples for a given concept without giving any preamble about how the concept is used rule as a final check that they understand the concept. Both deductive and inductive sequences are valuable for teaching concepts, generalizations, processes, and skills. When choosing, the teacher should consider a number of factors: How personalized should the learning be? Students will usually be more involved in the learning experience and tend to participate more actively when an inductive approach is used. If a deductive approach is chosen, it is important to structure the learning experience in order to draw on students' prior experiences and learning, and to provide for their active involvement. Should learning experiences be predictable? The deductive approach is more predictable because the teacher selects the information and the sequence of presentation. What depth of understanding and rate of retention is desired? Students tend to understand and remember more when learning occurs inductively. How much time is available to teach the material? The deductive approach is faster and can be an efficient way to teach large numbers of facts and concrete concepts. Merits of Inductive Method By making use of this method, following merits get accrue to the students as well as to teacher: a. As this is a scientific method, thus it helps to considerable extent in developing scientific outlook among the students. b. This method helps to develop scientific attitude among the students. c. With the help of this method, teacher can develop qualities of critical thinking and habit of keen observation among the students properly and accurately. d. This is a very logical and psychological approach of teaching science. e. By this method, students get various opportunities to play an active role in learning process.

74 Demerits of Inductive Method This method has certain limitations, some of which are as follows: a. The results or conclusions drawn from such method are not found to be final in case where the amount of data is very large in number. b. All the topics of science cannot be dealt with this method properly. c. This method can only be used when teacher have much time for teaching process. Merits of Deductive Method This method has following merits: a. As students of lower classes are being provided with established scientific principles, thus this method can prove to be effective for them. b. This method is quite time saving as students are not required to analyse the universal principles. c. Teacher's duty or burden gets lessen to some extent by making use of this method as a result of which teachers find themselves in a comfortable and secured position. d. Through this method, a teacher can cover the lengthy syllabi of class in shortest period of time. Demerits of Deductive Method This method suffers from the following demerits: a. As the approach of this method is non-conform and non-explanatory, because of which it is considered to be an unscientific method of teaching. b. Through this method, it becomes difficult for the teacher to develop scientific attitude among the students. c. As in this method, students do not get any opportunity to play active role in learning process, thus, some experts consider it as unpsychological in nature. d. Rote memory is being encouraged by this method among the students as a result of which they do not become self-independent.

75 3.4 Lecture, Demonstration, Discussion & other teaching Methods A lecture (from the French 'lecture', meaning 'reading' is an oral presentation intended to present information or teach people about a particular subject, for example by a university or college teacher. Lectures are used to convey critical information, history, background, theories and equations. A politician's speech, a minister's sermon, or even a businessman's sales presentation may be similar in form to a lecture. Usually the lecturer will stand at the front of the room and recite information relevant to the lecture's content. Lecture method of teaching is the oldest teaching method applied in educational institution. This teaching method is one way channel of communication of information. Students' involvement in this teaching method is just to listen and sometimes pen down some notes if necessary during the lecture, combine the information and organize it. One of the problems in this method is to grab the attention of students in class room. Another big problem is that many students in the class cannot follow the theme. Learning has a strong influence on method of teaching. The literature on teaching and learning contains other examples of techniques to maintain students' attention in a lecture setting: Avoid direct repetition of material in a textbook so that it remains a useful alternative resource. Make connections to current events and everyday phenomena. Begin each class with something familiar and important to students. End each class by summarizing the main points you have made. Adopt a reasonable and adjustable pace that balances content coverage and student understanding. Consider using slides, videos, films, CD-ROMs, and computer simulations to enhance presentations, but remember that : Students cannot take notes in darkened rooms. The text needs to be large enough to read from the back of the room. Students need time to summarize their observations and to draw and note conclusions.

76 Pay attention to delivery:- Maintain eye contact with students in all parts of the room. Step out from behind the lecture bench when feasible. Move around, but not so much that it is distracting. Talk to the students, not the blackboard. If using the board, avoid blocking it with A V projectors or screens. Shift the mood and intensity. Vary presentation techniques. Advantages of Lecture Method of Teaching : 1. In this teaching method a large amount the topics can be covered in a single class period. 2. Using of this method exclude the use of any equipment or Lab. 3. Learning material is not required. 4. Student listening skills develops. 5. Logical arrangement of the material in order to present it orally. 6. Help to learn languages. Disadvantages of Lecture Method of Teaching : 1. Psychologically this method is acceptable because individuals are not alike. Teacher delivers the same lecture to both students without recognizing the individual differences. 2. Learning is an active process thus study should encourage to actively participate in the class room instead of just listening the teacher. 3. If the language used in the lecture is above the standard of the students, they are not able to get full advantage of the lecture. 4. Lectures are often forgotten by the students soon after, while learning is retained if activities are experienced. 5. Attention level is not the same while listening the lecture.

77 Demonstration Method Demonstration involves showing by reason or proof, explaining or making clear by use of examples or experiments. Put more simply, demonstration means 'to clearly show'. In teaching through demonstration, students are set up to potentially conceptualize class material more effectively. Demonstrations often occur when students have a hard time connecting theories to actual practice or when students are unable to understand application of theories. Criteria for good demonstration: Identify the intended learning outcomes of the demonstration, so that you can communicate them to your students. Consider the various steps involved in the demonstration, listing the equipment and other materials that you will need to collect together before the lesson. Check whether you require teaching aids such as charts, pictures, posters and models to complement the demonstration. The board may be used to highlight key words and important points. Check that the classroom seating arrangements provide your students with a clear view of the demonstration. Rehearse the demonstration so that you are sure of the order in which to do things and can address any possible problems. List the questions that you can ask your students before, during and after the demonstration to engage them and focus the attention. Identify as many opportunities as possible to develop scientific enquiry. Allow your students to predict what will happen, observe any perceptible changes, record their observations and draw their own conclusions. A good classroom demonstration should capture your students' interest from the start, with an appropriate introduction to the topic, reference to the intended learning outcomes and some exploratory questions to establish their current knowledge and understanding. It is important to carry out the demonstration neatly and systematically. The intention is to provide a good example to your students if they later carry out the activity themselves.

78 Advantages 1. This method of teaching serves as model laboratory instruction. 2. Experiment shown as demonstration points out this matter of observation and indicates this inference. 3. It makes the pupils familiar with the nature and use of apparatus. 4. Experiments requiring special skill will merely be shown by the teacher. In this method no time is wasted. 5. Teacher's time is properly utilized in watching the students doing experiments. 6. While doing practical, there remains no necessity for explaining except educating precautions. 7. This method proves more useful if the pupils are told beforehand that they are going to do practical in the laboratory.

Disadvantages 1. There is danger of students being dishonest when teacher has to play the main role in the discussion and demonstration of the topic. 2. Teachers may be tempted to lecture rather than to teach. 3. Teachers do not try for more experiments than those given in the text book prescribed. 4. Oral discussion may not be encouraged, since it will go to restrict the demonstration experiment. 5. Practical as required may not go hand in hand with demonstration work. DISCUSSION AS A METHOD Small group discussion sessions often are used in large-enrollment courses to complement the lectures. In courses with small enrollments, they can substitute for the lecture, or both lecture and discussion formats can be used in the same class period. The main distinction between lecture and discussion is the level of student participation that is expected, and a whole continuum exists. Discussions can be instructor-centered (students answer the instructor's questions) or student-centered (students address one another, and the instructor mainly guides the discussion toward important points). In any case, discussion sessions are more productive when students are expected to prepare in advance.

79 Focused discussion is an effective way for many students to develop their conceptual frameworks and to learn problem solving skills as they tryout their own ideas on other students and the instructor. The give and take of technical discussion also sharpens critical and quantitative thinking skills. Decide on the goals of your class discussion. Keep in mind that the goals may change as you progress through the material during the course. Explain to the students how discussions will be structured. Will the discussion involve the whole class or will students work in smaller groups? If you want students to discuss questions and concepts in small groups, explain to students how the groups will form. Do not allow a few students to dominate the discussion. Some students will naturally respond more quickly, but they must be encouraged to let others have a chance. Be sure that all students participate at an acceptable level Look for opportunities for you or your students to bring to class mini- demonstrations illustrating important points of the day's topic. Be willing to adjust to the needs of your students and to take advantage of your own strengths as a teacher. Advantages : emphasis on learning instead of teaching. participation by everyone in the class. development of democratic way of thinking. training in reflective thinking. training in self-expression. spirit of tolerance is inculcated. learning is made interesting. Limitations: discussion method is not appropriate for all the topics. it can be used only to students who have some basic knowledge in the topic. some of the students may feel shy or reluctant to take part while others may try to dominate. teacher may lose control over the students and they may end up in quarelling.

80 PROBLEM-SOLVING METHOD

Problem-solving is a process-

an ongoing activity in which we take what we know to discover & what we don't know. It involves overcoming

obstacles by generating hypo theses, testing those predictions, and arriving at satisfactory solutions. Problem-based learning is a method of educating adult learners that combines theoretical knowledge with practical application. The process engages participants in considering complex and challenging issues and encourage them to work collaboratively towards finding an appropriate Solution.

Problem-solving

involves three basic functions: 1. Seeking information 2. Generating new knowledge 3. Making decisions Problem-solving is,

and should be,

a very real part of the curriculum. It presupposes that students can take on some of the responsibility for their own learning and can take personal action to solve problems, resolve conflicts, discuss alternatives, and focus on thinking as a vital element of the curriculum. It provides students with opportunities to use their newly acquired knowledge in meaningful, real-life activities and assists them in working at higher levels of thinking.

Fig : A

Problem-Solving cycle Problem Identification Organizing information about a problem Constructing a strategy for problem solving Definition of Problem Problem-Solving Allocation of resources Monitoring problem solving Evaluating problem solving 5 4 6 7 1 2 3

81 Here is

a five-stage model that most students can easily memorize and put into action and which has direct applications to many areas of the curriculum as well as everyday life:

Here are some techniques that will help students understand the nature of a problem and the conditions that surround it: List all related relevant facts. Make a list of all the given information. Restate the problem in their own words. List the conditions that surround a problem. Describe related known problems. For younger students, illustrations are helpful in organizing data, manipulating information, and outlining the limits of a problem and its possible solution(s). Students can use drawings to help them look at a problem from many different perspectives. 1.

Understand the problem It is important that students understand the nature of a problem and its related goals.

Encourage students to frame a problem in their own words. 2. Describe any barriers Students need to be aware of any barriers or constraints that may be preventing them from achieving their goal 3.

Identify various solutions. After the nature and parameters of a problem

are understood, students will need to select one or more appropriate strategies to help resolve the problem. Students need to understand that they have many strategies available to them and that no single strategy will work for all problems. Here are some problem-solving possibilities: Create visual images. Many problem-solvers find it useful to create "mind pictures" of a problem and its potential solutions prior to working on the problem.

Guesstimate. Give students opportunities to engage in some trial-and-error approaches to problem-solving.

Create a table. A table is an orderly arrangement of data.

Use manipulatives. By moving objects around on a table or desk, students can develop patterns and organize elements of a problem into recognizable and visually satisfying components.

Look

for a pattern.

Looking for patterns is an important problem-solving

82 strategy because many problems are similar and fall into predictable patterns.

Create a systematic list. Recording information in list form is a process used quite frequently to map out a plan of attack for defining and solving problems. Encourage students to record their ideas in lists to determine regularities, patterns, or similarities between problem elements. 4. Tryout a solution. When working through a strategy or combination of strategies, it will be important for students to try out & monitor strategies. 5.

Evaluate the results. It's vitally important that students

have multiple opportunities to assess their own problem-solving skills and the solutions they generate from using those skills.

CONCEPT-MAPPING A concept map is a way of representing relationships between ideas, images, or words in the same way that a sentence diagram represents the grammar of a sentence, a road map represents the locations of highways and towns, and a circuit diagram represents the workings of an electrical appliance. In a concept map, each word or phrase connects to another, and links back to the original idea, word, or phrase. Concept maps are a way to develop logical thinking and study skills by revealing connections and helping students see how individual ideas form a larger whole. Concept-mapping as a teaching method to promote critical thinking is based on the theoretical foundation laid down by educational psychologists (Ausubel 1963; Ausubel, Novak & Hanesian 1978). The fundamental idea is to determine how learning occurs and how thinking develops. Steps in Developing a Concept Map The process of concept mapping involves three major steps : Step 1 : List key concepts/terms related to the topic Step 2 : Build up concepts to elaborate key concepts Step 3 : Identify links between concepts Step 1 : List key concepts related to the topic List all the concepts related to the topic which you consider essential to understanding the topic. for example, for the topic "cooperative learning," Jose determined the key concepts to be:

83 Team Responsibilities Individual Responsibilities Characteristics Roles Basic Elements Expected Behaviors Step 2 :

Build up concepts to elaborate key concepts After defining the key concepts, you then expand on those concepts. Ask yourself the question: "What are the important concepts, facts, ideas, terms, etc. that explain the key concept?" Step 3 :

Identify links between concepts It is important to show how or why certain concepts relate to one another. This is called linking explaining the connection between two separate parts of your concept map. Fig 2 : A Concept mapping cycle

Source : www.scienceedu.gov.in

84 Characteristics of Concept Maps Focus question - clearly specifies the problem or issue the concept map should help to resolve. Propositions - a concept map consists of a graphical representation of a set of propositions about a topic. Hierarchical structure - the most general concepts are at the top of the map and the more specific, less general concepts are arranged hierarchically below. Cross-Links - relationships or links between concepts in different segments or domains or the concept map. Cross-links often represent new insights on the part of the knowledge producer. PROGRAMMED INSTRUCTION Programmed learning (or programmed instruction) is a research-based system which helps learners work successfully. The method is guided by research done by a variety of applied psychologists and educators.

Programmed instruction is an instructional method where learning content is broken down into small sections or short chunks. The behavioural principles devised by Skinner, the famous researcher in behaviourism, are used in many classrooms around the world today.

Characteristics of Programmed Instruction/learning: 1. The aims of the course are stated in terms which are objective, and can be measured. 2. A pre-test is given, or the initial behaviour is stated. 3. A post-test is provided. 4. The materials have been tried out and revised according to results (developmental testing). 5. The materials are constructed according to a predetermined scheme (stimulus control). 6. The material is arranged in appropriate steps. 7. The learner has to respond actively (not necessarily overtly). 8. Arrangements are made for responses to be confirmed (knowledge of results).

85 9. The teaching medium is appropriate for the subject-matter and the students. 10. The materials are self-paced or presented in a manner which suits the learner. Learning or training? The terms "programmed learning" and "programmed training" are interchangeable, because the principles and methods were almost identical. If the target audience is industrial or military, researchers used the term programmed training, because training budgets supported the work. But in schools and colleges, the work is often described as programmed learning. Many accounts used either or both terms according to which interest was paying for the work. Sometimes researchers used both terms as explicit alternatives.

Some surveys standardised on using just one of the terms. Types of Programme Instruction: Linear programme : Skinner's approach has been called linear in nature and involves the following features: Learners are exposed to small amounts of information and proceed from one frame or one item of information, to the next in an orderly fashion (this is what is meant by linear) Learners respond overtly so that their correct responses can be rewarded and their incorrect responses can be corrected. Learners are informed immediately about whether or not their response is correct (feedback) Learners proceed at their own pace (self-pacing) Branching programme: Branching programmed learning is similar to linear programmed learning except that it is more complicated because it attempts to diagnose the learner's response. It usually involves a multi- choice format. After the learners have been presented a certain amount of information, they are given a multiple- choice question. If they answer correctly they branch to the next body of information. If they are incorrect, they are directed to additional information, depending on the mistake they made.

86 Fig : Types of Program Advantages of Programmed Instruction. 1. Learners will work individually. 2. Students can proceed at their own pace and at time convenient to them. A slow learner is not embarrassed. 3. This offers a method of teaching project leaders and others in local communities. 4. Those who setup programmed instruction units may be motivated to plan their efforts more deliberately and more thoroughly than with traditional teaching. 5. It may be less complicated to keep materials in current Programmed Instruction unit than it is to update in a textbook. 6. Programmed Materials can be prepared for and adapted to fit almost any local situation related to nationality, economic or cultural variations in a community. 7. Material can be exchanged from country to country and from state to state, giving flexibility and variety to extension offering. Disadvantages of Programmed Instruction. Programmed Instruction has disadvantage too, among them are- 1. The preparation of Programmed Instruction material is time demanding, many hours are usually required to produce a unit. Branching Program Linear Program 1 2 3 4 5 etc. 2 3 4 5 etc. Repeat Section 1 Test 4a 4b

87 2. Motivation is necessary for students, whether they're staff members or layman, to complete units of programmed instruction. It may be that job promotion in their own organization would be sufficient enticement. Possibly an item in the individual personnel record would motivate him to complete a unit. 3. The extension teacher must keep in touch with their students working on units and let them know he's interested in progress and keeping in touch. This may be difficult to do in some cases, like in case of high rate of competition. 4. The technique may be new to the particular students and they may not complete units satisfactorily because they don't adequately understand Programmed Instruction. 5. Programmed Instruction done on an individual basis at student's home or offices would likely have to be limited to the linear type. While this could be effective, it may not have the potential that more sophisticated computers would have. 6. The problem of teacher motivation, one of the human factors is missing here. TEAM TEACHING : In team teaching

a group of teachers, working together, plan, conduct, and evaluate the learning activities for the same group of students. In practice, team teaching has many different formats but in general it is a means of organising staff into groups to enhance

teaching. Team teaching involves a group of instructors working purposefully, regularly, and cooperatively to help a group of students of any age learn. Teachers together set goals for a course, design a syllabus, prepare individual lesson plans, teach students, and evaluate the results. They share insights, argue with one another, and perhaps even challenge students to decide which approach is better.

The team-teaching approach allows for more interaction between teachers and students. Faculty evaluate students on their achievement of the learning goals; students evaluate faculty members on their teaching proficiency. Emphasis is on student and faculty growth, balancing initiative and shared responsibility, specialization and broadening horizons, the

clear and interesting presentation of content and student development, democratic participation and common expectations,

and cognitive, affective, and behavioral outcomes.

This combination of analysis, synthesis, critical

88 thinking, and practical applications

can be done on all levels of education. from kindergarten through graduate school. Working as a team, teachers model respect for differences, interdependence, and conflict-resolution skills. Team members together set the course goals and content, select common materials such as

texts and films, and develop tests and final examinations for all students. They set the sequence of topics and supplemental materials. They also give their own interpretations of the

materials and use their own teaching styles. The greater the agreement on common objectives and interests, the more likely that teaching will be interdependent and coordinated. Teaching periods can be scheduled side by side or consecutively. For example, teachers of two similar classes may team up during the same or adjacent periods so that each teacher may focus on that phase of the course that he or she can best handle. Students can sometimes meet all together, sometimes in small groups supervised by individual

teachers or teaching assistants, or they can work singly or together on projects in the library, laboratory, or fieldwork.

Teachers can be at

different sites, linked by video-conferencing, satellites, or the Internet. Breaking out of the taken-for-granted single-subject, single-course, single-teacher pattern encourages other innovations and experiments. For example, students can be split along or across lines of sex, age, culture, or other interests, then recombined to stimulate reflection. Remedial programs and honors sections provide other attractive opportunities to make available appropriate and effective curricula for students with special needs or interests. They can address different study skills and learning techniques. Team teaching can also offset the danger of imposing ideas, values, and mindsets on minorities or less powerful ethnic groups. Teachers of different backgrounds can culturally enrich one another and students.

SEMINAR : A seminar is a form of academic instruction, either at an academic institution or offered by a commercial or professional organization. It has the function of bringing together small groups for recurring meetings, focusing each time on some particular subject, in which everyone present is requested to actively participate. This is often accomplished through an ongoing Socratic dialogue with a seminar leader or instructor, or through a more formal presentation of research. It is essentially a place where assigned readings are discussed, questions can be raised and debates can be conducted.

It is relatively informal, at least compared to the lecture system of academic instruction.

89 Advantages : 1. A wealth of knowledge usually, presented by many speakers at one time in one place. A lot of "learning" at one clip, with most material compressed into two or three days' worth of time. 2. A sense of camaraderie, where individuals can meet others with the same interests/problems/concerns that they may have in their chosen field. 3. A sense of renewed hope and inspiration (this is especially true for Internet marketing seminars), as sometimes business concerns are lessened by sharing experiences with others. Being with others that "understand" individual's problems or concerns, is usually a great morale booster! 4. A great way for those that don't like to read, or attend classes, to improve their knowledge of a specific subject. Disadvantages: 1. Cost, of course, as all attendees must absorb their own costs. The seminars themselves sometimes also have an entry fee that can be quite high. All travel costs, food costs, hotel costs, and other miscellaneous costs must be absorbed by the attendees. 2. The chance that the speakers may be sharing incorrect knowledge, or not at all knowledgeable themselves (it pays to make your own assessments of presented topics, not just blindly "follow the pack"). Tips, tricks, and strategies need to be weighed as to "worth" and "accuracy" before using these. Careful thought rules here. 4. The chance that the topics may not actively help your learning or your concerns, and that the seminar will be a waste of time, where nothing you learn is of any use to you. 5. The chance that attendees will expect too much from a seminar and thus be disappointed. Realism must rule here. These are not "instant answers" to anything. COMPUTER ASSISTED LEARNING (CAL) :

Computer-assisted instruction (CAI) refers to instruction or remediation presented on a computer.

Computer programs

can

allow students to progress at their own pace

90 and work individually or problem solve in

a group. Computers provide immediate feedback, letting students know whether their answer is correct.

Computers being a graphic user interface, provide a wide range of additional features that can prove to be more effective for self-learning material. Though, CAI and self-learning books pertain to individualized learning, instructions through computers differ from SLM (Self learning material). Characteristics of CAI can be listed as follows: 1) Interactivity: Asking the learner to perform tasks during the package, keeps him alert and attentive. It prevents from getting bored. Immediate feedback is given. The learner is asked to select the correct answer. As soon as he responds, he is given feedback. The correct and wrong answers are shown. The wrong answer is in a faded colour whereas the correct answer is in bold colours and also some additional information about the question asked is supplied. This helps the learner to form a pictorial image of the answer in his mind. If the response of the learner is incorrect then he is asked to try again, till he gives the correct answer. Encouraging words such as "Very good!" or "You did it correctly" are used to increase the morale of the learner and also to motivate him to learn further. 2) Language: The learner is usually alone during while using the package. Isolated learning can tend to boring and the learner may eventually lose interest in the package. Hence it is necessary that the language be very interesting that would attract the attention of the learner and encourage him to learn further Conversational language is used, due to which the learner feels as if the narrator is speaking to him. This motivates the learner. 3) Use of a narrator: Many a times, a graphic narrator is shown which does the job of narrating the topic or the content and usually guides the learner through the entire package. Narrators directly converse with the learner and explain how to use the package. It may sometimes appear as if the graphic narrator is teaching the learner or he is learning along with the learner. This narrator gives a sense of some virtual guide, helping the learner through the process of learning.

91 4) Content Treatment: The content is structured. It is broken into small chunks, sections, subsections, units etc. The learner thus gets a whole picture of the content that he is going to learn in the package. The programmer beforehand decides upon the inter-relation and inter-dependence of the components and accordingly places the material in a sequential order or non-linear manner. 5) Multimedia: Multimedia includes the use of sounds, graphics, animations, motion to any animations, film clips and various other features. All such features have made the CAI packages very interesting. The eye catches any motion and it is easier to grasp attention. It is very interesting to watch a graphic animation performing the unexciting chemical equations or drawing some tedious geometrical figures. If there are any funny sounds in the background then all such boring lessons become fun and frolic. Thus apart from learning, such activities become amusement games for the learner. This keeps the learner motivated and he does not feel as if he is studying some difficult chapter. When there is some definition to be learnt, sounds clip can be added to the text, which would make a double impact on the brain and the learner is able to remember the definition by visual as well as auditory mode. Another advantage of multimedia is that real film clips can be inserted in the packages. Say for example, in a package for Universe, real film clips of the moon or now even the Mars, can be inserted which would create a better impression on the minds of learners. 6) User-friendly Layout: The package first introduces the topic to learner. The introduction may be based upon some previously known events or some situations that are familiar to the learner. The introduction through familiar topics leads to the main subject to be learned. After the introduction, the user comes to the first page or the homepage. This page contains link to all subunits and subsections. When the components are independent of each other, the learner may opt for any sub unit of his choice. For example, if the package is about different types of fruits and vegetables, he may select fruits or vegetables according to his wish and then learn further about them. Fruits and vegetables are not interdependent on each other. The learner can study these topics individually. Thus he has the freedom of choice in such a situation.

92 Unique Features of CAI: There are many unique features of CAI which make it an exciting field of study : One of the most useful is its adaptability for distance learning. Before the dominance of microcomputers, distance learning was mostly accomplished through PI or the US mail system supplemented by telephone contact. On the contrary, CAI provides regular and timely interaction with the instructor and current feedback. Students can repeat tutorials as often as needed and work at their own pace. CAI also can be used with greater numbers of students than a traditional classroom would hold. CAI and web-based instruction have opened avenues of access to individuals with disabilities that were not possible before. Intelligent computer-assisted instruction (ICAI) is programmed so that the CAI adapts to the student's individual needs. It acquires information about the student's current knowledge of a subject and his/her goals in learning the subject and then creates a user profile based on this knowledge. It can then adjust itself to the individual student. Web-based instruction is unique in that students and/or instructors can communicate with each other anywhere in the world within seconds via the Internet. Feedback from the instructor can be obtained immediately. 3.5 Project Method & Heuristic Method The project method is a medium of instruction which was introduced during the 18th century into the schools of architecture and engineering in Europe when graduating students had to apply the skills and knowledge they had learned in the course of their studies to problems they had to solve as practitioners of their trade, for example, designing a monument, building a steam engine. In the early 20th Century, William Heard Kilpatrick expanded the project method into a philosophy of education. His device is child-centred and based in progressive education. Both approaches are used by teachers worldwide to this day. Unlike traditional education, proponents of the project method attempt to allow the student to solve problems with as little teacher direction as possible. The teacher is seen more as a facilitator than a deliver of knowledge and information.

93

The term project is no longer reserved for the planned undertaking calling for the constructive thought and action. Project means almost any undertaking. It is activity oriented but it is more than the simple activity. It advocates that the education should be related to the life situation. The main focus of this strategy is socializing the child and developing the problem solving ability. DEFINITION

OF PROJECT "

A

project is

a whole-hearted purposeful activity proceeding in a social environment" -

W. H.

Kilpatrick. "

A project is a problematic act carried to completion in its natural selection" - R. L. Stevenson.

TYPES OF PROJECTS According to Kilpatrick there are four types of projects. They are: 1. Constructive project: Practical or physical tasks such as construction of article, making a model, digging the well and playing drama are done in this type of projects. 2. Aesthetic project: Appreciation powers of the students are developed in this type of project through the musical programs, beautification of something, appreciation of poems and so on. 3. Problematic project: In this type of project develops the problem solving capacity of the students through their experiences. It is based on the cognitive domain.

For instance, how to operate a bank account? or how to send a thing at distant place? 4.

Drill project: It is for the mastery of the skill and knowledge of the students. It increases the work efficacy and capacity of the students. For instance, this type of project may be taken up to give drill in singing or swimming.

Other types Individual and Social (Group) projects :

94 In individual projects, every student solve the problem in their own according to their interest, capacity, attitude and needs. It develops the problem solving qualities individually and not the social qualities. In Group projects, the problem is solved by the group of pupils in the class. Here the social, citizenship qualities and synergism are developed. **Simple and Complex project:** In the simple projects, the students complete only one work at a time. They also focus the work in one subject or one area only. It gives the deep information about the project in one angle. The students get deeper and broader knowledge about the problem. In the complex projects, the students carry out more than one work at a time. They focus on the work in various subject and angles. Here the students get the knowledge about the work in various activities and dimensions.

PRINCIPLES OF PROJECT METHOD 1. Principle of Purposefulness The project should be purposeful, and that should have some main objective. The objective should give the enthusiasm and work to the students, otherwise that will be a wastage of time and energy. 2. Principle of Utility The project should be useful to the students and the society. It should be of some value to the students. From a good project, the students as well as the society may get the benefit a lot. 3. Principle of Freedom The students should be free to select the topic and execute the work according to their will and wish, interest, attitude and capacity. The teacher should only be a "guide on the side" and give guidelines to execute that. 4. Principle of Activity Project means the purposeful activity so at the end of the project the students must gain knowledge through their activity. It is also a demand of the principle of learning by doing.

95 5. Principle of Reality Project should be real and related to the life situation of the students and the society. Only then they would be able to complete the project naturally and really. Imaginary problems must not be taken up in the project. 6. Principle of Social Development A good project focuses society needs, social development, and usefulness to the society. A single project solves the problem of the thousands of the people or the society. 7. Principle of Planning The students plan in advance about the project. They find solutions for - How? When? What? Where? Why? So, good project develops the problem solving capacity and prior planning for the execution. **PARADIGM OF PROJECT METHOD** Project method has the following steps: 1. Creating Situation In the first step teacher creates the proper situation to the students in the class. He shares the knowledge about the project method procedure, steps, and uses with the students. After that he provides proper motivation through conversation about the day to day life problems to the students. 2. Selection of the problem Then the teacher helps the students to select the problem and guide them. Here the students are having freedom to choose the topic or problem based on their interest and ability. Before choosing the topic the principles should be taken in to an account. 3. Planning The teacher discuss with the students about the problem through various angles and points. He should create the situation of the discussion with the students and they are allowed to talk freely and openly. After the free expression of the students' opinion about the problem, the teacher writes down the whole program of action stepwise on the blackboard. The grouping is made by the teacher based on the interest and ability of the students.

96 4. Execution The students start their work in this step. They collect the relevant information/ data and materials at first. The teacher should give time to the students according to their own speed, interest and ability. If need arises, he may provide the necessary help and guidelines to the students. He demands the groups to complete the project in the particular time. 5. Evaluation Here the students evaluate their task. They determine whether the objectives have been achieved or not. After that they criticize and express their feeling about the task freely. The planning, selecting the task, and execution are discussed in the class. All these things are collectively reported to the teacher. 6. Reporting and Recording It is the last step of the project method in which each and every step of the work are reported. The reported things are recorded in a certain order in a book form. The record is useful for the further use and future reference about the project. It reveals many ideas about the concerned project. The book formatted report is submitted to the teacher at the end. **ADVANTAGES OF PROJECT METHOD** 1. It is students centered, activity based method. 2. Students involves whole-heartedly in the learning process according to their needs, attitude, interest and ability. 3. This method is related to the life situation of the students. 4. This method develops the problem solving ability to the students. 5. It makes the students independent and confident. 6. It gives the real work experience to the students. 7. It develops the social qualities and synergism in the students' heart. 8. It develops the responsibility realization of the students. **LIMITATIONS OF PROJECT METHOD** 1. It is a time consuming method.

97 2. It is difficult to complete the prescribed syllabus in a particular time. 3. It is a very costly method. 4. It is not applicable for the lower classes. 5. All topics cannot be through this method. 6. It is not applicable for the all schools. 7. It needs so much material for the execution.

HEURISTIC METHOD : A heuristic method (a Greek word means to "find" or "discover"), often called simply a heuristic, is any approach to problem solving, learning, or discovery that employs a practical method not guaranteed to be optimal or perfect, but sufficient for the immediate goals. **Meaning of Heuristic Method of Teaching** : A problem is placed before the learners and they are asked to find the solution of the problem through various literacy means, like library, laboratory, and workshops etc. Teacher's role is to initiate the learning and pupils are active throughout the learning process. By using their creative thinking and imaginative power, they try to find out the relevant solutions based on some logic. They learn by self-experience. This teaching strategy is focused on: 1. To develop problem 2. Solving attitude 3. To develop scientific attitudes towards the problem 4. To develop power of self-expression Its basic principles are: 1. To each as little as possible at one time 2. To encourage learner to learn himself as much as possible. **Advantages** : 1. Students are put into the situation to learn by self-experience. It certainly develops self-confidence and self-reliance in the learners.

98 2. It helps in developing scientific attitude and creativity in the learners. 3. Teacher encourages the learners to explore the environment in search of the solution of the problems. By doing so, some new knowledge is discovered by them. 4. Teacher is always ready to provide individual guidance regarding the solution of the problem. Thus interaction between the teacher and the learner takes place in a cooperative, conducive environment. **Disadvantages of Heuristic Teaching Method** 1. It cannot be used at primary level of education. 2. Higher intelligence and divergent thinking is required in the learners. But, there are some students who are below average and fail to succeed in discovering the solutions of the problems. It frustrates them. 3. In true sense, none of the teachers have patience for providing individual guidance to the learner: 4. And learners, too, feel hesitation to approach the teacher for seeking his help. **Suggestions** There can be number of solutions for a problem. So, it is the teacher's duty to provide guidance to the learners to select the most relevant solution of the problem. 1. Problem should be related to the course and curriculum and a definite time period should be allotted to the learners to finish their research work. 2. Students' abilities capabilities, interest and choice of the subject should be taken into consideration in allotting the problems. 3. There should be an eligibility criteria for providing the problems. **3.6 Creating Different Situations of Learning Engagement** Three Main Types of Cooperative Learning in Science are : Cooperative Learning, Group Learning Small group Learning Collaborative or Cooperative learning "is

an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together".

Cooperative learning, a form of collaborative learning, is an

99 instructional technique in which students work in groups to achieve a common goal, to which they each contribute: out-of-class study groups in-class discussion groups project groups (in and/or out of class) groups in which roles (leader, timekeeper, technician, spokesperson, and so forth) are assigned and rotated. Cooperative learning is the most commonly used group work teaching strategy by all science teachers. Johnson & Johnson, two well-known pioneers in modern methods of cooperative learning have identified the three main types of cooperative learning: cooperative base groups, informal cooperative learning groups and formal cooperative learning groups (Johnson, Johnson, 1994). I. Cooperative Base Groups Cooperative base groups are long-term, heterogeneous cooperative learning groups (lasting for at least one semester or year) with a stable membership, whose primary responsibility is to give each member the support, encouragement, and assistance he or she needs to progress academically and develop cognitively and socially in healthy ways. II. Informal Cooperative Learning Groups An informal cooperative learning group is one in which students work together in temporary, ad hoc groups that last for only one discussion or class period to achieve joint learning goals. In formal cooperative learning groups are used to focus student attention on the material to be learned, create an expectation set and mood conducive to learning, ensure students cognitively process the material being taught, and provide closure to an instructional session. The one-period long group work activity designed for conducting any laboratory work in small groups (usually of 3- 4 students) is an example of an informal cooperative learning group. Group work is appropriate for laboratory work in science lessons because it is not always possible to provide material for individual manipulation. III. Formal Cooperative Learning Groups The formal cooperative learning group is the most widely used method as almost

100 all teaching examples provided in the on-line seminar were classified under this method. A formal cooperative learning group is when students work together for one or several class sessions to achieve shared learning goals and jointly complete specific tasks and assignments. These groups provide the foundation for all other cooperative learning procedures. They are structured through pre- instructional decisions, setting the task and the cooperative structure, monitoring the groups while they work, intervening to improve task-work and teamwork, evaluating student learning, and processing group functioning. Peer- Tutoring : Peer tutoring is an intervention in which students work in pairs to master academic skills or content. Peer tutoring can involve partners who are the same age or different ages (cross-age). Cross-age peer tutoring involves older students serving as tutors for younger, lower-functioning students. Cross-age tutoring occurs for example, when students in a high school child development class spend regularly scheduled time each week reading with struggling students in a fourth grade class. In this instance, the tutors might be expected to gain less from the content being tutored but may be expected to gain more in social responsibility or understanding of learning as a process. In same-age tutoring, in which students of the same age tutor each other, more skilled students may be paired with less skilled students. In this case, students with stronger skills may provide the first responses, providing a model for the less skilled partner. In other cases, the teacher may decide to pair students of similar ability and have them alternate tutoring roles, which is sometimes referred to as reciprocal peer tutoring. Class-wide Peer Tutoring (CWPT) occurs when the teacher creates highly structured tutoring materials for use during the tutoring session. Peer tutoring is differentiated from tutoring between adults, such as community volunteers, and students. It is also distinguished from cooperative learning, in which students work collaboratively in groups. Clearly, peer tutoring is a general term that encompasses many tutoring models. All methods are designed to increase practice, responding, and feedback For students, and they often result in increased student motivation and achievement. These models differ, however, in how tutoring pairs are assigned, how tutoring content is developed, and how extensively the tutoring is employed. For example, in cross-age tutoring the expert tutor is typically the older student, while in reciprocal peer tutoring and CWPT the paired students are the same age and can take turns assuming the expert role. In cross-age and reciprocal tutoring, the student tutor is typically responsible For learning the content and then teaching the information to the tutee, while in CWPT the teacher is more responsible.

101 The instructional components of the peer tutoring approach include (a) explicit teaching of students in how to be tutoring experts, (b) purposeful partner assignment, (c) careful preparation of tutoring materials, (d) highly structured tutoring procedures that include specific Feedback For tutors to provide tutees, (e) expert role reversal, and (f) active teacher monitoring. Also, some type of systematic performance is typically included. Jigsaw : Jigsaws are particularly relevant to science because they model the way in which science, engineering, and medicine work in the real world. Groups of experts often collaborate in multi- disciplinary teams to accomplish goals and complete projects. Jigsaw lessons provide unique opportunities for students to learn from each other and practice the 21 st century skills of collaboration and communication in an authentic setting. By using the jigsaw method in our classes, we are preparing our students for the careers that await them. How to Set Up Jigsaw Activities: Carefully arrange both sets of groups (the first "expert" ones and the second "multi-disciplinary" ones) to ensure diversity of skill levels and leadership ability. Assess students individually (not as a group) to make sure that their marks truly represent their own level of mastery (and not what the group overachiever knows). Give students lots of guidance about what they should be doing in each group. Choose a captivating, authentic experience for them. If you teach the human body, let them become specialists in a body system. If you are studying fossils, assign your students to become experts on different time periods. Later, give the mixed groups mysteries to solve, like unidentified bones or undiagnosed medical conditions.

102 Learning with reference to children with Disabilities : One of the four guiding principles of the National Science Education Standards is simply "science for all students" (NRC 1996). This principle underscores the belief that all students, regardless of race, gender, or disability, should have the opportunity to learn and understand the essential science content described in the Standards. Because of increasingly widespread inclusion practices and more thorough identification procedures, students with documented learning disabilities (LD) are becoming a larger percentage of the science classroom. Because many practicing science teachers have little training or experience in identifying and meeting the needs of students with disabilities basic educational principles that support the unique learning needs of these students have been formulated. Each principle is accompanied by examples of how a science instructor might put that principle into practice. Principle1: Learning is enhanced when teachers recognize and teach to diverse learning styles and strengths. Learners have diverse ways of making meaning, constructing knowledge, and expressing understanding; using this perception as a starting point in our science teaching is particularly important for students with disabilities. These students-who show deficits in certain aspects of their learning such as organization, reading, memory, and writing-have benefited when instructors accommodate and teach to a variety of learning styles (Carbo and Hodges 1988). Teachers interested in reaching the broadest range of students can offer multiple means of representing the content in their classroom and provide students with multiple means of expressing their mastery of that content. This universal design approach to education is strongly advocated by organizations that work to expand learning opportunities for those with disabilities, such as the Center for Applied Special Technology. Principle-to-practice examples Although this principle may require more time to implement, the field of science lends itself well to teaching to a diversity of learning styles. Teachers can apply the following approaches.

103 Provide instruction that reaches the full spectrum of diverse learners. Example: Students can see or perform a demonstration of osmosis (real or computer-based), view and/or construct a diagrammatic depiction of diffusion versus osmosis, read a text-based description of cell transport mechanisms, and enact a role play that shows active transport kinesthetically. Provide various means of assessment that capitalizes on students' learning strengths or preferences. Example: Students can choose from-or the teacher can alternate among-varied-format tests, graphic organizers, oral interviews, three-dimensional models, written summaries, PowerPoint slide presentations, or posters. The teacher could also have a set order to cycle through. Principle 2: Content learning is supported by explicit instruction in skills and strategies. The science curriculum is embedded with an ever-increasing array of thinking, study, and organizational skills that are predictors of future academic success. Principle 3: Learning is facilitated when instruction and assessment are clearly organized. Although explicit organizational schemes are useful for all students, they are particularly important for CWSN (children with special needs) who are most successful when provided with high structure (Minskoff and Allsopp 2003). Explicit organization of instruction and assessment can positively affect student planning, prioritizing, and goal-setting, all typical areas of difficulty these students (Raskind et al. 1999). Teachers should pay special attention to organizing routines and pacing, which are frequently difficult for these students. Principle 4: Learning is maximized when instruction and assessment are based on explicit objectives. In the Guide to Teaching Science to Students with Special Needs in the Inclusive Setting, Mastropicri and Scruggs (1993) emphasize clearly stated objectives as a hallmark of effective instruction for such students. Certainly, understanding the purpose of a lesson or an assessment will enhance the learning of any student, but this understanding is particularly salient for such students, whose memory capabilities 104 are likely to be compromised as a part of their diagnosis (Hulme and Mackenzie 1992), clearly articulated objectives, which are easily available and frequently referred to, can be an important reference point, allowing such students to access and re-access information that is likely to provide both clarification and motivation. The following points provide strategies for making learning objectives explicit during instruction and assessment. Make a direct connection, orally and in writing, between each class task and its associated learning objective. Example: When facilitating a role-playing demonstration of active transport, the teacher must make explicit at the outset the purpose of the demonstration and provide an opportunity at the end for students to articulate the main idea of the demonstration. Provide scoring rubrics that describe the qualities of excellent work for the various components of each assignment. Example: If assigning a lab report on some aspect of cell transport from an inquiry-based investigation, the teacher can give students a rubric that describes the qualities of an excellent, adequate, partial, or poor hypotheses statement. Each component of the assignment (e.g., data table, graph) would include similar descriptors of quality. Provide (or assign) some form of study guide for students to review before any quiz or exam. Example: The instructor can generate a study guide for early units in the course and eventually assign it to students. Principle 5: Learning is improved when teachers provide consistent feedback. In addition to providing important self-assessment information, frequent feedback enhances motivation, which is important to academic achievement. The benefits of feedback, while important to all students, some ways to offer consistent and helpful feedback for students in science exist. Principle 6: Learning is sustained when students develop self-knowledge. By increasing their own understanding of learning styles and disabilities, science teachers can help impart this information to their students, thus increasing students' metacognition and their ability to begin advocating for themselves as learners.

105 3.7 Constructivist Approach and its use in Teaching Science Constructivist teaching is based on constructivist learning theory.

Constructivist teaching is based on the belief that learning occurs as learners are actively involved in a process of meaning and knowledge construction

as opposed to

passively receiving information. Learners are the makers of meaning and knowledge. Constructivist teaching fosters critical thinking, and creates motivated and independent learners.

Characteristics of Constructivist Teaching

According to Audrey Gray, the characteristics of a constructivist classroom are: the learners are actively involved the environment is democratic

the activities are interactive and student-centered the

teacher facilitates a process of learning in which students are encouraged to be responsible and autonomous

Role of teachers in a constructivist classroom:

In the constructivist classroom, the teacher's role is to prompt and facilitate discussion. Thus, the teacher's

main

focus should be on guiding students by asking questions that will lead them to develop their own conclusions on the subject.

It is unanimously suggested that good teachers join self, subject, and students in the fabric of life because they teach from an integral and undivided self, they manifest in their own lives, and evoke in their students, a capacity for connectedness". There are three major roles for facilitators or teachers to support students in constructivist learning environments (CLE): Modeling - Modeling is the most commonly used instructional strategy in CLEs. Two types of modeling exist: behavioural modeling of the overt performance and cognitive modeling of the covert cognitive processes. Behavioural modeling in CLE demonstrates how to perform the activities identified in the activity structure. Cognitive modeling articulates the reasoning that learners should use while engaged in the activities. Coaching - the role of coach is complex. She acknowledges that a good coach motivates learners, analyzes their performance, provides feedback and advice on the performance and how to learn about how to perform, and provokes reflection and 106 articulation of what was learned. Moreover, she posits that coaching may be solicited by the learner. Scaffolding - Scaffolding is a more systemic approach to supporting the learner, focusing on the task, the environment, the teacher, and the learner. Scaffolding provides temporary frameworks to support learning and student performance beyond their capacities. The concept of scaffolding represents any kind of support for cognitive activity that is provided by an adult when the child and adult are performing the task together. Constructivist Learning Environments (CLEs)

In CLEs, learning is driven by the problem to be solved; students learn content and theory in order to solve the problem. This is different from traditional objectivist teaching where the theory would be presented first and problems would be used afterwards to practice theory. Depending on students' prior experiences, related cases and scaffolding may be necessary for support. Instructors also need to provide an authentic context for tasks, plus information resources, cognitive tools, and collaborative tools. Constructivist assessment Traditionally, assessment in the classrooms is based on testing. In this style, it is important for the student to produce the correct answers. However, in constructivist teaching, the process or gaining knowledge is viewed as being just as important as the product. Thus, assessment is based not only on tests, but also on observation of the student, the student's work, and the student's points of view. Some assessment strategies include: Oral discussions. The teacher presents students with a "focus" question and allows an open discussion on the topic. KWL(H) Chart (What we know, What we want to know, What we have learned, How we know it). This technique can be used throughout the course of study for a particular topic, but is also a good assessment technique as it shows the teacher the progress of the student throughout the course of study. Mind Mapping. In this activity, students list and categorize the concepts and ideas relating to a topic. Hands-on activities. These encourage students to manipulate their environments or a particular learning tool. Teachers can use a checklist and observation to assess student success with the particular material.

107 Pre-testing. This allows a teacher to determine what knowledge students bring to a new topic and thus will be helpful in directing the course of study

of findings. Significance of Teacher in a constructivistic Science classroom: In constructivists' view, teachers in science classrooms as authority figures play two essential roles. One is to introduce new ideas or cultural tools where necessary and to provide the support and guidance for students to make sense of these for themselves. The other is to listen and diagnose the ways in which the instructional activities are being interpreted to inform further action. The essential role of the teacher is controlling the 'flow of discourse' (Mortimer & Scott, 2000) in the classroom. The ability to guide the classroom discourse as ideas are explored and explanations are introduced, is central to the science teacher's skill and is critical in influencing students' learning. Teacher's role may be summarized as; develop key ideas relating to the new concepts being introduced; introduce points relating to epistemological features of the new way of knowing; promote shared meaning amongst all of the students in the class, making key ideas available to all; check student's understanding of newly introduced concepts. 3.8 Let Us Sum Up Whether in lecture, discussion, laboratories, or individual encounters, questioning is an important part of guiding students' learning. When students ask questions, they are often seeking to shortcut the learning process by getting the right answer from an authority figure. In the learning process, it is the processes of arriving at an answer and assessing the validity of an answer that are usually more important, particularly if the student can apply these processes to the next question. Both of these processes are obscured if the teacher simply gives the requested answer. Often, the Socratic method- meeting a student's question with another (perhaps leading) question- forces students (while often frustrating them) to offer possible answers, supporting reasons, and assessments. In fact, posing questions can be an effective teaching technique. Here are some tips for the effective use of questions: Wait long enough to indicate that you expect students to think before answering. Some students know that if they are silent the professor will give the answer (Rowe, 1974).

108 Solicit the answer from a volunteer or a selected student. Determine the student's confidence level as you listen to the answer. Solicit alternative answers or elaboration to provide material for comparison, contrast, and assessment. Solicit additional responses from the same students with a leading question or follow-up observation. It is often seen, that questioning on the part of the learners provide an actual learning, if they are directed properly in the path of learning. 3.9 Check Your Progress 1. What is the meaning of method & approaches in teaching–learning situation?

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2. Give the Characteristics of discussion method.

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3. What are the basic tenets of concepts mapping?

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109 4. How Good lecture can be delivered in a science classroom.

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..... 5. Mention the determinants a controlled cooperative learning in a Science classroom.

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..... 6. What is meant by CAI? Write its components.

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..... 7. Define a project.

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..... 8. Mention 4 attributes of constructivist hearing environment (CLE).

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110 9. What are Peer-tutoring & jigsaw.

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..... 10. What are the roles played by a Science teacher to cater to the needs of CWSN.

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111 Unit 4 Learning Resources with References to Children with Disabilities for Teaching Science Structure : 4.1 Introduction 4.2 Objectives 4.3 Needs for Teaching learning aids for Science Teaching 4.4 Importance of Co-curricular activities 4.5 Science Laboratory with Reference to Children with Disabilities 4.6 Aquarium, vivarium–Role in Teaching with Setting & Maintaining 4.7 Museum, Botanical & Zoological Garden : Role in Teaching 4.8 Let Us Sum Up 4.9 Check Your Progress 4.10 References 4.1 Introduction According to Kothari Commission (1964-66) “The supply of teaching aids to every school is essential for the improvement of the quality of teaching. It would indeed bring about an educational revolution in the country.” Our day to day life experiences have three aspect cognition, affection and conation. None of these can be experienced independently. Montessori Stressed the import of human senses. At the first step stimulation of sense produces in him or her just a sensation but later his Sensation became a meaning to it and at the end it visit convert to perception. Perception leads to ideas or concepts. The pupils interested to see concrete objects. They want to handle, manipulate and the teacher should provide a situation for the pupils to satisfy their curiosity of doing thing. According to Burton, “Teaching learning aids are those sensor objects or images which initiate or stimulate and re-inforce learning.”

112 4.2

Objectives After going through this unit, the learners will be able to: Understand the need & importance of teaching-learning aids. Signify & delineate different co-curricular activities Plan & interpret science lab with reference to children with disabilities. Explain & demonstrate aquarium, museum, botanical & zoological garden. 4.3 Needs for Teaching learning aids for Science Teaching The use of Teaching learning aids is necessary for the following reason : 1. The aids help in drawing the attention of students. 2. These help in arousing interest and motivating force for the students activity. 3. These help in providing direct experience as the objects are presented in concrete form. 4. These are helpful to the students to have clear understanding of the concept. 5. Teaching learning aids break monotony and provide variety of learning situations. 6. These help in making the students remain active all together. 7. These stress on the principles of learning by observing and doing. 8. They help teacher for in creasing classroom interaction style. 9. They help in catering to the needs of all kinds of students in the classroom. 10. Teaching aids help developing scientific attitude and train the teacher for applying scientific method in the class room. Importance of teaching learning aids : There is an old saying which reads. I Hear, I Forget : The traditional teacher depended to much on verbal exposition, pupil hears and forget. I See, I Remember : As a sensory organ, the eye is very highly developed when compare to the other sensory organs. So, what one sees, one remembers.

113 I do, I Understand : When one is engaged in any Practical activity, involving physical more all the Senses are used to perceive. Hence flow of knowledge is quick, complete and more accurate. So importance of teaching learning aids can be given for the following reasons : i) It reduces verbalism or meaning less use of words and phrases and contributes towards the clearness of percept and accuracy in learning. ii) It extends first hand experience when students see a demonstration, handle the apparatus, perform experience themselves and prepare chart model etc. iii) It is the most natural and easiest way of learning. Image is the greatest instrument of instruction. When a Pupil sees an object, he/she forms an image of the object. iv) Some type of freedom prevails in the classroom. Pupil can talk, ask, comment and discuss and they are motivated to do work and they work freely in the classroom situation. v) The large number of pupils can learn though proper teaching learning aids used by the teacher. vi) New curricula have broadened and extended the field of Education which can be satisfactory covered only with the help of teaching aids. Principles for Selection of Teaching learning aids 1. The aids Should be integrated with learning. It should be an integral part of educative process and appropriate to the curriculum of the class. It should not be merely recreational but should accomplish some significant end and co- ordination with day-to-day lessons. For example, while teaching about a scientist, the taperecorded speech may be reproduced in the classroom. This will provide life-like situations and the pupils will feel interested. 2. It should be according to the age, intelligence and experiences of the students. It should neither be too simple nor too complex. It should suit to the physical, psychological, intellectual and social development of the group wli which it is used. 3. The language should be familiar and understandable to the pupils. 4. It should be truthful, accurate and realistic and should be a substitute for reality. For example, a model of red-rose should represent a true flower in its

114 proportion, colour, symmetry etc, If the aid used is just a misrepresentative of the actual thing the whole aim of the aid or teaching is defeated for all children will learn wrong things. 5. It should be motivational and highly informative, The aid used should attract and capture the attention of pupils. 6. It should be available where and when required. 7. It should have desirable utility and should be according to local conditions and needs. The aid selected should satisfy the purpose with which it is used. Principles for the Use 1. The teacher should be well skilled in the use of aid. Aid should be actually taught and not merely displayed, It should not substitute but supplement the teacher's work. 2. While using the aid active participation of students should be sought. There should be adequate preparation on the part of pupils, They should be told what they should look for. The pupils should ask questions, answer questions, comment and discuss. 3. The aid should be properly protected and preserved for nothing discourages or mars the interest of the students more than a spoiled picture, broken model or a cracked slide. 4. It should be located conveniently so that it is easily available when need arises. 5. The aids should be evaluated at regular intervals in order to know their use and effect on learning. Types of Teaching-learning aids on the basis of experiences : All the experiences that human beings derive are mainly from three sources : (i) Direct sensory contact which involves doing. (ii) Pictures or some other forms of representation of objects by observing. (iii) Oral or printed words which involve symbolising. All the learning experiences which can be utilised for class room teaching are shown by Edgar Dale in a pictorial device—"Pinnacle form which he called "Core of experiences."

115 Effectiveness increases Projected Aids More effective than non-projected aids. Projected Aids More effective than non-projected aids. Figure 2.1 Relative Effectiveness of Teaching Aids Source : Sampath et al Coloured Chalk Charts Word, word, word least effective method Teaching Aids Non-projected Chalk Board White Chalk Display boards Models Static Models Sectional Epidiascope Slide Projection-Black and White Coloured Slides Flimstrip Projection-Colour Overhead Projector Motion Picture-Silent, Black and White Motion Picture-Sound-Colour Loop (Cassette) Colour Film CCTV. Demonstrations, TV Experiments Working Models Diorama Individual Doing Experiment Projects, Excursions Verbal

116 Teaching learning Aids to Promote Effective Learning—Comparative Study Classification of Teaching learning aids Visual i) Chalk-Board ii) Charts, Diagrams Sketches, models, graphs iii) Motion pictures film strips and slides iv) Flannel graph, Bulletin Board and scrap book etc. Auditory i) Radio ii) Gramophone iii) Tape-recorder etc. Audio-Visual i) Films (Sound motion pictures) ii) Television iii) Video etc. Information Technology 1. CD/DVD 2. Multimedia etc. Software needed 7 Information available from manufacturers. Teachers can themselves make slides Commercial TV stations often broadcast many programmes. But teachers. Sl. No. 1 2 Tool Hardware 2 2x2 slide viewer TV receiver (C.C.T.V.) How to use 3 Individual or small group instruction depend on type of viewer Small or large group instruction Features and Utilisation 4 Student can use alone in classroom or industrial an resource centres Ideal for students in make up work Useful in areas where space or safety limitations prevent students from clearly Conditions for Use 5 With proper screen little or no darkening of the laboratory is necessary School plant must be specially equipped Accesories available 6 Some models built-in- screens in covers, slide carries, slide trays, manual or automatic changers, automatic timers, remote control changers, adapters for single-frame vertical filmstrips Auxiliary speakers, glare shields, coaxial cable with impedance How many 8 One in each laboratory, one in resource centre Considering cost one is usually enough if a planning room or Maintenance 9 Low Normal Mainten

117 7 must develop own TV films for use in regular lessons possible. Teachers may record own tapes to suit lessons Both sending and receiving equipment is necessary (see TV Receiver) Spare reels, 2 track tape, check cata-logues/ disc records (33, 45, 78, r.p.m. Discs) Light Sensitive transparency blanks, laminates 1 3 4 5 6 2 Audio- tape recorder (Listening station) Portable Video-tape machine Tape- recorder and record player Trans- parency equipment 3 Used with individual or small group instruction, can be used with other audio- visual equipment Entire class viewing Small or large group instruction replaying recorded educational broadcast To make transparency for us with overhead projector 4 viewing demonstrations Ideal for mock up lectures or dictated tests Instructors and students can programme tape to be used for classroom demonstrations Avoid crowding around machines where safety problems could arise Lectures may be given during teacher's absence Students may review lecture as they wish or listen to recordings Can be used to make transparencies 5 Needs carphones and jacks. Students use the equipment independently. Need not disturb teacher or classmates Can tape teacher's demonstrations, allowing him freedom to work with students None None 6 matching transformer for connectting 300 ohm antenna or camera system Earphones, Jacks sound proof individual desk units Portable video monitor special effects generators empty reels, wide angle lens, telephoto lens, vidicon camera Additional speakers, microphones, stereo head phones, earphones Carrying case, dust cover 8 resource centre is available One per lab or resouce centre One in a resource centre One per department One per department 9 Specialised maintenance needed Requires specialised maintenance Spectalise maintenance may be sometimes needed Spectalise maintenance 118 7 Many commercially available 35 mm film- strips, check film and audio- visual catalogues Check catalogues for film listings Commercial films available, consult film catalogues for lists of films for rent or free. Some teachers can make their own films 1 7 8 9 10 2 Wall charts and posters Filmstrip Projector or Slide projector 8mm sound projector 16 mm sound projector 3 Small or large group instruction Small or large g roup instruction Small or large group instruction Small or large group instruction 4 Can be used for a variety of purposes Can be used for 2x2" slides or 35 mm filmstrip, teacher may stop and discuss any time Student can assist by reading or operating the projector during class Through commercially available films, more up-to-date information can be brought into the classroom to assis t the industrial arts teacher in clarifying lessons Can be used in classroom or laboratory 5 A darkened room may be necessary Same as 16 mm motion picture projector Darken room except for newly developed day-light screen 6 Dust cover, carrying case lenses, automatic timer, remote control film advance, rewind take-up self-contained unit with screen, PA system in some models Loudspeaker 20 mm to 32 mm f/1 Projection zoom lens, universal splicer, remote control microphone, variable speed control, automatic and semi- automatic threading devices, stop motion devices Speakers 10 and 25 hours 1000 watt lamps, protective covers, automatic threading devices remote control, wide angle lenses 8 As may as available One for each area in the department, one for the resource centre is ideal One per department One per department is usually enough 9 No maintenance problem Low, but specialised work may have to be done Specialised maintenance Specialised maintenance may be necessary

119 Source : Sampath et al 4.4 Importance of Co-curricular Activities In the 21century, the pure academic type of education that students are introduced to, is steadily paving way to a whole new type of education with a special focus to incorporate three major genres of education: reasoning, psychomotor and emotional learning. Education is a pretty broad concept that surpasses the four walls of a classroom. The core aim of education is to foster all round development of a child. All round development essentially means intellectual, physical, moral, sensible and social development. All round development can be achieved only through education. 7 Empty cartridges film splicers, make use of the filmstrip projector one of the newest and best audio- visual aids in the market Much software available but trans- parenncies can easily be made by the teacher Teachers can make own 1 11 12 13 2 Continuous loop film projector Overhead projector (Trans- parency parency Projector Opaque projector 3 Individual or small group instruction ideal but can also be viewed by a large group Whole class instruction Individual or small group instruction 4 Continuous loop enables students to review materials as they wish Can be used in a lighted room or laboratory with teacher facing students during presentation Use of this machine can replace overhead 5 Some darkening of the room may be necessary None Darkened classroom 6 Carrying case, screen, automatic cartridges, zoom lens, auxiliary speaker, listening centre (head phones) Roll feed attachment build-in projection pointer, heat filter carrying case light flash shield copy trays plastic dust cover Roll feed attachment glass pressure plate dust 8 Two or three would be ideal but one per deparment is usually enough One per department enough, two or three optimum Depending upon size of the department two or three 9 Low Low Low

120 Education plays a fundamental role in the making of a man and his development as a culturally well developed social animal. To fulfil these objectives, there is a prime need of striking a balance between syllabus, curriculum, books and also co-curricular activities beyond that. They actually complement the curricular activities and groom the students in the "Art of living and working together." They are the true and practical experiences gained by students by their own learnings. Children herald a new tomorrow and education plays an influencing role in shaping the worldview of children by creating a society that is inclusive and without barriers. It is in this context that schools are acknowledged as a crucial sphere for developing a tolerant and plural community by means of imparting education and developing equal opportunities for all. Schools adopting inclusive means are the beacons to an inclusive world that is tolerant to the differences. SCIENCE CLUB : A science club is an out-of-school-hours club that offers children the chance to do science-related activities that extend and enhance the science they experience in the classroom. Each science club is different, as the club programme reflects the interests of the children, the club organiser and the facilities available. Most clubs use the opportunity to explore areas of science not covered by the curriculum and to give the club members plenty of opportunities to do practical science. A science club can be run in a lunch break or after school. Some organisations are able to offer special Saturday clubs. A science club session typically lasts for about 45 minutes. In this time, the members might complete a challenge, plan a science project or have a special scientific visitor. Guiding Principles : There are many guiding Principles that govern the activities of children. They are : solve a relevant, science-based problem, set within a scenario. work in pairs or small groups, independently of adults. take part in practical, hands-on science activities. think and talk about science, during the activity and when sharing their results

121 share their results using a variety of media. solve increasingly complex problems, from a wider range of contexts make more decisions themselves about how to carry out, record and interpret the activity the increase in the length of the activities. reflect on, discuss and share the ideas about increasingly complex ideas share the results more widely, and in more diverse media. SCIENCE EXHIBITION : In order to develop scientific instinct among the youth, the National Curriculum Framework (NCF)- 2005 encourages implementation of various curricular activities viz. organization of "Science Exhibition" at school, block, tehsil, district, region and state levels. The vision of this activity is the exploration of the surrounding's resources to enable children to express themselves. The science instinct among the children begins at the unit (school) in the form of student projects; materials and activities. The following objectives could be illustrated : Objectives : To provide a forum to nurture science and inventive interest from the surrounding environment and connecting new ideas to their existing ideas from materials and activities. To explore and encourage scientific and technological talent and creative thinking among children and inculcate in them a sense of pride in their talent; To developed an understanding about the role of science and technology to meet the needs of the society; To analyse how science and technology have affected individuals, cultures and societies; To motivate the youth that science and technology are instrument for achieving self-reliance in socio-economic development; and To encourage them as an architect of the nation and visualize future of the nation;

122 Significance : In an exhibition, students get a chance to apply or do the practical aspect of the things that they have learned from the classroom. These are real opportunities for the kids to easily implement the things that they have learn from schools. It helps in being Creative. The school exhibition that is held in most of the schools is a great platform for the kids to do things. This is really a great chance for the kids to speak well. In most cases, the students need to explain to the faculties, their fellow students, judges and may also need to explain to people who come from outside to see the exhibition. This can help in boosting in their skills in speaking and thus their confidence. Here is teacher's different role. He can act as a motivator. Teacher has a great opportunity to develop student's creativity by preparing science kits or models involving students directly (teacher as a facilitator). The great way is teacher play a role as a facilitator in learning. SCIENCE TEXTBOOKS : In the teaching-learning process, the text-book occupies an important place. There is a saying "As is the text-book, so is the teaching and learning". A good text- book can even replace class-room teaching. The science text-book should aim at aiding the pupils in the development of their personalities, in developing open mindedness,

developing appreciation and understanding of nature and not merely stuffing their minds with facts. Characteristics of a good science text-book 1. The author: A good text-book is judged, at face, by the author, his qualification and experience. 2. Mechanical features of the text-book: (a) The print and paper used and the binding of the text-book should be attractive. It should be hard and durable. (b) The printing should be clear, legible and appropriately spaced. (c) The book should be well-illustrated with diagrams, sketches and pictures. (d) The size of the print, the language and experiments discussed should suit the age of the child and standard of the child.

123 3. The subject matter-its nature and organisation : (a)

The subject-matter should be developed as far as possible in psychological sequence. Care must be taken of

the mental growth and interest of pupils. (b) There should be consistency of the subject-matter and the text-book should satisfy the objectives of science teaching. (

c)

Each chapter should begin with a brief introduction and end with a summary. (

d) Subject-matter should lead to the inculcation of scientific attitudes, disciplinary and cultural values. (e) Each chapter should contain assignments at the end. (f) During treatment of subject-matter, numerical examples should find place where necessary. (g) Headings and sub-headings are given in bold letters. (h)

Each text-book should contain detailed table of Contents and an index. (i) The

language of the book should be simple, clear, lucid, scientific and precise. The English equivalents of the terms should be always given in brackets. (j) The text-book should give suggestions for improving scientific apparatus. (k) Examples in the

text-book should be given from local environment and from life experience. (l) During the treatment of science subject in the text-book, care should be taken to see that it is correlated with other subjects like craft, social environment and

physical environment. (m) Each text-book should be accompanied by a laboratory manual. Besides these characteristics, the UNESCO Planning Mission has given some principles of writing text-books. They are as follows: (i) It should be first of

all according to the requirements of the syllabus. It should also help in the improvement of the syllabus. (ii) The facts, concepts etc., should be modern and within the comprehension of the pupils. (iii) The contents should contain not only the established facts but also

124 the problems which are being researched and thereby, arousing the interest in the pupils in these problems. (iv) It

should help in linking up science with life and practice. The pupils should be equipped with 'know-how' utilizing the knowledge in everyday life. (v) The whole content of the text-book should be aimed at shaping the integrated modern scientific outlook which ensures success in mastering scientific knowledge and solution of the problems of vital issues.

The content should be simple, brief, exact, definite and accessible. 4.5 Science Laboratory with Reference to Children with Disabilities Individuals with physical disabilities often encounter barriers to one of modern society's most important rites of passage. It is that crucial process of obtaining a good education, so natural and uncomplicated for most people-that opens the door to productive employment and full participation in society. Today's barriers are rarely physical or architectural. More often, they involve perceptions and misperceptions of not just disability but also ability. One misperception is that a physical disability somehow disqualifies a person from a career in science, engineering, or mathematics. Well-intentioned but misinformed adults still discourage students with disabilities from pursuing careers in these fields. Often it occurs indirectly and implicitly, when adults withhold the mentoring and encouragement that can nudge young people toward science careers and sustain their interest. In addition, adults may set artificial limits on what the student with disabilities should attempt. These limits may be based not on reality but on the adults' own low expectations for the student or sincere concerns that the student may fail and not cope well with failure. In reality, students with disabilities benefit from the freedom to establish their own horizons, cope very well with the process, and learn from it. Application of universal design to a science lab :— Students with disabilities face access and challenges to typical science labs in educational settings. Access barriers may prevent a student from : gaining knowledge,

125 demonstrating knowledge, and fully participating in lab activities. There are two approaches to making academic activities accessible to students with disabilities- accommodations and universal design (UD). Accommodations are alternate formats, assistive technology, and other adjustments for specific students once they are enrolled in a class. Universal Design (UD) The Center for Universal Design defines universal design as "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design." Applications of UD in education take proactive steps to create academic products and environments that are accessible to students with a wide range of characteristics, including disabilities, thereby minimizing the need for future accommodations. For example, if a science lab contains an adjustable-height workstation, an accommodation will not be needed for a future student who uses a wheelchair that is too high for standard-height workstations. This workstation may also be comfortable for a student who needs to remain seated because of a health impairment or someone who is very tall or short in stature. In a science lab, UD can be applied to : lab climate; physical access, usability, and safety; delivery methods; information resources; interaction; Feedback; assessment; and plans for accommodations. Making accommodations is reactive, whereas universal design is proactive. Accommodations Following are examples of accommodations that might benefit a student with a disability. Use wheelchair-accessible labs and field sites.

126 Talk to a student about special learning needs and accommodation alternatives. Provide a lab partner. Use plastic instead of glass. Allow extra time for set up and completion of lab work. Address safety procedures for students with a variety of sensory and mobility abilities. Use institutional resources for students with disabilities. Typical science lab accommodations for students with specific disabilities include those in the following lists. Blindness Verbal descriptions of demonstrations and visual aids. Braille text and raised-line images. Braille or tactile ruler, compass, angles, protractor, Braille equipment labels, notches, staples, fabric paint, and Braille at regular increments on tactile ruler, glassware, syringe, beam balance, stove, other science equipment. Different textures (e.g., sand paper) to label areas on items. Low Vision verbal descriptions of demonstrations and visual aids preferential seating to assure visual access to demonstrations large print, high contrast instructions and illustrations raised-line drawings or tactile models for illustrations large print laboratory signs and equipment labels video camera, computer or TV monitor to enlarge microscope images hand-held magnifier, binoculars large print calculator

127 Mobility Impairments wheelchair-accessible field site uncluttered lab; clear, wide aisles preferential seating to avoid physical barriers and assure visual access to demonstrations mirrors above the instructor giving a demonstration an enlarged screen wheelchair-accessible, adjustable-height work surface non-slip mat utility and equipment controls within easy reach from seated position electric stirrer, container filler support stand, beaker and object clamp; test tube rack handles on beakers, objects, and equipment surgical gloves to handle wet or slippery items modified procedures to use larger weights and volumes extended eyepieces so students who use wheelchairs can use microscopes flexible connections to electrical, water, and gas lines single-action lever controls in place of knobs alternate lab storage methods (e.g., "Lazy Susan/ storage cabinet on casters) Deaf and Hard of Hearing preferential seating to view demos and watch instructor captioning for video presentations written instructions prior to lab visual lab warning signals Learning and Attention Disabilities combination of written, verbal, and pictorial instructions with scaffolding repeated demonstration of procedure and support practice

128 frequent, brief breaks preferential seating to avoid distractions and minimize extraneous stimuli scanning and speaking "pen" Health Impairments avoid chemical materials to which student is allergic or provide alternate assignment flexible schedule and time allocation Universal Design Considerations Some of the accommodation suggestions listed above could be implemented within a lab now, anticipating that at some point a student with a disability may need access to the lab and that some changes may benefit all students. Here are some strategies that could be implemented in a science lab as a part of universal design efforts: Provide both written and verbal instructions. Give verbal and visual descriptions of demonstrations and visual aids. Use plastic instead of glass. Allow extra time for set up and completion of lab work. Address safety procedures for students with a variety of sensory and mobility abilities, including the provision of visual lab warning signals. Make laboratory signs and equipment labels in large print, with high contrast. Ensure that field sites are wheelchair accessible. Maintain wide aisles and keep the lab uncluttered. Incorporate an adjustable-height work surface for at least one workstation. Install a mirror above the location where demonstrations are typically given. Use lever controls instead of knobs. Install flexible connections to water, gas, and electricity. Buy lab products that can be used by students with a variety of abilities (e.g., plastic lab products instead of glass, tactile models, large-print diagrams, non-

129 slip mats, support stands, beaker and object clamps, handles on beakers and equipment, surgical gloves to handle slippery items, video camera with computer or TV monitor to enlarge microscope image). Ensure that utility and equipment controls are within easy reach from a standing or seated position. Provide surgical gloves for handling wet or slippery items. Treat people with disabilities with the same respect and consideration with which you treat others. There are no strict rules when it comes to relating to people with disabilities. However, here are some helpful hints. General Ask a person with a disability if he or she needs help before providing assistance. Talk directly to the person with a disability, not through the person's companion or interpreter. Refer to a person's disability only if it is relevant to the conversation. If so, mention the person first and then the disability. "A man who is blind" is better than "a blind man" because it puts the person first. Avoid negative descriptions of a person's disability. For example, "a person who uses a wheelchair" is more appropriate than "a person confined to a wheelchair." A wheelchair is not confining-it's liberating. Blind or Low Vision Be descriptive. Say, "The computer is about three feet to your left," rather than "The computer is over there." Speak all of the content presented with overhead projections and other visuals. When guiding people with visual impairments, offer them your arm rather than grabbing or pushing them. Learning Disabilities Offer directions or instructions both orally and in writing. If asked, read instructions to individuals who have specific learning disabilities. Mobility Impairments Sit or otherwise position yourself at the approximate height of people sitting in wheelchairs whcr. you interact.

130 Speech Impairments Listen carefully. Repeat what you think you understand and then ask the person with a speech impairment to clarify or repeat the portion that you did not understand. Deaf or Hard of Hearing Face people with hearing impairments so they can see your lips. Avoid talking while chewing gum or eating. Speak clearly at a normal volume. Speak louder only if requested. Use paper and pencil if the person who is deaf does not read lips or if more accurate communication is needed. In groups raise hands to be recognized so the person who is deaf knows who is speaking. Repeat questions from audience members. When using an interpreter, speak directly to the person who is deaf; when an interpreter voices what a person who is deaf signs, look at the person who is deaf, not the interpreter.

Psychiatric Impairments Provide information in clear, calm, respectful tones. Allow opportunities for addressing specific questions. 4.6 Aquarium, vivarium–Role in Teaching with Setting & Mainfaiming AQUARIUM : An aquarium (plural: aquariums or aquaria) is a vivarium of any size having at least one transparent side in which water-dwelling plants or animals are kept and displayed. Fishkeepers use aquaria to keep fish, invertebrates, amphibians, aquatic reptiles such as turtles, and aquatic plants. The term, coined by English naturalist Philip Henry Gosse, combines the Latin root aqua, meaning water, with the suffix -arium, meaning "a place for relating to". The aquarium principle was fully developed in 1850 by the chemist Robert Warington, who explained that plants added to water in a container would give off enough oxygen to support animals, so long as their numbers do not grow too large.

131 Educational Benefits of Aquariums Reading Reading is an essential part of our everyday lives. Students will enjoy researching topics such as fish species, plants, or reefs to learn more about aquarium keeping. Who has not heard of the "selective" reading habits of children who only read books on topics of interest to them? The wide variety of aquarium-related topics can help foster good reading habits in children who may not otherwise be interested in reading. Writing Students can be asked to write reports or daily journal entries about the classroom aquarium. Students can also write letters to fish or aquatic experts with their questions. Both are great ways to help sharpen grammar and writing skills. Developing Critical Thinking & Problem-solving Skills Students collect data from an aquarium by measuring and recording water temperature, pH, ammonia, and nitrate levels. Chart or graph the information and look for trends that coincide with events in the aquarium. Any event, even the loss of a fish, is an opportunity to discuss possible causes and their effects, preventions, and ways to improve existing conditions. The teaching and learning opportunities are endless. Science Biology, chemistry, ecology, and physics are just a few of the sciences involved in aquarium keeping. A classroom aquarium can be used to teach students about specific topics such as fish anatomy or more complex topics such as the food chain, the water cycle, or the nitrogen cycle. Bringing Children & Parents Together An aquarium is a fun, educational tool that parents and children can enjoy together. Students not only develop learning skills but because they get excited about their aquarium, arc eager to share what they learned with family members and friends. Involved parents are more likely to participate in other school activities with their child. Setting up a teaching aquarium is a great way for students of all ages to learn about a variety of topics and gain valuable life lessons. However, the decision to set up an aquarium should never be done on a whim. Carefully evaluate the amount of time, effort, and finances you will be able to commit to the aquarium and its inhabitants.

132 Patience and proper research are key to a successful aquanum. VIVARIUM : The Vivarium program began in 1986, and is overseen by its principal designer, Alan Kay. Alan, in addition to being a computer scientist, is a musician, mathematician, biologist, physicist, philosopher, cognitive scientist ... and as such is able to bring a wide range of thought and influences to bear on the many issues inherent in such a grand goal, or grand direction, as Alan might prefer to phrase it. Alan is fond of pointing out that really good research simply cannot have a well stated goal, it can only have a useful direction. If you could state at the outset that you were going to now invent the flying buttress or vaulted arch, then you'd already have your goal so well defined that you'd have no need to perform the research. The literal definition of a "Vivarium" is an enclosure or reserve for keeping plants and animals alive in their natural habitat in order to observe and study them. A vivarium is an enclosure, container, or structure adapted or prepared for keeping animals under semi natural conditions for observations or study or as pets; an aquarium or terrarium. Impact on student learning is higher than expected because it plays an important role in teaching them about the conservation of plants and animals. A vivarium is a portion of an ecosystem. 1. a vivarium for smaller land animals, especially reptiles, amphibians, or terrestrial invertebrates, typically in the form of a glass-fronted case. 2. a sealed transparent globe or similar container in which plants are grown. There are many ways to bring classmates together and learning at the same time. Many times this is done with a class pet or aquarium. There is, however, a less expensive and just as fun alternative! Classroom terrariums are a great learning tool, can be created in any setting, and can be big or small. They are usually used for learning about habitats, ecosystems, biology, etc. Children can get their hands in the dirt and play around while learning valuable lessons about the Earth. Here are just a few examples of what students can learn from terrariums: life Cycle of Plants The life cycle of plants is easy to learn, and what better way to learn it than to witness it yourself? The students can observe the plants they grew themselves go from seed, to root, to bud, and then create new seeds! This is a standard life cycle that applies to other things as well, like humans and animals.

133 Care of The Earth Terrariums can also teach children how important it is to care for the Earth. Even if their terrariums are small (a bean seed in a cup for example) it's a little living thing kids can take care of. Caring for those little beans can teach responsibility in a way that kids will respond well to. Their small terrarium can be considered in scale to the Earth because all the basic resources are represented (sun, water, nutrients). Their small demonstration shows that the Earth needs people to care for it too. Systems Interacting Terrariums teach how plants, animals, and insects interact similar to the real world. You can include small animals, like turtles, in addition to the plants, soil and water provided. It shows that all living things have the same resources and need to learn to share and keep everything in balance. Overall they help raise children's awareness of the Earth and how important maintaining harmony is, while having tons of fun! For information on the kinds of projects we do and how they align with our philosophy. 4.7 Museum, Botanical & Zoological Garden : Role in Teaching MUSEUM : A museum is an institution that cares for (conserves) a collection of artifacts and other objects of artistic, cultural, historical, or scientific importance and makes them available for public viewing through exhibits that may be permanent or temporary.l' Most large museums are located in major cities throughout the world and more local ones exist in smaller cities, towns and even the countryside. Museums have varying aims, ranging from serving researchers and specialists to serving the general public. The purpose of modern museums is to collect, preserve, interpret, and display items of artistic, cultural, or scientific significance for the education of the public. The purpose can also depend on one's point of view. To a family looking for entertainment on a Sunday afternoon, a trip to a local history museum or large city art museum could be a fun, and enlightening way to spend the day. To city leaders, a healthy museum community can be seen as a gauge of the economic health of a city, and a way to increase the sophistication of its inhabitants. To a museum professional, a museum might be seen as a way to educate the public about the museum's mission, such as civil rights or environmentalism. Museums are, above all, storehouses of knowledge.

134 While there is an ongoing debate about the purposes of interpretation of a museum's collection, there has been a consistent mission to protect and preserve artifacts for future generations. Much care, expertise, and expense is invested in preservation efforts to retard decomposition in aging documents, artifacts, artworks, and buildings. All museums display objects that are important to a culture. As historian Steven Conn writes, "To see the thing itself, with one's own eyes and in a public place, surrounded by other people having some version of the same experience can be enchanting"

BOTANICAL GARDEN : A botanical garden or botanic garden is a garden dedicated to the collection, cultivation and display of a wide range of plants labelled with their botanical names. It may contain special ist plant collections such as cacti and succulent plants, herb gardens, plants from particular parts of the world, and so on; there may be greenhouses, shadehouses, again with special collections such as tropical plants, alpine plants, or other exotic plants. Visitor services at a botanical garden might include tours, educational displays, art exhibitions, book rooms, open-air theatrical and musical performances, and other entertainment. Botanical gardens are often run by universities or other scientific research organizations, and often have associated herbaria and research programmes in plant taxonomy or some other aspect of botanical science. In principle, their role is to maintain documented collections of living plants for the purposes of scientific research, conservation, display, and education, although this will depend on the resources available and the special interests pursued at each particular garden. Over the years, botanical gardens, as cultural and scientific organisations, have responded to the interests of botany and horticulture. Nowadays, most botanical gardens display a mix of the themes mentioned and more; having a strong connection with the general public. There is the opportunity to provide visitors with information relating to the environmental issues being faced at the start of the 21 st century, especially those relating to plant conservation and sustainability.

Roles & Fuctions : Availability of plants for scientific research display of plant diversity in form and use display of plants of particular regions (including local)

135 plants sometimes grown within their particular families plants grown for their seed or rarity major timber trees plants of economic significance glasshouse plants of different climates all plants accurately labelled records kept of plants and their performance catalogues of holdings published periodically research facilities utilising the living collections studies in plant taxonomy examples of different vegetation types student ed ucation a herbarium selection and introduction of ornamental and other plants to commerce studies of plant chemistry report on the effects of plants on livestock at least one collector maintained doing field work

ZOOLOGICAL GARDEN : The term zoological garden refers to zoology, the study of animals, a term deriving from the Greek z o ion ("animal") and logos ("study"). The abbreviation "zoo" was first used of the London Zoological Gardens, which opened for scientific study in 1825 and to the public in 1857. The number of major animal collections open to the public around the world now exceeds 1,000, around 80 percent of them in cities. In India there are more than 150 zoos. On the basis of the area, number of animals and variety, exhibited as well as the number of visitors, zoos are classified into large, medium and small. They attract as many as 50 million visitors annually. We have urban, rural, literate and illiterate people who visit zoos. India too has

136 recognised the importance of zoos as a site for education and learning. Significance Scope of Education and Interpretation in Zoos, are like large classrooms where a number of activities, specifically for children, teachers and school groups can be conducted. Zoos displaying live animals can capture the attention and affection of the public for wildlife and nature like no other institution. Living animals clearly have an enormous power of attraction and are the great and unique feature of zoos and form the very basis of zoo education. People visiting zoos are interested in learning about the animals, their habitat, behaviour and conservation status. Zoos are therefore appropriate places to impart to the visitor information about animals, their habitats, biology and threats to their existence. An array of biological and other themes can be explained through zoo education. These include themes such as animal adaptations, behaviour, reproduction, and nutrition, and also complex subjects such as evolution and ecology. Zoo programmes can explain how easily the subtle balances in natural habitats and ecosystems are disturbed by human interference and the connections between human consumption and life style and the survival of species and biological systems. Zoos provide a range of opportunities to educate a great variety of people and groups of all ages and levels. Many people of diverse groups visit zoos including different age and educational levels and different social, ethnic and cultural backgrounds. Providing education, communication and information relevant to all these groups is a challenge. Several educational and interpretive facilities could be provided in zoos to enhance, sensitize, educate and enrich the visitors' experience. In zoos, such programmes help visitors understand the uniqueness of each animal and its relationship to its surrounding. Interpretation is defined as an educational activity which aims to reveal meaning

137 and relationships through the use of original objects, by first-hand experience, and by illustrative media rather than communicating factual information. 4.8 Let Us Sum Up Co-Curricular activities are those which are undertaken side by side with the curricular activities. Aco-curricular activity essentially takes place outside a typical pen and pencil classroom experience. It gives the students an opportunity to develop particular skills and exhibit their non-academic abilities. These activities might be compulsory, such as music, art or drama classes that take place during the day. Others generally are voluntary, such as participating in school sports team, school debating team or student newsletters. In either case, participation can assist students in more than one ways. In Science education Co-curriculum takes a variety of forms like science clubs, exhibitions, visit to museums, botanical and zoological garden etc. Also maintainence & nurturing of aquariums & vivariums, their significance as an aid to learning. Another aspect in the purview of science education includes two pertinent aspects : science text books & laboratory set up that have been dealt in this unit very elaborately. While discussing on laboratory, stress is given on universal design for to accomodate children with special needs. 4.9 Check Your Progress 1. Why are teaching aids essential in our science teaching?

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..... 2. Mention different types of teaching learning aids used in science teaching.
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138 3. What are the principles for selection of teaching learning aids in our science teaching.

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..... 4. Mention the significance of Co-curricular activities.
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..... 5. What is meant by UDL.
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..... 6. How an aquarium is maintained?
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..... 7. Define vivarium.
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..... 8. Hist the functions of botanical garden.

139 9. Give the importance of museum in Science teaching.
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..... 10. What are the characteristics of a good science text books?

..... 4.10 References Ahmed, J. 2006, Teaching of Biological Sciences, Prentice Hall of India, New Delhi. Sharma, R.C, 1999 Modern Science Teaching, Mohan, R, 2003, Innovative Science Teaching, Prentice Hall of India, New Delhi. Jadav, M.S, 2004, Teaching of Chemistry, Anmol publishers. <http://www.ncpublicschools.org>. <http://www.scienceteacher.org>.
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140 Unit - 5 Evaluation Structure 5.1 Introduction 5.2 Objectives 5.3 Evaluation - concept, nature & need 5.4 NRT & CRT, CCE : Concept & Significance, Scholastic & Co. Scholastic Assessment. 5.5 Tools & Techniques for Formative & Summative Assessments. 5.6 Preparation of Diagnostic Test & Achievement tests. 5.7 Adaptations of Evaluation procedure with reference to children with disabilities. 5.8 Let us sum up. 5.9 Check your progress. 5.10 References. 5.1 Introduction Evaluation is

a continuous appraisal of the achievement of the aims of education as well as the method of teaching

learning process. It is a wider concept than testing and measurement and is supposed to judge the worth of all educational outcomes brought about as a result of Teaching and learning.

If also involves the self appraisal by the students of their success and failure from time to time. As a result the students come to know of their own drawbacks and try to improve. On the basis of day to day records of the pupils it becomes easy to know the present status of the students. So evaluation provides essential information for an effective guidance of the teaching learning programme. 5.2

Objectives After completing this unit the student teacher will be able to : i) Know about the concept of evaluation. ii) Understand the nature and need of evaluation. iii) Explain NRT, CRT & CCE

141 iv) Construct or form tools and techniques of formative and summative assessment. v) Prepare Diagnostic test and Achievement test. vi) Prepare various types of tests and questions. vii) Differentiate between 'tool' and 'technique' of evaluation. 5.3 Evaluation - concept, nature & need According to Dandekar (1971), "Evaluation may be defined as a systematic process of determining the extent to which educational objectives are achieved by pupils."

According to Kothari commission (1964-66), "Evaluation is a continuous process, it

forms an integral part of the total system of Education, and is intimately related to educational objectives. It exercises a great influence on the pupil's study habits and teachers' methods of instruction and thus helps not only to measure educational achievement but also to improve it

the techniques of evaluation are means of collecting evidences about the students development in desirable directions."

Nature of Evaluation : Evaluation may work as a connecting bridge between the objectives of teaching science and the ways and means of attaining these objectives in the form of learning experience learning methods and learning environment. A pupil's learning is evaluated in terms of the extent....of achievement and their behavioural objectives specified for a course of study in science. A close relationship that exists between objectives, learning experiences and evaluation can be formed as follows. Objectives Teaching learning Process Learning Experiences Evaluation Fig :

Evaluation triangle

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Evaluation is a term which has overtones that distinguish it from measurement.

Evaluation 1. It emphasis on overall growth of pupil. 2. It based on wide range of objectives. 3. It concerned total personality of the pupils 4. It is a continuous process. 5. It uses variety of techniques. Measurement 1. It focus on a single aspect or subject matter achievement. 2. Measurement is not based on pre- determined objectives. 3. It has limited in scope 4. It is done as and when required. 5. It used a limited set of techniques Needs of Evaluation : Evaluation process is very much necessary in the major two kind of processes : i) Educational ii)

Administrative The educational needs of evaluation are primarily concerned in our teaching learning process. i) Learning : This includes such functions as monitoring student progress, diagnosing student weakness, determining the need of remedial work and improving the quality of the learning environment. 2) Teaching : This is concerned with assessing the effectiveness of teaching structure and techniques. 3) Curriculum : This includes improving courses and curricular, texts, students and teaching materials. Administrative Needs of Evaluation Include : a) Society : This includes accountability to society in terms of the demands and requirements of the employment market. b) Parents : This mainly manifests itself in a perceived need for regular reporting to parents.

c) Education System : This includes the requirements of education system itself for purpose of selection, such as for introduced to a higher grade or tertiary level.

143 However is a broader perspectives, the need of evaluation can be studied at the following six levels. i) learning level. ii) Teaching level iii) Guidance and counselling level iv) Curricular Development level v) School administration level vi) Classroom research level. Types of Evaluation Evaluation Process may be classified broadly into four categories : i) Placement Evaluation : It determine Pupil performance at the beginning of instruction. ii) Formative Evaluation : It monitor learning progress during instruction iii) Diagnostic Evaluation : It diagnose learning difficulties during instruction. iv) Summative Evaluation : It evaluate achievement at the end of the instruction. 5.4 NRT & CRT, CCE : Concept & Significance, Scholastic & Co. Scholastic Assessment. The learning experiences of the students are lively to bring about behavioural changes in the learner as specified through differenet behavioural objectives Evaluation of Student's performance is generally done interms of marks or grades. Sometimes students may be compared with some absolute performance standard instead of making comparism with other students of a given group. There are two types of Evaluation : i) Norm references Test (NRT) and ii) Criterion Reference Test (CRT) NRT : It assesses the students performance relative to other students of the group. Students are awarded marks and relative rank is this method of Evaluation. CRT : It assesses the students performance is terms of specified performed standard or criterion without any mention of the performance levels of the other students of the group. This evaluation method is related to mastery learning and developmental tests of the students.

144 Comprehensive and Continuous Evaluation : (CCE) It is a process to provide holistic profile of the learner through regular assessment of scholastic and co-scholastic domains of development. It aims at making evaluation an integral part of teaching learning process. It focuses on all round development of personality of the learners. It improves on going teaching-learning processes by diagnosing the learning gaps and offering corrective and enrichment input. It brings about a paradigm shift from examination to effective pedagogy. Scholastic and Co-scholastic Assessment : The assessment procedure of different aspects of learners, which are related to intellect or the brain is called scholastic Assessment. It includes assessment of learners in curricular subjects, assignments, project work, practical and oral work etc. On the other hand the assessment procedure of different aspects of learners, which are related to hand and heart. The include psychomotor skills, physical development, life skills, attitude, values, interests and participation in co-curricular activities. 5.5 Tools and Techniques for Formative and summative Assessment Since Evaluation of students' learning out comes is one of the most important functions of teaching learning process. Student's learning out comes are evaluated with the help of different tools and techniques. These learning outcomes are generally. devided into cognitive and non-cognitive learning outcomes. Cognitive learning out comes are related to scholastic areas of students' performance where as non-cognitive learning out comes are concerned with non-scholastic areas. Evaluation of cognitive out comes is done with the help of certain tools and techniques whereas some other tools and techniques are used for the assessment of students performance in non-cognitive areas. Basic techiques of Evaluation : i) Testing ii) Observation iii) Inquiry iv) Content Analysis

145 Testing : The Tests are broadly classified as follows : Testing Standardized test Teacher made test Aptitude Achievement Interest Personality Attitude Test Test inventories Test Scales ii) Observation An assessment for which the primary data source is viewing or listening in the teaching- learning environment is a classroom observation. Observation is a techniques of evaluation which requires an observe to record the activities, experience and expressions of individual pupil either seperately or in a group. Observation may be two types : (a) Direct Observation : When observation is restricted to selected aspects of pupils behaviour and when records are made systematically and as objectively as possible. This is known as an direct observation. e.g. situations where tasks like drawing, painting, clay modelling are given the teacher can observe certain set of behaviours (Pre-planned) like accuracy, heatness, originality, initiation, precision, design etc (b) Indirect Observation : When a classroom teacher can observe and note pupils' performance either in the classroom or outside the classroom. The teacher can observe informally the pupils conduct, social adjustment or their personal and emotional adjustment. This iis called indirect observation. iii) Inquiry : Certain details about the students can be obtained by inquiring and securing information from the students themselfe parents, school teachers and administon, peer group and so on.

146 e.g. Assessment of the success of a course can be obtained by securing the opinion of students on a questionnaire.

iv) Content Analysis : Analysis means where a given qualitative material ismented into its constituent parts which is studied in detail for its characteristics or attributes. The content analysis is a mostly used method for analysing the materials. It is also termed as information analysis since it deals with classification, generalisation, evaluation and comparison e.g. The content of open-ended Questionnaire, interviews and focusdiscussions that is observed and are communicated qualitatively may be analysed. Different tools of Evaluation : Generally experimental techniques are used for the collection of different information from the students. The most common tools used for applying experimental techniques are Tests. The different types of test can be used as a tools of Evaluation. These are given below: Achievement Test Teacher Made Test Psychological Test Written Test Oral Test Intelligent Personality Aptitude Objective type Class Test Essay type Structured Unstructured Standardised Diagnostic Selection test test test Tests

147 5.6 Preparation of Diagnostic Tests & Achievement tests Diagnostic Tests are generally used to find out the learning difficulties and deficiencies of the students. The process of determining the causes of educational diagnosis is called educational diagnosis. The scope of educational diagnosis is much larger than the use of tests and examinations. An adequate diagnosis may involve the use of intelligence tests, rating scales, controlled observations, questionnaires, interviews etc. etc. A satisfactory level of diagnosis can be reached when the teacher has gained sufficient insight into the nature of the pupil's problem. Major aspects of diagnostic tests: 1. To determine the extent through which the desirable educational objectives are achieved. 2. To identify the factors that may be interfering with the optimum growth of the individual. 3. To understand the learning difficulties faced by the students. Characteristics of Diagnostic Tests: 1. Objectives: The essence of educational diagnosis is the identification of some of the causes of learning difficulty and some of the potential educational assets. 2. Validity : It refers to the evidence of casual factors to the attainment of the objectives. The methods of diagnosis may be valid for discovering certain factors which create different difficulties among the students. 3. Reliability: The increase in reliability is related to the decrease in the fluctuation in conclusion that can be secured by providing a more adequate and representative sample of pupil reaction upon which the conclusions are drawn. 4. Comparability: Diagnostic procedures that give comparable results are basics for intelligent interpretation. 5. Exactness: The exactness may be increased by analyzing the characteristics of the progress in learning more minutely and utilizing the symptoms. Diagnostic Test: A diagnostic test is a test used to diagnose or reveal an individual's weakness and strengths in a certain course of study.

148 Steps involved in the diagnostic testing: 1. Identifying the students who are having learning difficulties. 2. Locating the errors of learning difficulties .. 3. Discover the casual factors which are responsible for learning difficulties. Functions of diagnostic test: 1. Direction of curriculum which is emphasized by any important objectives of education. 2. Provision of educational guidance of the pupils 3. Stimulation of learning activities of pupils. 4. Motivation of administrative and supervisory efforts. Steps for preparation of diagnostic test: 1. Planning 2. Writing items 3. Assembling the test 4. Providing direction 5. Preparing scoring key and marking scheme 6. Administering the test 7. Making interpretation. Criteria for administration of Diagnostic Test: 1. The teacher is to win the confidence of the students and reassure them that test is to help them in the improvement of their learning rather than for declaring pass or fail. 2. It should be administered in a relaxed environment. 3. Students should be seated comfortably. 4. Students should be asked not to consult each other while taking the test. 5. If any student is not able to follow something, he should be allowed to seek clarification from the teacher. 6. The teacher may ensure that the students taking the test attempt all questions. 7. Time schedule should not be enforced strictly. If any student takes a little more time, he should be allowed to do so.

149 Role of Computers in Diagnostic Testing: Computers can be used for diagnostic testing in education. Several commercial test publishers have developed programmes for interpreting scoring of available diagnostic tests and for combining test scores and other data in the prescriptive formulation of individual used instructional programmes.

Preparation of Achievement Test: Achievement Tests are used to find out how much a student has learnt from a given course of study taken by him or her in a particular time. The tests are expected to yield information on the performance of individual students who are tested as well as the performance of group of students as a whole. Considerations for constructing a achievement test: 1. Deciding the purpose of the testing programme. The testing of students may be i) in a class or within a class ii) in a board examination iii) in an achievement survey 2. Assess the objectives to be covered. It should cover the cognitive level of educational objectives, i.e. Knowledge, Understanding, Application, Analysis, Synthesis, Evaluation. 3. Coverage the prescribed syllabus. It should determine the weightings in terms of marks to be assigned in each content area, large number of such questions which can be answered in short time in better coverage and limit the number of essay type questions. Type of questions; The common selection type questions are: 1. MCQ 2. True-False 3. Matching Type 4. Essay Type 5. Short Answer Type 6. Completion type

150 Factors which decide time to be allowed for answering questions: Availability of resources. Course content to be covered. Class for which testing is to be done. Number and type of questions to be included. Table : Assigning weightage to Objectives and difficulty level. Objectives Knowledge Understanding Application % 40 30 30 Difficulty Level Easy Average Difficulty % 25 50 25 Table : Preparation of Blue Print of the Question Paper: Sample Blue print : Objectives Knowledge Understanding Application Total Types of Question MCQ VSA SA MCQ VSA SA MCQ VS/\ SA Subunit-I 1(1) 3(1) 1(1) Subunit-II 2(1) 1(2) Subunit-III 1(2) 2(1) 3(1) Subtotal N. B: Figures outside the bracket indicate marks allotted for question and figures within the brackets indicate number of questions. After preparing blue print, the question paper should be framed and marking scheme should be prepared. Then the question paper should be reviewed, moderated and finalized for administration. Hence achievement test can be constructed for both school examinations and achievement surveys. The question paper should be well balanced combining all types of questions e.g. Multiple Choice Questions, Short Answer Type and ,very Short Answer Type Questions. The type of questions should be included in the question paper as per the

151 particular percentage ratios. After developing the question paper it should be reviewed by one or experts to ensure the quality of constructed questions. Moderation of question papers should be done to ensure that no question is out of syllabus and the difficulty level of the question is according to plan. Questions that are too easy or too difficult may be replaced with those that are neither too easy nor too difficult.

5.7 Adaptations of Evaluation procedure with reference to Children with disabilities Introduction to Assessment and Overview An assessment in special education is the process used to determine a child's specific learning strengths and needs, and to determine whether or not a child is eligible for special education services. Assessment in special education is a process that involves collecting information about a student for the purpose of making decisions. Assessment, also known as evaluation, can be seen as a problem-solving process (Swanson & Watson, 1989) that involves many ways of collecting information about the student. According to Gearheart and Gearheart, 1990; Pierangelo and Giuliani, 2006, assessment is "a process that involves the systematic collection and interpretation of a wide variety of information on which to base instructional/intervention decisions and, when appropriate, classification and placement decisions. Assessment is primarily a problem-solving process".

Importance of Assessment The importance of assessment should never be underestimated. In special education, you will work with many professionals from different fields. You are part of a team, often referred to as a multidisciplinary team, that tries to determine what, if any, disability is present in a student. The team's role is crucial because it helps determine the extent and direction of a child's personal journey through the special education experience (Pierangelo and Giuliani, 2006). Consequently, the skills you must possess in order to offer a child the most global, accurate, and practical evaluation should be fully understood. The development of these skills should include a good working knowledge of the following components of the assessment process in order to determine the presence of a suspected disability: Collection: The process of tracing and gathering information from the many sources of background information on a child such as school records, observation, parent intakes, and teacher reports.

152 Analysis: The processing and understanding of patterns in a child's educational, social, developmental, environmental, medical, and emotional history Evaluation: The evaluation of a child's academic, intellectual, psychological, emotional, perceptual, language, cognitive, and medical development in order to determine areas of strength and weakness Determination: The determination of the presence of a suspected disability and the knowledge of the criteria that constitute each category Recommendation: The recommendations concerning educational placement and program that need to be made to the school, teachers, and parents Purpose of Assessment Assessment in educational settings serves five primary purposes: screening and identification: to screen children and identify those who may be experiencing delays or learning problems eligibility and diagnosis: to determine whether a child has a disability and is eligible for special education

services, and to diagnose the specific nature of the student's problems or disability IEP development and placement: to provide detailed information so that an Individualized Education Program (IEP) may be developed and appropriate decisions may be made about the child's educational placement instructional planning: to develop and plan instruction appropriate to the child's special needs evaluation: to evaluate student progress. (Pierangelo and Giuliani, 2006) The Difference Between Testing and Assessment There is sometimes confusion regarding the terms "assessment" and "testing." While they are related, they are not synonymous. Testing is the administration of specifically designed and often standardized educational and psychological measures of behavior and is a part of the assessment process. Testing is just one piece of the assessment process. Assessment encompasses many different methods of evaluation, one of which is using tests. Role of the Education Professional in the Special Education Process The professional involved in special education in today's schools plays a very critical role in the overall education of students with all types of disabilities. The special

153 educator's position is unique in that he or she can play many different roles in the educational environment. Whatever their role, special educators encounter a variety of situations that require practical decisions and relevant suggestions. No matter which type of professional you become in the field of special education, it is always necessary to fully understand the assessment process and to be able to clearly communicate vital information to professionals, parents, and students (Pierangelo and Giuliani, 2006). Assessment Law: The Individuals with Disabilities Education Act (IDEA), lists 13 separate categories of disabilities under which children may be eligible for special education and related services. These are: autism:

a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3 deafness: a hearing impairment that is so severe that the child is impaired in processing linguistic information, with or without amplification deaf-blindness : simultaneous hearing and visual impairments hearing impairment : an impairment in hearing, whether permanent or fluctuating mental retardation : significantly sub average general intellectual functioning existing concurrently with deficits in adaptive behavior multiple disabilities : the manifestation of two or more disabilities (such as mental retardation- blindness), the combination of which requires special accommodation for maximal learning orthopedic impairment : physical disabilities, including congenital impairments, impairments caused by disease, and impairments from other causes other health impairment : having limited strength, vitality, or alertness due to chronic or acute health problems serious emotional disturbance: a disability where a child of typical intelligence has difficulty, over time and to a marked degree, building satisfactory interpersonal relationships; responds inappropriately behaviorally or emotionally under normal circumstances; demonstrates a pervasive mood of unhappiness; or has a tendency to develop physical symptoms or fears specific learning disability: a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations

154 speech or language impairment : a communication disorder such as stuttering, impaired articulation, a language impairment, or a voice impairment traumatic brain injury: an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both visual impairment: a visual difficulty (including blindness) that, even with correction, adversely affects a child educational performance. Types of Tests Used in Special Education Developmental assessments Screening tests Individual intelligence tests Individual academic achievement tests. Adaptive behavior scales Behavior rating scales Curriculum-based assessments End-of-grade, end-of-course, and alternate assessments Developmental Assessments Developmental assessments are norm-referenced scales designed to assess the development of infants, toddlers, and preschoolers in key areas. These areas include fine- and gross-motor, communication and language, social, cognitive, and self-help skills. If a very young child is thought to be experiencing delays, and especially if the child is going to be served in an infant- toddler program, professionals will use developmental assessment scales to identify strengths and weaknesses. The scales are administered through direct observations of the young child and parent questionnaires. From the results of the assessment, the evaluator can determine how delayed or advanced the child is in the key areas mentioned above. Screening Tests Schools often use screening tests to help find children who might be below the norm in different areas. Screening instruments are very easy to administer, contain relatively few items, and can be completed in a relatively brief time, often requiring only a few minutes per child. They may be pencil-and-paper tests, rating scales or checklists used 155 to document certain behaviors, or direct observations of skills or abilities. Their purpose is to alert the school to a potential problem so that more in-depth assessments can be conducted. Individual Intelligence Tests . Only a psychologist or diagnostician trained and certified in the administration of specific intelligence tests, often called IQ (intelligence quotient) tests, can administer them. This is because, in order for the test to be considered reliable and valid, it must be administered and scored in a very precise manner. Most intelligence tests report an overall or general IQ score as well as subscores in areas such as verbal skills, motor performance, and visual reasoning. Intelligence tests commonly used in the public schools are the Wechsler Intelligence Scale for Children (3rd ed.) (WISC-III) (Wechsler, 1991), the Stanford-Binet Intelligence Scale (4th ed.) (Thorndike, Hagen, & Sattler, 1986), and the Woodcock-Johnson III Tests of Cognitive Abilities (WJ III) (Woodcock, McGrew, & Mather, 2001). Individual Academic Achievement Tests Most students in special education, and those referred for special education consideration, will be weak in one or more academic areas. In order to determine most precisely which academic areas are of concern, a psychologist or educational evaluator will administer at least one broad ranging, multiple-skill academic achievement test to the child. The results of the test will tell how the child stands in key academic skills such as reading, written expression, arithmetic, general information, and specific school subjects. Traditionally, professionals have used norm-referenced academic achievement tests for formal evaluations to help determine a student's special education eligibility, placement, and IEP goals. These tests will also be useful for documenting the academic progress of students over a long period of time. Adaptive Behavior Scales A student with mental retardation (or intellectual disabilities) must exhibit a deficit in adaptive behavior. Adaptive behavior skills are those that are especially useful for daily functioning. Typical items on adaptive behavior scales include daily living skills; community participation skills; and functioning in specific ability areas such as demonstrating appropriate social behaviors, communication, motor abilities, and applying basic academic skills.

156 Among the most commonly used scales are the second edition of the AAMR Adaptive Behavior Scales (ABS), including the Residential-Community versions (ABS-RC:2) (Nihira, Leland, & Lambert, 1993) and the School version (ABS-S:2) (Lambert, Nihira, & Leland, 1993). Other useful scales are the Vineland Adaptive Behavior Scales (2nd ed.) (Vineland-I) (Sparrow, Cicchetti, & Balla, 2005) and the Scales of Independent Behavior-Revised (Bruininks, Woodcock, Weatherman, & Hill, 1996). Behavior Rating Scales Like adaptive behavior scales, a parent or a teacher may complete the scale or an evaluator can obtain the relevant information from someone else who knows the child. After rating different behaviors, the evaluator can then calculate summary scores; and because the scales are norm-referenced, the scores for the child can be used to determine his or her behavioral status compared to others. Rating scales that are frequently used in schools are the Devereux Behavior Rating Scale- School Form (Naglieri, LeBuffe, & Pfeiffer, 1993) and the Social Skills Rating System (Gresham & Elliot, 1990). Curriculum-Based Assessment Curriculum-based assessments are often made by the teacher to determine the student's skill level in specific curriculum areas at a certain point in time. For example, if a student has an IEP goal to learn to read on the fifth-grade level, the teacher is not likely to regularly administer a standardized reading test to see if the goal is being achieved. Instead, the teacher might ask the student to read aloud two or three times a week from a fifth-grade reader and answer comprehension questions about the material. At each session, the teacher would record and chart the number of words read correctly, the number misread, and the number of comprehension questions answered. By using this form of curriculum-based assessment, the teacher could determine if the student was making progress toward the goal. Curriculum-based assessment provides a viable approach for evaluating how well a student responds to intervention (Fuchs et al., 2003). For this reason, teachers are likely to use it very often when evaluating students who are participating in early intervening activities. By using the curriculum-based assessment, teachers and other professionals will be able to determine if a particular intervention is succeeding.

End-of-Grade, End-of-Course, and Alternate Assessments The purpose of the No Child Left Behind Act (NCLB) was to close the achievement gap between students with high and low levels of performance. Schools are required to demonstrate adequate yearly progress for all students or make significant changes in the way schools are run. In order to show if schools are making adequate progress, students are tested at the end of each grade. Currently, this testing applies to children between the third and eighth grades. Besides NCLB, many also have educational accountability laws that operate in a similar way. Students in special education are not exempt from these tests; in fact, IDEA 2004 requires their participation. If students with special needs are unable to participate in the general education mandated assessment, there are two possibilities. First, they may take the test with accommodations that allow them to participate. Second, they may participate through an alternate assessment procedure. Most students with academic special needs and with sensory or physical impairments are provided with accommodations, whereas students with more severe intellectual special needs are evaluated using an alternate assessment. In ease, the students IEP must indicate how the end-of-grade or end-of-course test is to be given (Browder & Spooner, 2003).

10 Basic Steps in Special Education When a child is having trouble in school, it's important to find out why. The child may have a disability. By law, schools must provide special help to eligible children with disabilities. This help is called special education and related services. Following are the 10 basic steps: Step 1. Child is identified as possibly needing special education and related services. There are two primary ways in which children are identified as possibly needing special education and related services: the system known as Child Find, and by referral of a parent or school personnel. When a child is identified by Child Find as possibly having a disability and as needing special education, parents may be asked for permission to evaluate their child. Parents can also call the Child Find office and ask that their child be evaluated. Referral or request for evaluation. A school professional may ask that a child be evaluated to see if he or she has a disability. Parents may also contact the child's teacher or other school professional to ask that their child be evaluated. This request may be verbal, but it's best to put it in writing. Parental consent is needed before a child may be evaluated. Under the IDEA regulations, evaluation needs to be completed within 60 days after the parent gives consent.

158 Step 2. Child is evaluated.

Evaluation is an essential early step in the special education process for a child.

It's intended to answer these questions: Does the child have a disability that requires the provision of special education and related services? What are the child's specific educational needs? What special education services and related services, then, are appropriate for addressing those needs? By law, the initial evaluation of the child must be "full and individual"-which is to say, focused on that child and that child alone. The evaluation must assess the child in all areas related to the child's suspected disability. The evaluation results will be used to decide the child's eligibility for special education and related services and to make decisions about an appropriate educational program for the child. If the parents disagree with the evaluation, they have the right to take their child for an Independent Educational Evaluation (IEE). They can ask that the school system pay for this IEE. Step 3. Eligibility is decided. A group of qualified professionals and the parents look at the child's evaluation results. Together, they decide if the child is a "child with a disability," as defined by IDEA. If the parents do not agree with the eligibility decision, they may ask for a hearing to challenge the decision. Step 4. Child is found eligible for services. If the child is found to be a child with a disability, as defined by IDEA, he or she is eligible for special education and related services. Within 30 calendar days after a child is determined eligible, a team of school professionals and the parents must meet to write an individualized education program (IEP) for the child. Step 5. IEP meeting is scheduled. The school system schedules and conducts the IEP meeting. School staff must: contact the participants, including the parents; notify parents early enough to make sure they have an opportunity to attend; schedule the meeting at a time and place agreeable to parents and the school; 159 tell the parents the purpose, time, and location of the meeting; tell the parents who will be attending; and tell the parents that they may invite people to the meeting who have knowledge or special expertise about the child. Step 6. IEP meeting is held and the IEP is written. The IEP team gathers to talk about the child's needs and write the student's IEP. Parents and the student (when appropriate) are full participating members of the team. If the child's placement (meaning, where the child will receive his or her special education and related services) is decided by a different group, the parents must be part of that group as well. Step 7. After the IEP is written, services are provided. The school makes sure that the child's IEP is carried out as it was written. Parents are given a copy of the IEP. Each of the child's teachers and service providers has access to the IEP and knows his or her specific responsibilities for carrying out the IEP. This includes the accommodations, modifications, and supports that must be provided to the child, in keeping with the IEP. Step 8. Progress is measured and reported to parents. The child's progress toward the annual goals is measured, as stated in the IEP. His or her parents are regularly informed of their child's progress and whether that progress is enough for the child to achieve the goals by the end of the year. These progress reports must be given to parents at least as often as parents are informed of their nondisabled children's progress. Step 9. IEP is reviewed. The child's IEP is reviewed by the IEP team at least once a year, or more often if the parents or school ask for a review. If necessary, the IEP is revised. Parents, as team members, must be invited to participate in these meetings. Parents can _make suggestions for changes, can agree or disagree with the IEP, and agree or disagree with the placement. If parents do not agree with the IEP and placement, they may discuss their concerns with other members of the IEP team and try to work out an agreement. There are several options, including additional testing, an independent evaluation, or asking for mediation, or a due process hearing. They may also file a complaint with the state education agency.

160 Step 10. Child is re-evaluated. At least every three years the child must be reevaluated. This evaluation is sometimes called a "triennial." Its purpose is to find out if the child continues to be a child with a disability, as defined by IDEA, and what the child's educational needs are. However, the child must be reevaluated more often if conditions warrant or if the child's parent or teacher asks for a new evaluation. 5.8 Let us sum up As discussed so far there are different types of evaluation tools and techniques. Norm-referenced test, Criterion referenced tests & continuous and comprehensive evaluation are a pre-requisite of today's evaluation system in education. To determine if a child is eligible for classification under one of the 13 areas of exceptionality, an individualized evaluation, or assessment, of the child must be conducted. The focus of evaluation is to take the educator, step-by-step through the assessment process in special education. A referral to Special Education can be made by teachers, parents, doctors, or anyone involved in a student's education. Before a child is placed in Special Education an assessment must be completed to determine their academic level, cognitive ability, adaptive behavior, motor skills, or language processing abilities. The design of the assessment varies according to the suspected area of disability. Assessments are only appropriate when all other classroom interventions are tried. The assessment results are presented at the Individual Educational Plan (IEP) meeting to the IEP team, which is usually composed of the child's parents, a general education teacher, an administrator, and the assessment team. The goal is to understand the student's strengths and weaknesses, to understand the root causes of their learning difficulties, and to determine their eligibility for Special Education services. When the individual pieces of the assessment are put together, they compose a complete picture of the child and their educational needs. If the child qualifies for Special Education, the assessment information is used to develop an IEP.

161 5.9 Check Your Progress. 1. Define Evaluation. Mention Differences between requirement and Evaluation.

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..... 2. Discuss in brief different types of Evaluation.

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..... 3. Explain with suitable example, the difference between NRT and CRT.

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..... 4. Why evaluation process are necessary in our teacher learning system.

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..... 5. Explain in brief about CCE and scholastic and non scholastic assessment in Evaluation process.

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..... 6. Mention different types of tests used in our teaching learning system.

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162 7. Classify different types of tools used in Evaluation.

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..... 8. Explain about the basic technique of Evaluation implemented in our teaching learning process.

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..... 5.10 References Ahmad. J, Teaching of Biological Sciences, Prentice Hall of India, New Delhi. Singh A. K. Tests, Measurement & Evaluation in Education. Agarwal J. C. Evaluation in Education, Vikas Publishing House, New Delhi. Mangal, S. K. Essentials of Educational Technology, Prentice Hall of India, New Delhi.

163 Notes

164 Notes

Hit and source - focused comparison, Side by Side

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3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA - A A-4 (PART-II) : PEDAGOGY OF TEACHING MATHEMATICS
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7 Netaji Subhas Open University AREA - A A-4 : PEDAGOGY OF TEACHING MATHEMATICS A-4 □ □ □ □ □
Pedagogy of Teaching Mathematics UNIT - 1 : NATURE OF MATHEMATICS 9-31 UNIT - 2 : OBJECTIVES AND INSTRUCTION PLANNING IN MATHEMATICS 32-99 UNIT - 3 : STRATEGIES FOR LEARNING AND TEACHING MATHEMATICS 100-151 UNIT - 4 : TEACHING-LEARNING RESOURCES IN MATHEMATICS FOR STUDENTS WITH DISABILITIES 95-129 UNIT - 5 : ASSESSMENT AND EVALUATION FOR MATHEMATICS LEARNING 130-158

8

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Unit I □ Nature of Mathematics 1.1. Introduction 1.2.

Objectives 1.3 Meaning, Nature, Importance and value of Mathematics 1.3.1 Meaning (Derivation from Greek word; English Dictionary; Indian language, Saying of Maxwell, Bartrand Russell, A.N.Whitehead etc) 1.3.2 Nature (As a science of reasoning; a science of symbols; an abstract science; Science of numbers; a language; survival of mankind; Interpreter for real life phenomenon; deductive reasoning etc) 1.3.3 Importance (in school curriculum; in mathematical aspect; in civilizations and culture; in other subjects). 1.3.4 Value 1.1. Introduction Longback, Comte observes as follows, "All science education which does not commence with Mathematics is, of necessity, defective at its foundation". Roger Bacon observes "Mathematics is the gate and key of the science. Neglect of Mathematics causes injury to all knowledge. Science he who is ignorant of it cannot know the other sciences or the things of the world. What is more, men who are thus ignorant are unable to perceive their own ignorance and so do not seek a remedy." Mathematics plays an important role for acquiring knowledge in any branch of science and scientific theories are also based on mathematical knowledge. Kothari Commission (1964–66) mentioned "we cannot over stress the importance of mathematical in relation to science, education and research. This has always been so, but at no time has the significance of mathematical been greater than today. It is important that deliberate effort is made to place India on the world map of mathematics, within the next two decades or so." National Curriculum Framework– 2005 has emphasised "Developing children's abilities for mathematicalisation is the main goal of mathematics education. The narrow aim of school mathematics is to 10 develop useful capabilities, particularly those relating to numeracy, numbers, number operations, measurement, decimals and percentages. The higher aim is to develop the child's resources to think and reason mathematically, to purpose assumptions to logical conclusions and to handle abstraction. It includes a way of doing things and the ability and attitude to formulate and solve problems." So the role of mathematics, is many folded. Mathematics develops the skills of visualisation and representation of a person about physical phenomena. C. A. Coulson says "Our world is becoming increasingly mathematical" In this perspective we will discuss the nature, importance and value of mathematics. 1.2.

Objectives : At the end of this subunit, you will be able to ● acquire a clear perspective of meaning and nature of mathematics. ● explain the importance of mathematics in multi-dimensional fields. ● appreciate different values of mathematics as a school subject. 1.3.1. Meaning of Mathematics : Etymologically the term 'Mathematics' is derived from two Greek words, 'Manthanein' means 'learning' and 'Techne' means 'an art or technique'. So, mathematics means the art of learning related to faculties. In many Indian languages the vernacular word for mathematics is 'Ganita' which means the science of space and quantity which helps us in solving many problems of life using numeration and calculation. In Sanskrit, it is said, 'Ganita Shastra' which means science of counting and calculation for mankind.

The dictionary meaning of Mathematics is, "it is either the science of number and space or the science of measurement, quantity and magnitude." So mathematics is the science of quantity, measurement and spatial relations. It is a systematised and well organised branch of science

expressed symbolically. Mathematics is defined in different ways by different schools.

11 ● "Mathematics is the indispensable instrument of all physical resource" Kant. ● "Mathematics is engaged in fact in the profound study of art and expression of beauty" –I. B. Shaw ● "Mathematics is the art of saying the same thing in many different ways" – Maxwell ● "Mathematics may be defined

as "The subject in which we never know what we are talking about, nor whether what we are saying is true" – Bertrand Russell ● "

Mathematics is the queen of science and arithmetic is the queen of all mathematics" – Gauss ● "Mathematics is a science of order and measure" – Descartes ● "

Mathematics is a way to settle in the mind a habit of reasoning" –

Loyce. Mathematical culture shares with the humanistic culture some characteristics like beauty, elegance, depth, emotional involvement, artistic nature, creativity, pursuit of truth etc. The National Policy on Education 1986, mentions ● " Mathematics should be visualised as the

vehicle to train a child to think, reason, analyse and to articulate logically. ●

Mathematics is the science of patterns and forms in numbers and space. The thrill of mathematics lies in the discovery of these patterns. ● Mathematics is both an experimental and deductive science. While proofs are important, the discovery of pattern, is even more important and is certainly more exciting. Derived definition : So mathematics can be defined as a systematised, organised branch of science which deals with quantitative facts forming generalisation, establishing relationship and developing logical thinking and reasoning. So the word Mathematics denotes two different senses namely one as a method used to solve the problem of physical nature (tool) and second to generalise truths (logical frameworks)

12 1.3.2 Nature of Mathematics : On the basis of various thoughts of the greatest mathematical scientists of all times the following aspects on nature of mathematics are emerged. 1.3.2.1 As a science of

reasoning : According to Locke 'Mathematics is a way to settle in mind a habit of reasoning'. Mathematics is based on logical reasoning. This logic helps us to come to a conclusion or to prove a statement. The reasoning may be of two types (a) inductive reasoning—based on observation and experience of a individual cases to arrive of a generalised conclusion (b) inductive reasoning—where generalization is made on the basis of predetermined axioms or postulates. Laws of deductive logic are the basis of valid reasoning. These laws are (a) Law of identity (b) Law of excluded middle and (c) Law of contradiction. So mathematics is regarded as a highly disciplined model of thinking.

1.3.2.2. Mathematics as a science of symbols. Symbols are plenty in mathematics. Each symbol has a definite meaning. These symbols are accepted as universal. The main characteristics of mathematical languages are simplicity, accuracy and very precise. Meaning of Mathematics Etymological Vernacular word In Sanskrit Derived definition Mathematicians English dictionary NPE 1986 Mathematical culture

13 The other features of mathematical language are the following. (i) Like other languages, the mathematics language also has its own grammar. A definition must be stated clearly and precisely without confusion. (ii) Mathematical languages, clearly distinguish between number and numeral, fraction and fractional, angle and angular etc. (iii) Some common words are also used in mathematics in different contexts like 'Cone' 'angle', 'root', is used as a root of an equation, as square or cube root and main source etc. (iv) To arrive at a mathematical solution, we have to follow an algorithm that depends on sequence of steps. (v) Verbal statement, can be precisely expressed using mathematical symbols i.e. language. A is greater than B. B is greater than C can be stated $A > B > C$. The commutative law of addition and multiplication of real number system is expressed in verbal language as 'addition and multiplication of two real numbers is independent of order.' In mathematical language it can be stated as $a + b = b + a$, $a \times b = b \times a$, $a, b \in R$ Important mathematical statements relations and operations are $+$, $-$, \times , \div , $>$, $<$, \leq , $\%$, $\sqrt{\quad}$, \sum , etc. (vi) Sometimes, the same mathematical operation can be expressed in different mathematical language. The addition, can be stated as 'find the sum', 'find the value', 'find the whole', 'find the total', 'how many is all', the summation of, \sum , etc. Mathematical symbols may be referred as 'tool of communication'. 1.3.2.3. Mathematics as an Abstract science. Scientific theories, laws etc are expressed also in mathematical language which become abstract. $E = mc^2$, $1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$ etc. Some mathematical concepts cannot be physically verified, they are abstract. For example Euclid's lines are assumed to have no width and points are no size similarly,

14 the concept of infinity, negative numbers limit etc. Can not be learned through practical experiences. Hence they are abstract. 1.3.2.4. Mathematics as a study of structure. Mathematical structure is a mathematical system obtained by some sort of arrangement, formation or putting together of parts. For this we apply the properties like commutative, associative and distributive operations. Plane analytic geometry is considered as a superstructure based on the structure known as real number system. Similarly, number system, group, field, ring, vector etc, are examples of mathematical structures. 1.3.2.5. Mathematics as a science of precision and accuracy. Mathematical results are exact and precise. It may be either right or wrong, accepted or rejected. There is no in between the right and wrong. Sometimes we have to give emphasis on approximation in mathematical results but that also depends on degree of accuracy. 1.3.2.6

Mathematics as a deductive science. In deductive reasoning we proceed in the following way : if something is true which is considered as fundamental assumption, then the subsequent deduction based on accepted assumptions must be true. 'If a line intersects two parallel lines, the alternate angles are equal.' Hence the validity of the deduced conclusion depends on the consistency of the assumption i.e., premises Air contains O_2 , N_2 , CO_2 etc in the following percentages, of a mixture of O_2 , N_2 , CO_2 etc contains such percentages, then it may be treated $AB \parallel CD$; E, F , intersects at P and Q points. $\angle EPB = \angle EQC$ etc. $A B D F P C E Q$

15 as air. This type of deduction is made by applying logical reasoning. So the phases of mathematical deduction are (a) Premises (basis consideration or axioms) (b) The process of reasoning and (c) Conclusion (accepted definition or theorem)

1.3.2.7 Mathematics as an inductive science. Inductive reasoning is based on the principle that if a relationship holds good for few particular cases and even for any similar case then the relationship can be generalised into a rule or formula. If $(a+b)(a+b) = a^2 + 2ab + b^2$, $(m+n)(m+n) = m^2 + 2mn + n^2$ etc then $(p+q)^2 = p^2 + 2pq + q^2$. Mathematical definitions and rules are formed through induction based on particular facts, examples. The child may use measurement, manipulation as some constructive activities to arrive at a relationship using mathematical symbols. This symbolic form based on particular instances is called as law or rule. The phases are : Observation and \rightarrow Generalised form/ \rightarrow Use of symbols through direct experiences relationship reasoning (law/rule is formed)

1.3.2.8. Mathematics as a science of number. Before the invention of proper numbers, ancient people uses the notations of 'one' and 'many'. But necessity of man compels them to write symbols for numbers which we use today—1, 2, 3, 4, 5, 6, 7, 8 and 9. Those counting numbers are invented within a centuries of development. Scientific information was expressed by using numbers. Thus mathematica is considered as a science of numbers. For example, (a) 1, 2, 3, 4.....are called numberd. These numbers are used in counting. Hence then unmbers are called counting numbers. (b) On the same way 0, 1, 2, 3, 4.....are called whole numbers. Those are used in meaning. Hence these numbers are called measuring numbers. (c)-4, -3, -2, -1, 2, 3, 4.....are called integers. Those numbers are used to indicate direction. So there are called directional numbers. By using the numbers, we can explain the natural phenomenon, scientific discoveries, economic growth, environmental information etc. } } }

16 1.3.3. Importance of Mathamatics. In the words of Young "Mathematical is the only subject that encourages and develops logical thinking. It enables the student to discriminate between essential and non essential. It helps them to shift facts, to draw conclusions without ambiguity and that is the subject by which they may learn what is meant by rigid reasoning." The importance of mathematics is multidimensional and widespread. So being numberate is becoming more important than being literate. The importance of mathematica can be judged from three aspects namely (a) Social aspect, (b) Application aspect and (c) Mathematical aspect.

1.3.3.1 Importance of Mathematical from social aspect. • Daily life activities of man demand mastery of number and mathematical vocabulary like commission, discount, profit and loss, percent and like. • The study of mathematics helps to develop logical thinking and reasoning, creative imagination. • Mathematics enhances the ability to apply mathematical ideas in other branches of knowledge and even in daily life situation. • Many vocations require mathematical skills. • Mathematics helps man to discover the mysteries of universe and to overcome superstitions.

1.3.3.2 Importance of Mathematics from application aspect. • Mathematics provides sufficient skills to meet the demand of daily life. • It provides a clear understanding of laws of nature. • Various cultural art like painting, drawing and sculpture are based on mathematical knowledge. • Music utilizes mathematics. • Mathematical Quizes, puzzles, magic squares, tools are both entertaining and challenging to develop power reasoning. • Mathematics has a positive correlation with other frames of science as well as with social sciences and also with languages-mathematics in used have as tool of other subjects.

17 • Lofly A Zadeh has dicovered two types of fuzzy set namely Intuitionistic and Neutrosophic fuzzy set which has revolutionied the application areas of mathematics.

1.3.3.3 Importance of Mathematics from mathematical aspect. • Mathematical contents are gradually increasing and other related subjects are also developed by mathematics. • Mathematics improves the ability to perform calculation with speed and accuracy. It also develops the concepts of symmetry, similarity and the skill to use instruments with precision. • Mathematics improves the power of (a) estimation and approximation of results more accuracy. (b) being more systematic in finding relationship, drawing conclusion. (c) interpretation of numerical data using graphs etc. (d) taking independent decisions in administrative and social, issues. (e) thniking alternative methods of solving problems

Importance of Mathematics 1.3.4. Value of Mathematics. In the language of Courant and Robin "Mathematics is an expression of the human mind which reflects the active will, the contemplative reason and the desire for aesthetic perfection. Its basic elements are logic and intuition, eralysis and constructions generality and individuality." Mathematics does not contain only asbtract information, some process laws and In the field of application of mathematics In the field of social and cultural aspect In the field of mathematical aspect

18 formula. It must contain avenues of developing a good number of values. According to Encyclopida "Value means relative worth or importance". We know 'value can not be taught, it must be caught.' Buy by teaching or learning a subject one must obtain such qualities which one essential for a person to live in society and which is desirable for a person. Teaching of mathematics will also foster the following values. 1. Utilitarian value 2. Intellectual value 3. Aesthetic value 4. Moral value 5. Recreational value. 1.3.4.1 Utilitarian value : In the words of I. G. Kemeny "Whether man's travel carries him into space or into theoretical science, his passport must be stamped with the mathematician's seal or approval.' The utilitarian values of mathematics are many and varried consider the applications of mathematics in our daily life. We start our works, complete those following the time schedule and planning. We face comercial transaction, fill payment, construction expenses, use of electronic gudget, tour & travels etc in our daily life. All these activities are directly influenced mathematics. • Other frames We have identified the relationship between mathematics and other branches of science and humanities and have realised the utilitarian value of mathematics starting from scientists, educationists, administrations businessmen teachnicuans and even the foal utilise mathematics knowingly or unknowingly. So mathematics for all. • Mathematics is business and industry--The development of a country depends also on the expression of its business of industry. Both utilise the application on the mathematics. 1.3.4.2 Intellectual value : Intellect is the mental capacity with the help of which we can think and acquire

19 knowledge. It is the mental faculty by which we understand the concrete and abstract life experiences. If regulates our thinking, imagination and responses to any stimulus. All sorts of creation, manipulation and structuring of knowledge are the output of intellectual vaules, mathematics regulates those processes standign from thinking, analysing, arriving at a conclusion and verifying the result. According to Duffon "Mathematics furnishes the power of deliberate thought and accurate statement and to speck trugh." So students must love and enjoy mathematics. To inlucate such mental faculty, the teachers may8 arrnage the following activities. • To allow the students to be exposed in different branches of mathematics. • To arrange mathematics Quizt, Quest, seminar. • To acquaint the student with mathematical logical for solving different problems. • To include the biographies and contributies of national and international mathematics. • To enourage the students to participate in teaching learning process and in mathematics laboratoriaies. • To organise mathematical exhibition, fair, fun for mathematics etc. • To conduct group mathematical project for exchange of views. 1.3.4.3 Aesthetic value : In the words of Thorndike "Education as a whole should foster the higher impersonal pleasure" Mathematics also fulfills that function. Mathematics is alos sources of delight and joy. Geometrical drawings, artistic diagrams, engineering figures etc, are based on the principles of mathematics. Proper shope and appropriate size brings beauty to the objects in nature. Symmetry is the corner stone of beautiful creation of the universe. For example two parts (belt and right) of a human body, loves of a tree, beehibes, nests of birds, spider net has beautiful mathematical structure. The feeling of Aesthetic measure (M) cembe calculated using the formula. $M = O C$ where O = The property of harmony, as symmetry of orders. C = Complexity of the objects.

20 1.3.4.4 Moral values : Morality means the characteristics and conduct of a person with respect to his/her behaviour is the society. The human character and conduct is determind by the culture of the person. The culture includes knowledge, belief, morals, custom, law and habits etc. The culture is influenced both by material components like clothing, machine tools etc as well as non-material components like language, literature, out religion, rule of the government. Moreover, both the material and nonmaterial component of culture are controlled direct by or indirectly by mathematics. Hence mathematics has a strong moral value. The moral value of mathematics are exhibited in multidimensional powers like "discipline', reasoning capacity, concentration of mind, precission in delaing, perfectness in work, neatness in all kinds objects, self confidence in arriving at a conclusion, constructive imagination for solving a problem, capacity of judging the problamatic sitituation. Moral values of Mathematics Precision character and conduct of a person in a society discipline Reasoning Perfectness Self confidence Constructive imagination Judging the situation Material Component cultura like toal, clothing, shelter etc. Non material components like knowledge belief, language, religions, law etc.

21 Thus moral values of mathematics develop in the learner good character, desirable cultura, honesty, attitude of openness, deductive and inductive reasoning etc. 1.3.4.5. Recreation value : Galileo has mentioned 'Mathematics is the language in which God has written the Universe.' For recreation or enjoyment we also explore the language of the universe. For recreation we even undergo such activities which require power of reasoning symbolisation and critical thinking etc. Recreational activities give the person fresh energy for solving problems, performing creative activities. While solving mathematical problem one can enjoy a lot by facing challenging situation and ultimately solving the problem. The learner is delighted by discovering such new knowledge. Mathematical puzzle, induction and finding alternate ways to solve problem are the sources of recreation value of mathematics. 1.2. Axioms, Postulates, assumption and Hypothesis in Mathematics (Mathematical assertions) The word axiom comes from the Greek word 'axioms' means 'That which is thought worthy or fit' or 'that which commends itself as evident'. In mathematics, it is a statement that is so evident as well-established, that it is accepted without controversy or questions. It can be used as the premise or starting point for further reasoning or arguments. Axiom is, a rule as a statement that is accepted as true without proof. In mathematics, there are two types of axioms namely (i) Logical axioms and (ii) non-logical axioms. Logical axioms are usually statements that are considered to be true within the system of logic they define. For example A and B may represent two points A and B when as AB may be a line segment etc. Non-logical axioms is not a self-evident truth, used in deduction to build a mathematical theory.

22 Example : $a + b = b + a$ is true in arithmetic \square Characteristics : (1) It is any mathematical statement from which other statements may be logically derived. (2) An axiom in one system may be a theorem in another and vice versa. (3) An axiom is a self evident assumption which is common to many branches of science. Example : when an equal amount is taken from equals, an equal amount results. In mathematics, a clear distinction can be made between logical and non-logical. Logical axioms are certain formulas in a formal language that are universally valid. They are satisfied by every assignment of values. On the other hand, non-logical axioms are formulas that are theory specific assumptions. For examples the natural numbers and integers involve the same logical axioms. The non-logical axioms aim to satisfy what is special about a particular structure like groups. These are referred as axioms in mathematical discourse. Every mathematical theory starts from a given set of non-logical axioms and ultimately formalised to logical formulas. Example : For natural numbers. Relevant terms '0' (Zero); "number"; "successor" Axioms A1 '0' (Zero) is a number A2. The successor of a number is a number. A3. No two numbers have the same successor A4. 0 is not the successor of any number a5. If p is a property such that (

a) q/ has the property p and (b) whenever n has

the property P, the successor of n has the property P, then every number has property P The 5th axiom is termed as 'The principle of mathematical induction'. \square

Postulate : The meaning of the word is to 'demand'. Euclid demands that 'any two points can be joined by a straight line.' All the foundation of the famous science depend certain additional hypothesis which were accepted without proof. Such a hypothesis were known as postulate.

23 \square Characteristics : (1) The postulates of each particular science were different. (2) The validity of postulate is determined by means of real-world experience. (3) These are very basic, self evident assertions. (4) These are non-logical axioms. From Euclid's Elements, the following five postulates are obtained. 1. Things which are equal to the same thing are also equal to one another. 2. If equals are added to equals, the wholes are equal. 3. If equals are subtracted from equals, the remainders are equal. 4. Things which coincide with one another are equal to one another. 5. The whole is greater than the part. Postulate is a true statement which does not require to be proved. Example : We use postulates SSS. General assumptions : 1. Things which are equal to the same thing are also equal to one another. 2. If equal are added to equals, the wholes are equal. 3. If equals are subtracted from equals, the remainders are equal. 4. Things which coincide with one another are equal to one another. 5. The whole is greater than the part. However, modern mathematics develops theories and axioms like field theory, group theory, topology, vector spaces, hyperbolic geometry without any particular application in mind. Mathematicians now consider that axioms should be regarded as purely formal statements and not as facts based on experience. Modern mathematics strengthens its foundation to such an extent that mathematical theories can be regarded as mathematical objects and mathematics itself can be regarded as a branch of logic. \square Assumption : Something taken for granted or accepted as true without proof, as supposition. A B C D E F

24 It is a statement that is used as the premise of a particular argument but may not be otherwise accepted. Latin 'assumptionem' meaning a taking as receiving." So Assumption is a supposition on the current situation or a presupposition on future course of events, assumed to be true in the absence of positive proof but necessary to establish a rule/law. □ Characteristics : 1. A statement that is assumed to be true and from which a conclusion can be drawn a straight line— which will never meet, but on the surface of earth which has a curvature, it is assumed. 2. It is hypothesis that is taken for granted. 3. From the fundamental assumption something is developed or explained. 4. It is the act of assuming or taking for granted. 5. An assumption may be taken as postulate or axiom. 6. It may be taken as presumption for establishing a theory. 7. It is accepted cause and effect relationship. □ Hypothesis : Hypothesis is the part of a condition statement. It is statement or idea which gives an explanation to a science of observation. Example : If the three sides of a triangle measure the same, the triangle is equilateral. The hypothesis is 'all three sides of a triangle measure the same'. (1) A statement that might be true, which can then be tested. (2) Sometimes the hypothesis would not be tested.

25 (3) Steps underlying the formation of hypothesis are : (to make some observations) 9 Collect some data based on the observations 9 Make a conclusion (Hypothesis) 9 To test the hypothesis taking more evidence/data 9 9 If the evidence is in agreement If the data/evidence contradict 9 9 The hypothesis is correct It must be rejected as amended for verification (4) Mathematics is based on deductive reasoning so a good hypothesis is essential for formation/explanations of a math. 1.3. Historical Development of Notations and Number System 1.3.1 Development of Mathematical Notations. Mathematical notations comprise the symbols used to write mathematical equations and formulas. It implies a set of well-defined representations of quantities and symbols operators. The history includes Hindu-Arabic numbers, better from the Roman, Greek, Hebrew and German alphabets. The development of mathematical notation can be expressed in phases. 1st The rhetorical stage. At this stage calculations are performed by words only. 2nd phase The syncopated stage Operation and quantities are represented by symbols The numerical symbols consisted of strokes or notches cut in wood or stone. The symbolic system was in use by medieval Indian mathematicians and in Europe since the middle of the 17th century. The Egyptian mathematics had a symbol for one, ten, one hundred, one thousand, ten thousand, one hundred-thousand and one million. Some common Mathematical symbols with history. = (the equal sign) means "is the same as" first introduced in the 1557 (book 'The Whetstone of Witte by Robert Recorde.)

26 < (the less than sign) means "is strictly less than", > (greater than sign) means "is strictly greater than sign". First appeared in Artis Analytica Praxis ad Aequationes Algebraicas Regolverdas. ("The Analytical Arts Applied to Solving Algebraic Equation" by Thomas Harriot (1631). ≤ ("less than or equal") and ≥ ("greater than or equals" by Pierre Bouguer in 1734 ∴ (three dots) means "therefore" ("Teach yourself Algebra" (1659) by Johann Rahn ⇒ (the such that sign) means "under the condition that". Commonly to abbreviate 'such that'. ⇒ (the implies sign) means "logically implies that". ⇔ means "if and only if". ∀ (the universal quantities symbol means "for all" Gerhard Gentzen (1935) Investigation on Logical Reasoning ∃ (The existential quantities) means "there exists" first used in 1897 book "Formulaire de mathematiques by Giuseppe Peano Set theory notation : ⊂ (Proper subset) means "This set is a subset of " and ⊃ (the includes sign) means "this set has a subset". Those are used in 1890 book Vorlesungen über die Algebra der Logik ("Lectures on the Algebra of the Logic") by Ernst Schröder. ∈ (Element of) means "in an element of" and first appeared in the 1895 book Formulaire de mathematiques by Giuseppe Peano. ∪ (The union sign) means "take the elements that are in either set", and ∩ (The intersection sign) means "take the elements that the two sets have in common." They were introduced in the 1888 book "Geometric Calculus based upon the teachings of H. Grassman. Preceded by the operations of deductive logic" by Giuseppe Peano. ∅ (The null set or empty set symbol) means "the set without any elements is it", first used in 1939 book "Elements de mathematique" by N. Bourbaki. ∞ (infinity) denotes "a number of arbitrarily large magnitude" First appeared in print in the 1655 book "On Conic Section" by John Wallis. π (The ratio of the circumference to the diameter of a circle) denotes the number 3.141592653589... and was first used by William Gones in his 1706 book

27 Synopsis Plama morum mathematica ("A New Introduction to the Mathematics") Many people speculate that gones chose the letter π because it is the first letter in Greek word perimetron, which roughly means 'around'. 1.3.2.

Development of Number system. The historical development of number system can be grouped into following phases.

1.3.2.1. Egyptians (3000 – 1000 B.C.) Ciphered number system. Important features are. • Two numeration system.. • Important tally system 'Hieroglyphics'. • Those system when based on groupong of 10. • Thy used their numeration system for measruesment. 1.3.2.2. Babylonians (2000 – 200 B.C.) Important features are. • Their number system based on goruping of 60. • Have the position system. • Writing ws as clay tablets. • Problem was spacing between position. • Finally they used dot to seprate those numbers. 1.3.2.3. Maya and Romans (300 B. C.) Important features • Those were similar to Babyglonians. • Problems related to spacing were removed. • Grouping of numbers was based on 20. • Based on odd use of 18.

28 Romans' system was. • Similar to the Egyptian system. • They wrote larger numbers by putting a bar over. • Addition and subtraction can be made. 1.3.2.4. Regarding Place Value of Zero : • Babyglonians started the place value using theri dot. • In 600 A.D. Hindus started to use 10 place value system • Hindu recognized zero as a number • In 9th century, Arabs started to use the Hindu system • Indian word sunyo means absense of quantity • Mahavira proved that number multiplied by zero will become zero. • Bhaskare proved a number divided by zero will result infinite quantity. 1.3.2.5.

Place Value of Zero : • Babylonians started place value using their dot. • In 9th century Arabs accupted Hindus system. • In 18th century zero occupy a place in algebraic equation. 1.3.2.5. Fractions : • Egyptians first use fractions as "parts". • Babylonians started base sixty system to include fraction. • Russian had a unit-fraction method. • In their nine chapters on mathematical art, Chinese mathematicism thought about fraction similar to our. • Chinese avoided using improper fractions. 1.3.2.6. Nagetive Numbers : • In 7th century, Brahmagupta recognised that negative number can be treated as debt.

29 • In 17th century, negative numbers were accpted. • Descartes recognised negative roots as 'false roots'. • Euler recognised negative numbers as debts and treated that product of two negative numbers is a positive number. 1.3.2.7.

Complex Number : • In early times if the quadratic formula was used to square root of a negative number then there was no solution. • Rafael Bombelli formed out a new language to treat these negative radicol. • Bombelli showed that sometimes the square roots of a negative number can be used to find real solution. • Euler used complex numbers a lot, but could not explain about their nature. • Argund represented imaginary numbers geometrically on a plane. • Gauss showed how complex number could be used in Mathematics. Number can be calssified into sets, called number system. main number system of Roman numbers are the following : N Natural 0, 1, 2, 3, 4,...or 1, 2, 3, 4,... Z Integer ..., -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5 Q Rational a b where a and a are integer a and b is not 0 R Read The limit of a contergent sequence of rational numbers C Complex a+ib where a and b are real number and i is the square rot of -1 Premitive and prehistoric number system are numbers systems that have been developed when then has been need to express mognitudes. Thus the "bundle-of- sticks" method is used to represent magnitude. It can be used to express anything but quantities.

Following Table shows the number words used amont the

30 Bushmen in South Africa Number Word or Combination 1 Xa 2 t'oa 3 'quo 4 t'oa – t'oa 5 t'oa – t'oa ta 6 t'oa – t'oa – t-oa 1.4. Contribution of Great Mathematics 1.4.1. Srinivasa Ramanujam FRS He was an Indian mathematician. Though he had atmost no formal training in pure mathematics, he made extrordinary contribution to mathematical analysis, number theory, infinite service and continued fractions. During his short life (22 December 1887 – 26 April 1920). Ramanujam idependently compiled neraly 3.900 result (mostly identities and equations) Ramanujum, with the help of Ramanujam

Aiyer, had his work pulished inthe Journal of the Indian Mathematial society. He posed the problem in the Journal as follws. $1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$ He waited for a solution over six months. At the end, Ramanujan published the solution himself. On page 105 of his first notebook, he formulated an equation that could be used to solve the infinity rested radical problem $x + n + a = \sqrt[n]{x + n + a}$ using this equation the problems can be solved. Ramanujum has written a good number of creative article. Prof Handy recommended the following seven articles as most significant. They are -- i. Modular Equation and Approximatians to π -- Quarterly journal of mathematics. Vol. 45.

31 ii. Highly composition Numbers– Proceeding London Mathematical Society. Vol. 14 iii. On Certain Arithmetical Functions Trase Continental Philosophical Society. iv. On Certain Trignometirc sums and Their Applications to the Theory of Nunbers. -- Transe Continental Philosophical Society. v. Some Properties of P(n), the Number of Partitions on 'n'. Transe Continent Philisophical Society. vi. Proof of Certin Identities in Combinatory Analysis. vii. Congruance Properties of Partitions--Math. Thematia Zeitschmift. Vo. 9 Besides his published work, Ramanujam left behind several notebooks, which have been the object of research. The Enlish mathematician G. N. Watson wrote a series of papers about them. At present, the American mathematician C. Berndt has written a multi-volume study of the notebook in 1997. Ramanujam worked out the Riemann series, the illiptic integrads, hypergeomtric series, the functional equations of the Zeta functions, the classical theory of quachotic forms as Cauchy's Theorem. Though brilliant, many of his theorems on the theroy of prime numbers were wrong. Reference : Isaiah Lankham, Bruno Nachtergaele etc --"Some Common Mathematical Symbols and Abbreviations (with History), 2007. MAT 067, University of California, Davis. ● Boyer, C.B. "Fundamental steps in the Development of Numeration.

32 Unit-2 □□□□□

Objectives and Instruction Planning in Mathematics Structure : 2.1 Aims and Objectives of Teaching Mathematics in Elementary and Secondary Schools. 2.1.1 Introduction 2.1.2 Aims of teaching Mathematics 2.1.3 Objectives of Teaching Mathematics 2.1.4 Objectives of Teaching Mathematics at the Elementary Stage 2.1.5 Objectives at the Secondary Stage 2.1 Aims and Objectives of Teaching Mathematics in Elementary and Secondary Schools. 2.1.1 Introduction We know that education is meant to acquire 3 Rs reading, writing and Arithmetic. The National policy in Education (1986 NPE) has mentioned that Mathematics should be taught to fulfill the aim that each learner is trained to think, on reason, analyze and articulate logically. As far as possible the discovery approach is to be followed. The skills of drawing, measuring and estimation have to be developed. To remembers the knowledge of terms, concepts, principles, processes and symbols. To respect the contribution of great mathematicians. To develop the skills in handling devices like calculators Computers etc. To help the learner to utilize the knowledge of Mathematics and skills to solve problems of daily life. To be fit to understand the content of higher Mathematics. The aims of teaching Mathematics are the goals, targets or universal purpose that may be fulfilled by the teaching of Mathematics. So aims are like ideals. Their attainment needs a stepwise as phasewise a long-term planning. Objectives are the short-term or immediate goals that may be attained within specified classroom activities.

33 2.1.2 Aims of teaching Mathematics Besides helping the students to acquire mathematical knowledge, the teaching of Mathematics also help the students to attain the broad aims of Mathematics. a. Disciplinary aim : The teaching of Mathematics will provide the learner to think logically and will develop the intellectual habits. b. Utilitarianism aim - The students will be given mathematical knowledge to solve the real life the real life problems also. Thus the study of Mathematics will be functional and purposeful. c. Social aim. The knowledge of Mathematics will serve both the individual in particular as well as the society in general. d. Moral aim The contental and the process solution will imbibe morality. e. Aesthetic aim The teaching of mathematics will create intervest and the learners will remain engaged even is their leisure time f. Cultural aim The teaching of Mathematics will also help the learner to understand the contribution of Mathematics in development culture. g. Vocational aim It will help the learner to be fit for any location of his choice. h. Inter disciplinary aim The learner will realise the application of Mathematics in different subjects. 2.1.3 Objectives of Teaching Mathematics The objectives of teaching mathematics at the whole school stage may be classified as follows : (a) Knowledge and understanding objectives (b) Skill objectives

34 (c) Application objectives (d) Attitude objectives (e) Appreciation and interest objectives These objectives are to be expressed in behavioural terms. The instructional objectives are those objectives which the students is expected to active. These objectives are developed for classroom teaching. By teaching knowledge and understanding of Mathematics to the learner it is expected that the pupil acquire the following. A. KNOWLEDGE AND UNDERSTANDING (a) Language of Mathematics – symbols, formula, terms, definitions statements etc (b) Different mathematical concepts like numbers, sets, measurements, directions etc (c) Mathematical process and relationships (d) Development of Mathematics and contribution of mathematicians (e) The nature of Mathematics and its scope (f) Interrelationship between different branches of Mathematics and with different subjects B. SKILL OBJECTIVES Skill means the ability to perform a given act with case and precision. The teaching Mathematics helps the learners to develop the following skills (1) He acquires and develops speed, neatness, accuracy and precision is mathematical calculations (2) He develops skill in the use and understanding mathematical language (3) He develops the ability to estimate, check and verify results (4) He develops the ability to perform calculations orally and mentally (5) The learners develops ability to think correctly, to draw conclusions, generalisations and interences.

35 (6) He develops skills to use mathematical tools and apparatuses skillfully. (7) He develops skill is drawing, meaning, weighing and use of different mathematical tools. (8) He develops necessary skill in drawing geometrical figures and mathematical concept maps. C. APPLICATION OBJECTIVES It is the ability to apply learned knowledge, concepts principles and skills in new and similar situations. It involbs the application of abstruck learning is reallife situations. Learning outcomes is this area require higher level of understanding of mathematical concepts. The students are enable to : (1) Analyze, draw inferences, generalise from collected data. (2) Use mathematical concepts is every day life (3) Solve mathematical problems independent by (4) Apply mathematics is his fortune vocational life. (5) Make use of mathematics is learning of other subjects and equip the self for higher education. D. ATTITUDE OBJECTIVES The development of Mathematics attitude makes learner open minded, helps him to make critical observation and to develop curiosity and impartial thinking The students will be able to (1) To analyse the problem independently (2) Develop the habit of systematic thinking and reasoning (3) Develop huristic attitude (4) Develop originality, independent thinking and creativity (5) Develop mathematical perspective while observing real life physical phenomena.

36 E. APPRECIATION AND INTEREST OBJECTIVES The students will be able to appreciate 1. The value of mathematics as the science of all sciences and art of all arts. 2. The recreational value of mathematics and the utility for leisure time activities. 3. Actively participate in mathematical debates, contests, quiz, quest. 4. The role of Mathematics in every day life. 5. The student will develop interest in mathematical learning and activities. 2.1.4. Objectives of Teaching Mathematics at the Elementary Stage. The main objectives at the elementary stage are the following : A. KNOWLEDGE AND UNDERSTANDING OBJECTIVES 1. Develop The knowledge and understanding of mathematical concepts of number, units of measurement, shape, size, direction, distance, fractions, equal, grouping and sub grouping etc. 2. Develops the knowledge, understanding of mathematical terms, symbols, digits, fractions, percentages etc 3. Develops the knowledge and understanding of mathematical facts like four fundamental operations, percentage, unitary method, mensuration etc 4. Develops the knowledge and understanding of mathematical relationships, notations etc. B. SKILL OBJECTIVES The learner develops the following skills 1. Skill of four fundamental operations with speed and accuracy 2. Ability in counting, reading, writing numbers and simple calculations 3. Skill in the use of mathematical tables 4. Proficiency in making estimates of size, distance and weights.

37 C. APPLICATION OBJECTIVES 1. The learner is able to solve both oral and simple writtens mathematical problems independently. 2. Try to apply elementary mathematical knowledge is every day real life situation 3. Try to estimate the length, mass of visible objects. D. ATTITUDE OBJECTIVES 1. To solve a problem, he tries to follow the systematic steps of solving the problem like reading the verbal problems carefully, analyse the facts, collect data and draws tentative inference. 2. Develop gradually the habit of logical thinking and reasoning 3. Develops the habits of neatness, honesty and regularity. 4. Gradually develops self-confidence for solving elementary mathematical problems. E. APPRECIATION AND INTEREST OBJECTIVES. 1. Appreciates the knowledge of Mathematics is solving problems of daily life. 2. Appreciates the recretional value of Mathematics and try to utilise his leisure time. 3. Develops interest in the learning of Mathematics. 4. Appreciates the contribution of mathematicians and get inspired. 2.1.5 Objectives at the Secondary Stage A. KNOWLEDGE AND UNDERSTANDING OBJECTIVES 1. He understands relationship of concepts, formulas, axioms and properties in the field of mathematics. 2. Gudge sufficiency, superfluency, relevance, inconsistency is the given data. 3. Detects errors in definitions, concepts, principles, process etc. 4. Translate mathematical relationship into symbolic forms and vice-versa. 5. Interpret graphs, charts, tables etc.

38 B. SKILL OBJECTIVES 1. He develops skill in solving the same problem by various methods but with reasonable speed. 2. Make readings from the table quickly and correctly. 3. Draw the geometrical figures neatly and systematically. 4. Check the calculation quickly and can use the instruments and appliances. C. APPLICATION OBJECTIVES 1. He learns the application of Mathematics in daily life, vocational, occupational and recreational life. 2. Formulate hypothesis from observed data and then draw inference. 3. Develop designs using mathematical relationship and principles 4. Solve new problems D. ATTITUDE OBJECTIVES 1. Develops interest and positive attitude towards learning of Mathematics 2. Learner gains confidence in the learning of Mathematics 3. Observe mathematical relationship in the environment 4. Accepts mistakes and point out errors unhesitatingly. E. APPRECIATION AND INTEREST OBJECTIVES 1. He enjoys solving mathematical problems of different types 2. Derive pleasure in observing, finding, interpreting mathematical relationship 3. Express joy and pride over great contribution of mathematicians 4. Regard great mathematicians and mathematics teacher with respect. National curriculum Framework has put forward the objectives of teaching school Mathematics as follows Developing Children's abilities for mathematization is the main goal of mathematics education. The narrow aim of school mathematics is to develop useful capabilities particularly those relating to numeracy-numbers, number operation, measurement, decimals and percentages. The higher aim is to develop the child's

39 resources to think and reason mathematically, to pursue assumptions to logical conclusions and to handle abstraction. It includes a way of doing things and the ability and the attitude to formulate and solve problems.

Accordingly the vision for school Mathematics are : • children learn to enjoy mathematics rather than fear it. • children learn important mathematics. • Mathematics is more than formulas and mechanical procedures. • Children see Mathematics as something to talk about, to communicate, to discuss among themselves, to work together on. • Children pose and solve meaningful problems. • Children use abstractions to perceive relationship to see structure, to reason out things, to argue the truth or falsity of statements. • Teachers engage every child in class with the conviction that everyone can learn mathematics.

40 2.2

Bloom's Taxonomy of Educational objectives and writing objectives in Behavioural terms Structure : 2.2.1 Bloom Taxonomy 2.2.2 There six behavioural objectives are related to specific mental process or ability which can be identified by using related action verbs. 2.2.3 Behavioural objectives under Affective Domain Krathwohl and his associates developed this objectives. These objectives are concerned with feeling aspect i.e changes in interests, attitude and values and also development of appreciations and adjustments. 2.2.4 Behavioural objectives under Psycho-motor domain. 2.2.5 Simpson's Taxonomy to Psychomotor Domain 2.2.6 Writing objectives in Behavioural terms 2.2.1 Bloom Taxonomy B.S. Bloom has included Taxonomy in educational objectives. The word Taxonomy has been derived from two Greek words : 'Taxis means configuration or arrangement and 'Nomos' means Law or rule. So Taxonomy means arrangement based on law. Know that, Bloom and Maric (1964) defined "A Taxonomy is a set of classification based on one or more principles." According to Bloom "The Taxonomy places the behavioural aspect of the objective within a hierarchical framework : each category is assumed to include behaviour more complex, abstract or internalised than the previous category. These categories are arranged along a continuum from simple to complex." In his book "Taxonomy of Educational objectives" (1956). Bloom has defined the educational objectives in terms of behavioural objectives. He mentioned three domains of Taxonomy namely i) Cognitive domain ii) Affective domain and iii) Psychomotor domain. Bloom and others have mentioned different stages of cognitive domain. "The cognitive domain includes those objectives which deal with recall or recognition of

41 Cognitive Domain Higher Level Lower Level 6. Evaluation 5. Synthesis 4. Analysis 3. Application 2. Comprehension 1. Knowledge 1. Knowledge is defined as the remembering of previously learned information. It stresses the Psychological process of remembering. Knowledge can be divided into three components. Psychomotor domain Affective domain Cognitive domain knowledge and the development of intellectual abilities and skills" – B.S. Bloom & others 1956.

42 A. Knowledge of specifics i) Knowledge of terminology Area, Triangle, Ratio Interest etc. ii) Knowledge of specific facts. Area of triangle, Volume of a cube, $(a + b)^3 = ?$ etc. B. knowledge of ways and means dealing with specifics. a) Knowledge of conventions (length) breadth, in a rectangle. b) Knowledge of trends and sequence. $-3 > -2 > -1 > 0 > 1 > 2$ c) Knowledge of classification and categories Area of circle, rectangle, triangle etc. d) Knowledge of criteria Rational and irrational number, equation of inequation etc. e) Knowledge of methodology To prove a geometrical theorem. C. Knowledge of the universal and abstraction in a field. i) knowledge of principles and generalisations the effect of temperature on a volume of gas when pressure remains constant etc. the relation between area of a circle with that of its radius. ii) Knowledge of theories and structure Knowledge 2. Comprehension It is expressed as the ability to grasp the meaning of a concept. It represents the lowest level of understanding. This domain has three sub components i) Translation The abstract ideas can be translated into concrete ideas.

43 a) Translation from one level of abstraction to another. The ability to convert verbal statement into mathematical statement. b) Translation from symbolic form to another form or vice versa. c) Translation from one verbal form to another translate the theorem from Bengali to English $5x + 3y = 15$ Give the graphical representations of the expression. ii) Interpretation It involves a re-ordering, rearrangement as explanation of concept for understanding. Interpret the statement, the correlation coefficient (r) is -0.85 . Interpret the nature of a group of the expression $Y = mx + c$ iii) Extrapolation of trends or tendencies beyond the given data for determining the implication or consequences on the original expression. $x + y + z = 1$ Find the coordinates of points which lie on the state line as to justify whether a particular point lies on the state line. 3. Application: It involves the application of a concept to new or similar situations. The concept includes the following types : i) General idea (Classification of numbers into rational and irrational, Types of triangles as the basis sides as angles.) ii) The rules of procedure iii) The Generalized method A E C D B AD z BC BF z BC etc.

44 Calculation of interest, or principal using the formula i) The technical principles To draw the graphical representation of circle, Parabola, Hyperbola from giving sets of points. v) The ideas The reciprocals of rational numbers are less than the original numbers but it is not true for fractions. vi) The theories/Laws Based on a theorem, the teacher sets different hidden questions to test the application ability of students. 4. Analysis It implies the breaking down of a mathematical concept into its constituent subconcept or parts so that relative hierarchy of ideas/concepts is made more clear. It has three components. i) Analysis of elements In a mathematical problem, There are some elements which do not directly related to the concept but to solve the problem relationship among the dependent variables is essential. Variables is essential. For example in calculating the total interest of say Rs 5000/- for a period from January 15 to October 25 of 1999 at the rate of Rs 8/- per annum, the year 1999 is not related, but if the year be 2000 then it will affect the calculation. ii) Analysis of relationship In a mathematical problem, sometimes there may be two variables, each of which is related to other function independently. For solving the problems two relationship are to be taken into account for example, 12 women can finish a piece of work in 5 days, but 10 men can finish the same work in 4 days. Then in how many days 7 women and 6 men can finish the work? Here rate of finishing a work is different for men and women. So independent relationship has man and women is to be calculated. iii) Analysis of Organisational principles. In teaching-learning of Mathematics, the domain of analysis of organisational principles includes the way the concept is to be presented, steps to be followed in sequence, scope of learners to take part in the discussion and the feedback system etc.

45 For example in proving a geometrical Theorem. The organisational principles will be what is going to proof must be known to learner. • To test the necessary background knowledge for the theorem of the students. To proceed logically with active co-operation of others. etc 5. Synthesis It refers to the ability to rejoin parts together to form a new whole. It gives emphasis to the formulation of new pattern. It is the fifth stage of cognitive domain. It has three components. i) The production of unique communication : • In this stage, the learn gains the ability to express his experience of learning to others • Can construct new problems based on learnt concept. ii) Production of a planned or proposed set of operations • In this stage, the learner achieves confidence to set operations for understanding / solving similar mathematical problems. • Can form unit plan for teaching a unit iii) Derivation of a set of abstract relations • In this stage of teaching-learning, mathematical concept are classified, abstract relations using symbols are established. • Students gain the ability of generalisation, discovery approach and problem solving. 6) Evaluation. It is concern with the ability to judge the value for a given purpose. Judgement are to be based on specific criteria like consistency, sequence and justification or internal determinents. It is of two types : i) Judgement is terms of internal evidence. Here judgement is made considering the accuracy, justification, sequence of the concept presentation. In a class where a geometrical theorem is proved. Judgement will be made considering the internal evidences like whether the necessary back ground knowledge is tested, necessary construction is made, logical proof as well as verification is done, students, participation is adequate and expected outcome has been attained by the learner.

46 ii) Judgement in terms of external criteria. At the finishing stage, to what extent expected outcomes has been achieved, that will be evaluated summatively. The judgement value well be given considering the retaintion, recall value of the content. 2.2.2 There six behavioural objectives are related to specific mental process or ability which can be identified by using related action verbs. Objectives 1. Knowledge 2. Comprehension Mental process / ability 1.1 Recall 1.2 Recognize 2.1 See relationship 2.2 Cite example 2.3 Discriminate 2.4 Classify 2.5 Verify 2.6 Generalise Associated action Verbs 1.a Define 1.b State 1.c Recall 1.d Recognize 1.e Label 1.f Measure 2.1 Identify 2.2 Justify 2.3 Illustrate 2.4 Formulate 2.5 Judge 2.6 Classify Examples 1.a Define rational numbers 1.b State the parallel lines 1.c Recall the meaning of 5% per year 1.d Recognize the figure of triangle from the following 1.e Label the names of the geometrical figures 1.f Measure the length of the sides of the following triangle. 2.1 Identify the might angled triangle from the following figures 2.2 Justify alternative angles are equal 2.3 Illustrate the perpen- dicular distance is the shortest distance 2.4 Formulate the relation among 1, p, R. I 2.5 Judge the relationship between external angle with that sum of intension angles. 2.6 Classify the triangles according to sides and angles. 3.1 Predict whether it will

47 be the angle of elevation or depresion when a man sees the top of a tower form top of a roof which is taller than the lower. 3.2 Assess the number of days from 2nd February to 16 October is 2004. 3.3 Explain the term 'Ratio' and 'Proportion' with examples 3.4 Show the relationship between the angles subtained at the circumtance and at the centre of a circle from a chord. 3.5 Construct a square equal in area of a given rectangle. 3.6 Compute the interest of a principal amounting Rs 6250/- for a period of 2 1 2 yrs at the rali of 8 .25% per anum. 4. Analyse the number of terms of the expression $(ax + by)^7$ as $(ax + by)^5$ 4.2 Differentiate between Rombus and square 4.3 Compare and contrust between 'Frequency polygon and Histogram 4.4 Resolve into factors $(ax + b)^3$ 5.1 Combine the total 3.1 Reason 3.2 Formulate 3.3 Establish 3.4 Inter 3.5 Predict 4.1 analysis 3. Applications 4. Analysis 3.1 Predict 3.2 Assess 3.3 Explain 3.4 Show 3.5 Construct 3.6 Compute 4.1 Analyse 4.2 Differentiate 4.3 Compre and contrust 4.4 Resolve

48 volumes of two cones formed by relating a night angle triangle along its hypotenuse. 5.2 Argue in favour of the statement that only in equilaliral triangle the angle bisectors and the lines joining the vertex and mid point of the opposite side meet in the same point. 5.3 Generalise the sum of interior angles of a polygon have n equal sides. 5.4 Conclude the measure of each angle of a right angled isosceles triangle. 6.1 Judge the value of which fraction is greater than 1. $\frac{3}{4}$ $\frac{7}{9}$ $\frac{26}{25}$ $\frac{9}{10}$ $\frac{99}{100}$, , , . . . 6.2 Evaluate the value of $X \times 3 \frac{1}{3} - \text{When } X \times - = 11$ 6.3 Defend the relation between different sets under Rational numbers NCWCZCQ with diagram where α = set of Rational numbers Z = Set of Integers W = Set of whole numbers N = Set of Natural number 5. Synthesis 6. Evaluation 5.1 Synthesize 6.1 Evaluate 5.1 Combine 5.2 Argue 5.3 Generalize 5.4 Conclude 6.1 Judge 6.2 Evaluate 6.3 Defend

49 2.2.3 Behavioural objectives under Affective Domain Krathwohl and his associates developed this objectives. These objectives are concerned with feeling aspect i.e changes in interests, attitude and values and also development of appreciations and adjustments. Affective taxonomy is divided into five major classes arranged in an hierarchical order characterisation by a value complex (attains the integration of his beliefs and attitude). D Organisation of a value systems (organisation of the value into a system, to determine the interrelationship and to establish the dominant value. D Valuing (acceptance of a value, preference for a value and commitment to certain value) D Responding (Response beyond attending, willingness to respond and satisfaction is response) D Receiving (it includes a awareness willingness to receive and selected affection. D Presentation of material in the classroom Through teaching-learning of Mathematics, the behavioural objective under Affective domain will inculcate the value system among the learners. It will include to create interest in mathematics, to respect mathematicians to appreciate the recreational value of mathematics and appreciate the knowledge of mathematics in solving problems of daily life. While teaching Mathematics, the teacher will try to remove the fear of Mathematics and engage every child with the conviction that every one can learn Mathematics. 2.2.4 Behavioural objectives under Psycho-motordomain. The Psychmotor domain includes those behavioural objectives which deal with manual and motor skills. D

50 In Mathematics teaching-learning we include skill for development of precision and accuracy in calculation as well as for adopting alternative methods for solving a mathematical problem. According to Dr R.H. Dove of the NCERT, the behavioural objectives under psychomotor domain are the following : 1) Imitation of an action, performance The students of Mathematics class also at the initial stage imitate the action of his teachers in respect of calculation, drawing of mathematical figures or diagrams. 2) Manipulation of an act. Here the students will select the proper one among various movements. For accuracy is calculation how to use calculators, Vedic mathematics etc. 3) Precision in reproducing a given act. This includes the motor activities in accurate calculation, exactness in performance by using calculators, computers etc. 4) Articulation among different acts. It includes co-ordination, sequence and balance among acts. How to use instruments is drawing figures, skill of black board use, approximation of the result and follow the sequence. 5) Naturalisation : The motor activities in calculation, drawing figures, using mathematical instruments/aids will attain highest level of proficiency. It will become automatic and will be carried out unconsciously. 2.2.5 Simpson's Taxonomy to Psychomotor Domain Simpson (1966-67) divided the domain in the following ways. i) Perception - by utilising sense organs three types. a) Sensory stimulation - Knowledge about concrete things by sense organs. b) Cue selection - for doing any mathematical operation a cue may be selected. c) Translation - transfer of real activities in to the virtual activities.

51 For examples a learner can visualise is how many seconds a water filled up tank having smaller incoming tap and larger outgoing tap will be emptied. But for calculating such mathematical problem this real life knowledge will be translated into virtual activities. ii) Set : For doing any mathematical activity or learning a mathematical concept, the learners need physical, mental and emotional set of mind. There are three types of set. a) Mental set - For transfer of knowledge from real life experience to mathematics class room activities a mental set is essential. b) Physical set / Anatomical set - whether the learner is physically capable for performing any mathematical activities is to be ascertained. c) Emotional set : For performing the transfer of knowledge emotional set or disposition is essential. All the three set may be treated as mind set for the transfer. iii) Guided response : By initiation of the activities of the teacher or by trial and error method the learner will be acquainted with the guided response in the mathematics classroom. iv) Mechanism - The motor skill will be spontaneous by repetition or by habit formation. For example use of calculator, computer will be accurate after prolonged practice with a limited technical know how. v) Complex over-response At this stage the learner will acquire the motor activity for performing accurate, rapid and speedy movement pattern. The performance will be spontaneous, no hesitation and speed will be higher. In doing calculation, manipulation, drawing diagrams and solving problems is alternative way, the learner will be efficient. vi) Adaptation : In new situation the transfer of motor activity will occur in a modified form. vii) Origination : Creative ability to meet specific situation will also be transferred by motor activity. The skill of drawing geometrical diagram will also help the learner to draw creative picture.

52 2.2.6 Writing objectives in Behavioural terms 2.2.6.1 Introduction The objectives of teaching mathematics at a particular stage will definitely give guidance to the mathematics teacher for planning of his/her classroom activities. It will help in planning what to teach, how to teach, how to teach and when to teach. Objectives have to be formulated for every lesson before teaching. Hence a teacher must know the procedure of writing the objective in terms of behavioural objectives so that the expected outcomes of teaching may be evaluated while writing such behavioural objectives, the teacher must keep in mind the following points : a) The nature of the subject matter as topic to be taught b) The need and interest of his pupil and c) The availability of resources : d) It must follow the outline of objectives of teaching Math 2.2.6.2 Definition of Behavioural as Instructional objectives These are the statements which will express the expected behavioural changes of the learners after the lesson. The characteristics are i) The Broad objectives should be broken down into specific ones ii) It must be observable iii) It must be measurable 2.2.6.3 Guidelines for writing behavioural / Instructional objectives in Mathematics i) Every statement of objectives should not be too large and general. ii) They must fulfill the specific purpose of learning for that particular unit iii) Objectives must be written and the outcomes will be achievable, and observable iv) A teacher must keep in mind the entry behaviour (necessary background knowledge) of the learner. v) It must mention the teaching points of the lesson, the expected behavioural changes of pupils, learning experiences to be organised etc.

53 vi) The statement of an objective should start with an the action verb. vii) The elements of writing specific behavioural objective are a) performer i.e teacher and taught. b) Task (which topic or subtopic to be taught like 1st lesson of Height and distance, Volume of cone etc) c) Condition - (What previous knowledge will be required, how subtopics to be arranged etc) d) Actions related objectives to be discussed. e) Criteria for judgement of the teaching outcome, specification of objectives In setting of behavioural objectives, all cognitive three domains of honourable of objective cognitive affective and psychomotor domains are not utilised in details. 1. Knowledge objectives a) The student will be able recognize different figures, symbols etc b) The students will be able to recall different definitions, laws, mathematical tablets etc. 2. Understanding Objectives The student will be able i) to see relationship between like profit and loss, interest, principal, rate of interest, time etc. ii) to classify rectangles etc. iii) to classify triangles according to sides, angles etc. iv) to discriminate between rational and irrational number etc. v) to verify the result obtained from the problem. vi) to generalize the law like $(a+b)^3 = ?$ $(a + b)^n = ?$ 3. Application objectives : i) The learners will be able to formulate hypothesis like sum of interior angles of a polygon having n sides.

54 ii) The learner will be able to reason out why reciprocal of natural number is less than reciprocal of a fraction. iii) The learner will be able to infer about the statement angle opposite to greater side is greater than the angle opposite to smaller side of a triangle. iv) The learner will be able to predict about say value of size, $\sin 45$, $\sin 60$ and $\sin 90$ etc. 4. Skill (from psychomotor domain) i) The learner will be able to handle the instruments of Geometry Box for drawing figure accurately. ii) The learner will be able to calculate more correctly and precisely iii) The learner will be in a position to solve similar problems in alternative ways. 5. Interest, attitude and appreciation (from affective domain) i) The student will create positive attitude, interest towards solving such problems ii) Mathematics phobia will be reduced. iii) The learner will appreciate the problem solving nature of Mathematics etc.

55 2.3 Lesson Planning – Importance and Basic steps. Planning Lesson of Arithmetic, Algebra and Geometry Structure : 2.3.1 Introduction 2.3.2 Importance of Lesson plan and characteristics 2.3.3 Basic steps in lesson planning 2.3.4 Planning Lesson Arithmetic 2.3.5 Planning Lesson an Algebra 2.3.1 Introduction Mathematics must be taught by a suitable planning Teaching mathematics without preparation and proper planning is like a load without a ladder. To make the classteaching more effective prior planning is essential. A planning may be of the following types. 1. Long range / term planning : The total content is to be divided into few Units 2. Topic as Unit planning : Each topic is to divided into few subunit is to be completed in a class 3. Lesson planning : It is a written note prepared by the teacher containing the subunit to be taught, method to be used, objective in behavioural term, teaching activities, questions to evaluate and home work (assignment) According to N.L.

Bossing "Lesson plan is the title given to a statement of the achievements to be realised and the specific means by which these to be attained as a result of the activities engaged in day-by-day under the guidance of the teacher". It is a detailed planning of a lesson. It is a basic unit of planning for teaching.

It is the teacher's mental and emotional presumption of classroom experience.

It is a plan of action which reflects the philosophy of the teachers, his knowledge of the content to be presented and the ability to use proper method of teaching.

56 Characteristics of Lesson plan. • Lesson plan should be written. • It must give a clear picture of the activities to be performed by the teachers and the learner. It should contain clearly stated behavioural objectives. It should be related to previous knowledge. Home work / assignment must be related to the next days activities in the introduction stage. It should provide. It must cater the individual differences. Age Level and mental level of the students should be kept in. 2.3.2 Importance of Lesson plan and characteristics i) For preparing a lessonplan, teacher has to study the content in details which helps the teacher in the classroom. ii) Prior to teaching, the teacher gets enough time to think over the content, method to be used. iii) Lesson plan helps the teacher to know the different objectives of teaching a particular subtopic. iv) It helps the teacher to know the necessary background knowledge of student prior to teaching. v) Teacher gets the opportunity to think over the content and method to be used as well as to select the teaching aids necessary during the teaching. vi) It helps the teacher to be acquainted with the expected output of the students. vii) It helps the pupils to understand the process of teaching expected outcome and viii) It ensures a proper connection of the new knowledge with the previous knowledge acquired in the class. ix) It helps to maintain steady process with in schedule time. 2.3.3 Basic steps in lesson planning Psychologist Herbart initially mentioned the following steps of 'Lesson Planning'. These steps are 1) clearness 2) Association 3) Systematisation and 4) Method Later the associates of Herbart modified the steps and recommended the following six steps :

57 (a) Preparation or motivation or Introduction (b) Presentation (c) Comparison (d) Generalisation and (e) Application (f) Recapitulation Mathematics is a continuous and sequential content based subject. To maintain the continuity, the lesson plan follows the concept of module preparation. The objectives are stated in terms of behavioural objectives. So, the format of lesson plan will follow the following steps : Format of Lesson plan School General Information Unit Class Sub Units Teacher Name of the Teacher No of students Date Today's Lesson Small description of the content (Major concepts) preparation / Introduction Necessary background knowledge for the sub topic. To test the background knowledge, following question will be asked Instructional Objectives Cognitive domain Knowledge Understanding Application Affective domain To develop interest, attitude and appreciation of the students Psychomotor— Skill Methodology, Presentation by lecture method followed by question and answer method.

58 Teaching aid Teachers activity Student's activity Content Module-1 i Module-2 i Module-3 etc. Evaluation By asking questions Questions will be asked relevant to each module and then few probing questions will be asked. Homework Question of different types like short answer type. (fillup the blanks, match the pair, multiple choice type) and long answer type (may be from Mathematic Text book) may be given. Unit Test in worksheet F.M = 10 A unit Test (F.M. = 10) may be given to students for immediate feed back. 2.3.4 Planning Lesson on Arithmetic Introduction Arithmetic is the science of number and the art and craft of computation. It deals with a system of counting. It is very essential in daily life. So the teaching of Arithmetic has to fulfil the following objectives. i) To inculcate the ability of approximation and counting ii) To develop the power of socialisation through number experiences. Before teaching Arithmetic in the class, the teachers and student must be acquainted with the aims of Teaching Arithmetics. These are : 1) To help the learner to understand verbal statement, to analyse them and to express it in mathematical statement.

59 2) To guide the student for simple computations using four basic operation. 3) To use arithmetic as simple tool in business and daily life problem. 4) To prepare for higher mathematics. Lesson Part - I A. Subject : Arithmetic Sub Units Class VI i) Nature of fraction Unit - Addition of ii) Pure, impure and Fractions have different mixed fractions numerators iii) To express one form to other form Time - 40 minutes iv) To compare the fractions into smaller and greater form Name of the teacher - MVX v) Addition of fractions B. Objectives i) Knowledge : a) The student will be able to give the definition of different forms of fractions b) They will be able to identify which fraction is higher and which is lower in value. ii) Understanding : i) The students will be able to understand different types of fractions ii) They will be able to distinguish between pure and impure and compound fractions iii) They will be able to add different type of fractions iv) Skill a) The students will be able to add different fractions correctly and with speed b) They will be able to draw diagrams showing different types of fraction iv) Application a) The students will be able to add fraction from a verbal statement b) They will be able to convert fractions into decimals v) Interest, Attitude and appreciation. a) The students will be able to get interest from addition of fractions in their daily life. b) They will be motivated to work out such problems c) They will appreciate the existence of such fractional concept in nature and in daily life.

60 C. Necessary background knowledge To test the background knowledge the teacher may ask following type of Question using charts, diagram paper cutting etc. i) Using a square paper whose 1 part is coloured theteachers will ask how many part of the paper is coloured? ii) If another 1/4 part is coloured, then what portion of the paper is coloured? iii) Express different types fraction using the number 7 and 9. iv) Convert the following paise into rupees a) 48 paise b) 125 paise c) 60 paises etc D. Teaching aids a) Chalk, duster, Blackboard b) Low cost and no cost teaching aids like paper cutting, Mathematics tool box. E. Announcement of to-days lesson. Today we shall discuss the different types of fraction and their addition F. Method Presentation : Discussion followed by question answers method P R E S E N T A T I O N Content Module 1 Formation of fraction Module 2 Process of addition i) Find the L.C.M of denominator ii) Convert all fractions having Teacher's activity Write in fraction form 7 th by 8th part, 10 th by 16th part 15th part by 60th part L.C.M. of 8, 16, 60 $7 \times 8 = 210$ $150 \times 60 = 240$ + + Method Student's activity 240

61 Evaluation Add i) Shaded clean portion $\Rightarrow 3/8 + 1/8 + 4/8 = 1$ ii) $2/7 + 5/14 + 1/7 = ?$ Probing Questions 1. Shade 5/30 Part, = 5/30 1 Part by 30 th part = $1/30 \times 7/30 = 7/30$ Add all Count the shaded small squares " " unshaded " " 2. A man gives 1/3 Part this capital to his elder son, 2/9 th part to his servant, 1/2 to his wife. How much capital the man keeps for himself ? Home Work 1. Add .3 + .4 + .04 =

..... 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 12345678901234567890 + + =

. I O N as denomination iii) Add the fractions Module 3 Problem 2 $2/3 + 4/5 + 6/7 + + = ?$ Module 4 Verbal problem. = $4/3 + 3/20 + 240 / / / / / = 4/3 = 1 + 1/3$ What is the answer? How the operation can be verified using origami/ Paper cuttings.

62 2. 13 3. In Proper fraction $N < D$; $N > D$; $N = D$ 4. In mix fraction $N < D$; $N > D$; $N = D$ Work sheet F.M = $10 \times 2 = 20$ a) Add $5/7 + 9/14 + 5/21$ cm cm cm + + b) When $N < D$ The Fraction is ----- c) When $N = D$ The nature Fraction is ----- d) When $N > D$ The Fraction is ----- e) Convert paise into Rs. and then add. 17 paise + 23 Paise + 20 paise = Rs.----- - 2.3.5 Planning Lesson on Algebra Introduction : The word 'Algebra' has originated from the 'Arabic' word 'Al-Jabr' al- muquabulah' where 'al' means 'the', 'Jabar' refers to the operation of transferring a quantity from one side of an equation to another and 'muqabulah' refers the process of subtracting similar quantities from both sides of an equation. Objectives of teaching Algebra. • To formulate the problems into equations and then solving we get the result. • To generalisation of arithmetic problems and also to use in other branches of mathematics trade and industries. • To inculcate the power of analysis and to develop the confidence among students by verifying the results to simple way. • To help the students to express a new symbolic relationship of abstract ideas.

63 PEDAGOGY OF TEACHING MATHEMATICS LESSON - 2 2. B. Objectives (Instructional) (i) knowledge (a) The students will be able to name different components of an algebraic equation. (b) They will be able to know the different sides i.e L.H.S and R.H.S side of the equation. (ii) Understanding (a) The students will be able to understand the relationship among different variables (b) They will be able to form mathematical statement from the verbal statement (iii) Application (a) The students will be able to solve the algebraic equation formed by themselves (b) They will be able solve the mathematical equation formed by themselves covering daily life problems. (iv) Skill (a) The students will be able to solve the equation more accurately. (b) They will be able to form two equations for finding two unknown quantity. (v) Attitude (a) The students will be able to create a positive attitude towards the formation of an algebraic equation has solving problems of arithmetic and even of geometry. Sub - Units 1) Meaning and order of Equation 2) Formation of simple equation 3) Solution of a equation in algebra 4) Solution of a arithmetic problem and problem of others discipline Subject - Algebra Class - IX Unit : Formation of Equation School - Time 40 minutes Name of the teacher Mry

64 (b) Mathematics probia Love for Mathematics will be generated and this will dispel the mathematics probia among the students. 3. Testing previous knowledge (related to the topic by means of asking questions, drawing figures– ankering) (i) What will the algebraic equation of the following verbal statements 8 years more than The age of the father is three times that of his elder son and four times that of his daughters. (ii) What is the value of $\angle ACD$ if $\angle O$ and $\angle O$ (iii) For finding the values of two unknown how many equations are to be formed. 4. Introduction (Presenting the overview of the content) In different branches of Mathematics like arithmetic, algebra and geometry etc mathematical problems are solved by using specific procedure. But by using algebraic equation those problems can be solved easily. Mainsteps of this algebraic procedure are (i) To transform the verbal statement into algebraic equation/s. (ii) To solve the equations (iii) To verify the equations as relationship with the help of the find out solution. (Major concepts (Modulwise) Presentation of the content To day we shall discuss the solution of arithmetic problem by formation of equation. 5. Teaching method Problem solving / discussion followed by question-answer) X C D B A 60 0 40 0

65 6. Teaching acts : Graph papers, Mathematics tool box, Mathematics concept mops. etc 7. Presentation of the content (Transaction of lesson) Teachingpoints •••• Arithmetical statement to algebraic equation prof I. The costof 5 tables and 3 chairs is 13000/- Again 4 tables 4 chairs cost 12000/- Form the equations •••• Prob 2 In a co-operative firm Rs 40,000/- was invested for the productions of rice and wheat in the last year. Meeting all expenditure a profit of 15% on rice and 20% on Wheat (1) Were obtained - In the (2) Present year the rate of expenditure is same but the total profit is 20% and Rs 1200 more profit is obtained. Find the expenditure in each of the cultivation. The teacher will write the relevant portion of the question-answer on the black board Teacher's activity (i) What is the algebraic equation? Let cort if each table be Rs T and Cort of each check is Rs C ii) Try to solve the equations $5T + 3c = 13000$ $20T + 12c = 52000$ - (III) $20 T + 20 c = 60000$ (IV) Eq (IV) – Eq (V) What wegef iii) What is the cost of each chairs? using graph paper the teacher will show the point of interaction of two equations 2.1 If the expenditure for the cultivation of rice be Rs X, then what is the expenditure for wheat 2.2 What is the % of profit is rice? 2.3 What is the amount of profit is rice 2.4 What is% of profit in wheat? Students' activity $5T + 3C = 13000$ $4T + 4C = 12000$ $20T + 20C = 60,000/-$ $20T + 12C = 52,000/$ $8C = 8000$ or, $C = 8000$ $8 = 1000/-$ 2.1 Rs $(4000 - X)$ 2.2 15% 2.3 Rs. $X \times 115$ 100 2.4 20% 2.5 Rs. (,) 40 000 120 100 - $\times X$ Students activities 115 100 40 000 120 100 X X + - (,) 2.8 Rs. 40 000 120 100 , \times 2.9 Rs. 1200/-

66 2.5 What is the amount of profit in wheat? Teacher's activity 2.6 What is the total profit on both rice and Wheat? 2.7 The teacher will use the graph paper to show the students the amount of profit is wheat. 2.8 What is the total profit is the production is the present year on the whole? 2.9 What is the excess profit is this year? 2.10 Comparing the amount of profit of both the years, establish the relation. 2.11 Establish the algebraic equation relating to profits The teachers will solve the equations through question-answer method on the black board. 2.12 What is the value of X=? 2.13 What the amount of expenditure for the production of rice 2.14 What is the amount of expenditure for the cultivation of wheat? 2.10 The difference of profit will be Rs 1200/- 2.11 Rs. 40 000 120 100 , \times R S T U V W \times U V W = 120 100 1200 2.12 X = 24,000 2.13. Rs 24,000/- 2.14 Rs $(40,000 - 24,000) =$ Rs 16,000/-

67 8. Generalisation (Consolidation of contents) The Teacher will generalise the Mathematical concepts of formation of equation on and the steps of solution 9. Application (is other branches of mathematics and is relevant or real life situation) The teacher will give examples showing the solution of geometry, arithmetic problems. i) If the length of a rectangular field be increased by 2 meter and breath be increased by 3 meters, the area will increase by 75 sq. meter. But if the length be less by 2 meter and breath be increased by 3 meter, the area will increase by 15 sq. meter. Find the length and breath of the field. This type of mensuration can also be solved by this method also. 10. Recapitulation (Evaluation of how much of the content has been grasped. To ask few profing type questions.) a) What are the steps to be followed for the solution of a quachatic equation of two unknown. b) Find the equation of the following statement. If three times of a number is subtracted from the square of the numbers, the value will be 18. c) A starts from a place P to go to a place M; at the same time B starts from M for P. After meeting they arrived at their destinations is 2 and 3 hours respectively. Show that the ratio of this speed is 3 2: 10. Home assignment – The Home assignment will comprise different type of questions like objective type, short answer type and long answertypes questions. To fulfill the objectives belonging to cognitive as well as affective domain some activities may be included. Q1. State four consquitive numbers Q 2. Make a diagram to show that $1^2 + 3^2 + 5^2 + 7^2 + \dots + (2n-1)^2 = n^3$ Q 3. Some problems of the Text book Q 4. Divide 48 into two parts such that of one part be multiplied by 8 and the others by 5, the sum of the products shall be 180.

68 Lesson - 3 Class IX Sub unit Subject - Geometry Relation between School extension angle of Time - 40 minutes
 a triangle with opposite angles. 2. Objectives (Instructional) 1) Knowledge a) The students will be able to define extension and opposite angles of a triangle b) They will be able to establish relation between extension and opposite interior angles ii) Understanding a) The students will be able to understand the logical proof of the theorem b) They will be able to proceed sequentially for establishing the relations iii) Application. a) They will be able to apply the theorem in real life situation iv) Skill a) The student will acquire the skill for drawing the geometrical figures with instruments. b) They will be able to draw necessary figures with speed and accuracy. v) Attitude : a) The students will be able to create a positive attitude towards the development of the power of reasoning and analytical thinking. b) To introduce students to the significance of rigor, intelligent generalisation and critical evaluation. 3. Testing previous knowledge (related to the topic) The necessary knowledge for the proposition is i)

The sum of the angles of a triangle is equal to two right angles

ii) A straight angle is equal to two right angles

69 iii) When a straight line stands on another st. line, the sum of adjacent angles so formed is equal to two right angles.

For this the following questions will be asked showing the diagram. a) What is the sum of the angles of a triangle? b)

Draw the figure of a straight angle? c) What is the sum of supplementary angles? d) If a straight line stands on another

straight, what is the sum of adjacent angles so formed? 4. Introduction The teacher will draw different types of triangle and will produce one of the side. He may ask the students that today we shall find out the relation between the exterior

angle with that of the sum of opposite angles of a triangle. 5. Teaching method Deductive method followed by

question answers method. 6. Teaching aid. a) Math Tool Box b) Model showing the relationship c) Geometry Box d) Usual classroom equipment 7. Presentation (Transaction of lesson) Teaching Pts 1) Conclusion through verification 2)

Theoretical proof 3) Alternative Proof Application Teacher's activity Board works The teacher will draw $\triangle ABC$ and the side

BC is produced up to D A 1.1 What is the measure of the angle $\angle ACD$? Students activity / Evaluation The students will

measure the $\angle ACD$ The students will measure $\angle A + \angle B + \angle C$ A side of a triangle is produced so as to form an exterior angle A

B C D Figure-I

70 1.2 What is the measure of $\angle A$ and $\angle B$? 1.3 What is the total measure of $\angle A + \angle B + \angle C$? 1.4 What relationship is obtained? 2.1 What is

given is the Fig- I 2.2 What exterior angle is produced 2.3 What is to be proved? 2.4 What is the sum of three angles of a

triangle? 2.5 Find out another group of angles in this diagram whose sum is equal to 2 rt. angles 2.6 What is the relation

between two equ (i) and (ii) 2.7 If we subtract the angle $\angle C$ from both sides what will happen? 2.8 What inference can we

draw? 3.1 The teacher will draw the following Fig-II 2.1 In triangle = BC is produced to D. 2.2 $\angle C$ exterior angle is formed.

2.3 You prove $\angle ACD = \angle CAB + \angle ABC$ The exterior angle = sum of the two opposite angles. 2.4 $\angle ABC + \angle BCA + \angle CAB$

= 2 rt. angles.....(i) 2.5 2 rt. angles as AC stands on (ii) the line BD 2.6 $\angle ACD + \angle ACB = \angle ABC + \angle ACB + \angle CAB = 2$ rt.

angles 2.7 $\angle ACD = \angle ABC + \angle CAB$ 2.8 The exterior angle = Sum of the two opposite angles. A B C D E

71 8. Generalisation (Consolidation of the contents) The teacher will generalise the theorem to the students with

examples 9. Application (i) In the triangle $\triangle ABC$ angle $\angle C = \angle BAC$ 75° What is the value of $\angle C = \angle ABC$? (ii) $\triangle ABC$ is an isosceles

triangle where $\angle C = \angle A$ Find the value of $\angle A$ and $\angle C$ 10. Recapitulation. The teachers may ask the following probing

questions to the students. i) Given $\angle C = \angle ABC$ 40° $\angle C = \angle ACB$ 60° Find the value a) $\angle CAE$ b) $\angle ACD$ ii) State the theorem

and mention the steps of "given" and "to prove" in this case. 11. Homework Where $CE \parallel BA$. 3.2 The teacher will proceed

referring the corresponding angles. A B C (75° or 135° or D A D B (150° or C E A C D B $\pi/4$

72 i) In an equilateral triangle what will be the value of exterior angle? ii) In an isosceles right angled triangle what will be

the value of exterior angle opposite to the right angle triangle? iii) Prove the theorem in alternative way taking the

corresponding value of the parallel.

73 2.4 Unit Planning - Format of a Unit plan Structure : 2.4.1 Introduction 2.4.2 Characteristics of a Unit 2.4.3 Unit Plan 2.5 Pedagogical Analysis 2.5.1 Meaning : 2.5.2 Need of pedagogical analysis 2.5.3 Types of pedagogy 2.5.4 Procedure for conducting Pedagogical analysis of Mathematics 2.5.4.1 Distribution of Content into Unit and sub Units 2.5.4.2 Writing the Instructional objects for any subunit for the preparation Lesson : 2.5.4.3 Test of Entry Level behaviour Necessary background knowledge for the topic 2.5.4.4 Selection of relevant strategy for teaching learning process and appropriate teaching aids.

2.4.1 Introduction Prof. H.C. Morrison of Chicago University is the founder of unit approach of teaching. According to him 'Unit is a comprehensive and significant aspect of the environment of an organised Science and Art' According to Wesley, "Unit is an organised body of information and experience designed to effect significant outcome of the learner" The Dictionary of Education states a Unit as "an organisation of Varried activities, experiences and types, learning around a central problem, purpose, developed co-operatively by a group pupils under teacher leadership, involve planning, execution of plans and evaluation of results" Thus, Unit is comprehensive instructional plan specifying the 'What', 'how' and 'when' of teaching and organised body of information.

74 2.4.2 Characteristics of a Unit 1. A unit of a curriculum is a purposeful learning activity. 2. It has significant programme. 3. It is designed to effect significant out come of the learner. 4. It also provides opportunities for creative experience. 5. A unit is functional. 6. A unit enables learners to adjust to a life situation more effectively. 7. Every Unit is a contract or obligation to study. 2.4.3 Unit Plan (a) Definition A unit plan is the mapping process that begins with long-term plan which provides a sense of direction and organisation to achieve significant academic gains with is a particular time period. Before the excution of lesson, The teachers plans for the period. So unit planning begins with identifying the particular content to be taught to fulfill the goals for learning out comes. Goals relates the rational for teaching the particular content. It will cover the intended objectives, activities to be performed, time estimation, material needed, assessment procedure and alternatives for students having different ability levels or interests. So it learning tragectory. (b) Characteristics of Unit plan • It is a brood 'road map'. • It designs a structure covering key content, skills, ways of assessment, what students need to know, class time and its productive use. • It can be used with revision

75 (c) Format of Unit Plan. For creating Unit plans we have to follow the eight interdependent steps namely Development of Unit Vision i Creation o Summative Unit assessment i To transfer the learning goals into lesson objectives the basic Unit of teaching i To sequence the content and finalising Lesson Objectives i To schedule the objectives on the school calender i To create beginning -of-Unit diagostic tool i To create a tracing system i, e checkout system of the objectives i Scope far continually adjust the plan for modification So the teacher will plan out several Units over the course of a term or even the entire year. (d) Standard Format of Unit Plan 1. Subject area : Grade level- 2. Unit / Title / Name Period : From – to – 3. Unit goals – Lory term goals. What are the goals for this unit of instructioin? How does this Unit fit with year long goals?

76 4. Specific ways to relate goals to curriculum 5. Characteristics of students To list the needs for the students is the cognitive social, emotional and physical areas— a) Student Goals i) will be able to define ii) will be able to identify iii) will be able to describe iv) will be able to draw/calculate etc. b) Student objectives. i) Will be able to pass a Unit test. ii) Will be able to create. iii) Will be able to understand / apply. 6. Introductory procedures. How the teacher will introduce the Unit and goals to the students. 7. Materials/Media to be used daywise. 8. Assessment and evaluation. Selection of methods to identify students learning levels and needs when teaching will occur during the Unit. 9. Assessment instrument to measure the outcomes. (e) Benefits of Unit planning– i) Unit planning will help the teachers to take decesion about what to teach and how to teach it. ii) A unit plan keeps teachers on pace to fulfill unit and untimately long term goals. iii) To help the teachers to reflect on what they want to accomplish in each unit. iv) How the classtime to be utilised as productive as possible. v) Unit plan provides an opportunity to stimulate students interest through rearrangement of convent that is relevant to students. vi) Will help the teacher to realise What type of revision and adaptation are necessary in the content. vii) Unit plans help the teachers to organise individual lesson into a coherent structure i,e linking each lesson plan to the next. viii) Will help the teacher to keep on tract for the formative and summative evaluation. ix) Will help the teachers to realise how much materials can be realistically fit into a unit. x) A unit plan after execution may help teacher to realise how much time should be allocated for a unit. In practice, a given concept takes more or less time to teach than anticipated.

77 2.5 Pedagogical Analysis 2.5.1 Meaning : The word 'pedagogy' has derived from the Greek word 'paidagogia' means a slave who accompanied a Greek child to school. 'Paidos' means 'Child' 'ago' means 'to lead' So it means 'to lead the child' Pedagogy is the discipline that deals with theory and practice of education. It concerns the study and practice of how best to teach. Pedagogy comprises what teachers do in the classroom but also refers their ideas, knowledge and attitude in relation to the learner. the teaching and learning process and the curriculum. Pedagogy is the art of teaching (creative and intuitive part), The science of teaching (research, decision making and theoretical understanding) and the craft of teaching (To produce skill and practice for habit formation. 2.5.2 Need of pedagogical analysis • Pedagogical analysis not only gives stress on the analysis of content but also how the content can be best presented to the students. • It does not give stress on rote learning but on (i) meaningful learning (ii) discovery learning and (iii) problem solving learning. • Pedagogical analysis not only help the teacher to teach the content systematically but also help the learner to modify their experiences and to apply the new knowledge in real life situation. • It helps the learner for sequential development of individual mental process such as recognising, recalling, analysing, reflecting, applying, creating, assimilating prior knowledge with new knowledge. • Pedagogy develops metacognition in teachers i.e the ability to learn how to learn. • Pedagogy is a basis for auditing teacher's practice. 2.5.3 Types of pedagogy Depending on the area of application, it can be classified into four types a) General pedagogy b) Andragogy - the art and science of helping adult c) Inclusive pedagogy - an alternative approach that has the potential to reduce educational inequalities by enhancing learning opportunities for everyone. d) E-Pedagogy

78 2.5.4 Procedure for conducting Pedagogical analysis of Mathematics Pedagogical analysis of Mathematics the process by which the content of Mathematics for a particular class is analysed by Educational psychology, follow the strategy of teaching in the class room and create an educational environment for transaction of the content. 2.5.4.1 Distribution of Content into Unit and sub Units The whole syllabus of Mathematics for a particular class has been divided into different branches of Mathematics like Arithmetic, Algebra, Geometry, Mensuration, Trigonometry etc. Concepts/Units Factorisation Factorisation of $a^3 + b^3$ using identities HCF and LCM Concepts/Sub-Units Meaning of factorization, finding the factors for the given algebraic expression, factorization of the expressions of the form $a^2 + 2ab + b^2$, $a^2 + 2ab + b^2$ and $a^2 - b^2$ using identities Finding the product of expressions of the form $(x+a)(x+b)(x+c)$ using the identity. Finding the coefficients of x^2 and x using the identity $(x+a)(x+b)(x+c)$ Finding the factors of the expressions of the forms $a^3 \pm b^3$ using identities. Meaning of HCF and LCM of algebraic expressions Finding the HCF and LCM of binomial and trinomials Experted Learning Outcomes Learns the meaning of factorisation, finds the factors for the given algebraic expression, performs the factorization of the expressions of the form $a^2 + 2ab + b^2$, $a^2 - 2ab + b^2$ and $a^2 - b^2$ using identities. Finds the product of expressions of the form $(x+a)(x+b)(x+c)$ using the identity Finds the coefficients of x^2 and x using the identity $(x+a)(x+b)(x+c)$ and factors of the expressions of the forms $a^3 \pm b^3$ using identities Learns the meaning of HCF and LCM Finds the HCF and LCM of binomials and trinomials

79 Concepts / Units Polygons Quadrilaterals Division of polynomials Simultaneous Linear Equations Algebraic structure Division of a monomial by monomial, division of polynomial by a monomial division of a polynomial by a binomial and application of division of polynomials Framing simultaneous linear equations solving simultaneous linear equations by elimination method and graphically, verification of results of simultaneous equations. Verification of closure property w.r.t. a given operation. Definition of binary operation and algebraic structure. Learns the division of a monomial by a monomial, division of a polynomial by a monomial, division of a polynomial by a binomial. Frames simultaneous linear equation, solves simultaneous linear equations by elimination method and verifies results of simultaneous equations. verifies closure property w.r.t. a given operation. Defines binary operation and algebraic structure. Content / Sub-Units Meaning of polygons, identification of polygons, difference between regular and irregular polygons, inscribing regular pentagon, hexagon and octagon Basic concepts of quadrilaterals, identification of elements of a given quadrilateral, properties of quadrilaterals, Experted Learning Outcomes Learns the meaning of polygons, identifies given polygons. Differentiates between regular and irregular polygons and inscribes regular pentagon, hexagon and octagon. Learns the basic concepts of quadrilaterals, identifies elements of a given quadrilateral, states the properties of quadrilaterals, constructs quadrilaterals to given measurements and calculates the area of a

80 Different types of quadrilaterals Theorem on parallelogram Areas of Parallelogram Mid-point theorem construction of quadrilaterals to given measurements, calculation of area of a quadrilateral using the formula. Identification of different types of quadrilaterals, properties of parallelogram, rhombus and trapezium, construction of parallelogram, calculation of area of a parallelogram, construction of rhombus, finding the area of rhombus, construction of a trapezium and finding the area of trapezium Proving of the different properties of the parallelogram logically Meaning of corollary, corollaries of the theorems, problems and riders based on the theorem theorem on areas of parallelogram; corollaries of the theorem, problems and riders based on the theorem Statement of mid-point theorem, proof of mid-point theorem, converse of mid-point theorem, problems and riders based on midpoint theorem. quadrilateral using the formula. Improves skill of constructing more geometrical figures given certain data/ conditions. Identifies different type of quadrilaterals, states the properties of parallelogram, rhombus and trapezium, constructs parallelogram, rhombus and trapezium and calculates the area of these quadrilaterals using the formula. Proves the different properties of the parallelogram logically, Learns the meaning of corollary, states the corollaries of the theorems, solves the problems and riders based on the theorem States and proves the midpoint theorem, states the converse of mid-point theorem, solves the problems and riders based on midpoint theorem. States the definition of circle, radius, circumference, diameter, chord, arc, segment, etc. Identifies the chord property of the circle, central angle and inscribed angle.

81 In the Unit planning of each branch of Mathematics, the content is analysed in terms of concepts/Units, Content /Subunits and corresponding Learning outcomes. For example the content of 9th standard mathematics, the Algebra can be analysed in terms of concepts / Unit like Factorisation, Factorisation of $a^3 + b^3$ using identities, HCF and LCM, Division of polynomials, Simultaneous Linear equations, Algebraic structure similarly, the content of Geometry can be divided into concept/Units like polygons, Quadrilaterals, Different types of Quadrilaterals, Theorems on parallelogram, Area of parallelogram, Midpoint theorem, circles, cyclic quadrilateral, Though in the present curriculum of Mathematics under West-Bengal Board of Secondary There are no such grouping of Arithmetics, Algebra, Geometry etc. Define cyclic quadrilateral, states the properties of cyclic quadrilateral logically, constructs cyclic quadrilaterals, and solves problems and riders based on the theorem on cyclic quadrilateral. States the definition of prism and pyramid, states the properties of prism and pyramid, differentiates between prism and pyramid, calculates the surface areas of prism and pyramid and volume of prisms and pyramids. Circles Cyclic quadrilateral Surface areas and volumes of solids Definition of circle, radius, circumference, diameter, chord, arc segment etc. Identification of chord property of the circle central angle and inscribed angle Definition of cyclic quadrilateral, properties of cyclic quadrilateral, theorem on cyclic quadrilateral logically, construction of cyclic quadrilaterals, problems and riders based on the theorem on cyclic quadrilateral Definition of prism and pyramid properties of prism and pyramid, differentiation between prism and pyramid, calculation of surface areas of prisms and pyramids, calculation of the volume of prisms and pyramids

82 For Pedagogical analysis of a particular unit, the unit is to be divided into corresponding subunits in such a way that a sub unit is to be completed in one period by forming a lesson plan. So the number of periods to be required for the completion of the unit/is to be mentioned in the pedagogical analysis. 2.5.4.2 Writing the Instructional objectives for any subunit for the preparation Lesson : Instructional objectives are the objectives expressed in terms of behavioural objectives for classroom teaching Mathematics to realise through activities Mathematics to realise through activities and working out the problems in the classroom. These instructional objectives like knowledge understanding, skill, application, appreciation etc will follow the Bloom's Taxonomy. In Mathematics, the instructional objective will include under the following dimension knowledge means acquiring knowledge of symbols, terms, definitions, relationships, principles, formulae, aims and properties. The specifications on action verbs are recall and recognition. Understanding means to develop an understanding for symbols, terms, concepts, principles etc. The specification or action verbs pertaining to this domain are illustrate, detect errors, translation mathematical relationships to symbolic forms vice versa, express given statement in different forms, compare, identify, classify, substitute, analyse, judging the sufficiency of data, presentation of proofs, verify results, select proper formula in finding out solution of a problem etc. Developing skills include to be able to do oral or written calculation, drawing neat figure, to select proper table, quick and accurate checking from the table etc. Application : Developing ability to apply mathematical relationship to different situations. The specification as action verb to be used are suggest, modify, establish new relationships, inference, formulates hypothesis, find new application, solve new problems. Application : Developing appreciation of mathematical relationship, achievements, develop self reliance through the habit of verification, develop the power of analysis, ability to work accurately sees relationship between mathematics and environment, makes reasonable estimation etc.

83 2.5.4.3 Test of Entry Level behaviour Necessary background knowledge for the topic To test the background knowledge teacher will select few questions. Teacher will up date the students with necessary knowledge. He will also test the 'concept mapping' of the students for the topic. 2.5.4.4 Selection of relevent strategy for teaching learning process and appropriate teaching aids. There are many methods of teaching Mathematics. They are : a) Dogmatic Psychological Mehtod b) Inductive and Deductive methods c) Analytical and Synthetic methods d) Neuristic mehtod e) Laboratory method f) Lecture method g) Project method h) Play way method The content categories to be taught in Mathematics are the following and the appropriate method of teaching. Content area a) Concepts b) Generalization c) Mathemacical probles d) Geometric Constructions e) Proof Method of Teaching i) Inductive reasonin ii) Verifying specific examples iii) Discovery activities iv) Developing skill of using instruments v) Following logical sequence

84 2.5.4.3 Test of Entry Level behaviour-Necessary background knowledge for the topic. To test the background knowledge teacher will select a few questions. Teacher will up date the students with necessary knowledge. He will also test the concept mapping of the students for the topic. 2.5.4.4 Selection of relevent strategy for teaching learning process and appropriate teaching aids. There are many methods of teaching Mathematics. The are a) Dogmatic Psychological Method b) Inductive and Deductive methods c) Analytical and Synthetic methods d) Neuristic method e) Laboratory method f) Lecture method g) Project method h) Play way method The content categories to be taught in Mathematics are the following and the appropriate method of teaching are as follows : Content area Method of teaching a) Concepts i) Inductive reasoning b) Generalization ii) Verifying specific examples c) Mathematical problems iii) Discovery activities d) Geometric Constructions iv) Developing skill of using instruments e) Proof v) Following logical sequence

85 2.5.4.5 Objectives in pegagogical analysis The knowledge dimension following revised Bloom's Taxonomy-2001 in given below. 2.5.4.5.1 Factual Knowledge The Core knowledge which is essential for solving related problems. This includes : a) knowledge of terminology (mathematical symbols, mathematical Vocabulary etc) b) knowledge of specific and details of elements) Like Types of triangles, Number system 2.5.4.5.2 Conceptual knowledge Formula showing relationship among variables $I = PTR$ 100 ; Interest = Principal Time Rate $100 \times \times$ Relation of angles oppsite to sides. The components are a) Knowledge of classification and categories. •••• Different types of teaching aids used in mathematics class •••• Types of interest •••• Types of quadrilaterals •••• Types of reasoning (deductive and inductive etc.) b) Knowledge of principles and generalization partinent points and their generalization viz. Rules of variation, logarithem, congruance of triangles etc. c) Knowledge of theory, model and structure Viz Effect of increase or decrease in neumenators as denominatop, mathematical modelling, structure of three dimension bodies etc. 2.5.4.5.3 Procedural knowledge How to proced for a proof, for drawing a graph of a line...equation. This includes a) Knowledge of subject specific skills and algorithms

86 Examples i) Procedure for solving quachatic equations ii) To determine the volume of a sphere as prism iii) To find out the ratio of the Components of a mixture etc b) Knowledge of subject specific techniques and methods. Examples i) To find out the value of unknown number in arithmetic and in algebraic problems ii) To solve a problem using synthetic, method iii) To solve a problem using deductive and inductive method etc c) Knowledge of criteria for determining when to use appropriate procedure. Examples i) Statistical analysis for ariving at a conclusion ii) To verify the laws of Biology or others subject thought Mathematics 2.5.4.5.3 Metacognitive knowledge Deep rooted cognitive knowledge to understand the inner meaning of a content and / or express the self creativity is known as Metacognitive knowledge. It includes three types of knowledge objective namely : i) Strategic knowledge ii) Knowledge about cognitive tasks including appropriate contextual and conditional knowledge and iii) Self knowledge. i) Strategic knowledge helps the learner a) to retain the information / Content b) to understand the inner meaning of the content c) to develop divergent thinking on the learnt content etc. The strategic knowledge can be expressed in three ways a) through Rehearsal b) through elaboration and c) through organizational ways. In the Rehearsal procedure repeation with earnestness is essential. This is not applicable in highes studies/education. ii) In the elaboration way, the learners tries to go into the deep of the content by abstracting the content or thinking is details. This helps the learner to graph the content is details. In Mathematics, This is very helpful for creating a deep understanding.

87 iii) Through organisational procedure the learner tries to a) create concept map of the Content....b) tries to improve the cognitive structure (schemata) by incorporating the new content with his/her old concept. c) tries to rearrange the content pattern. He realises 'Product or multiplication is the shortest process of addition as division the shortest process of subdivisions. Verbal statement of mathematics can be organised as algebraic equation etc. ii) Knowledge about cognitive tasks including appropriate contextual and conditional knowledge This dimension of objective helps the learner to select the appropriate steps for solving as understanding the problem. For example, the students put 'x' in place of what is to be find out? sometimes, we select a statement keeping a parameter fixed. When temperature increases, the volume of a gas is also increases keeping the presure fixed or unchanged. In solving a mathematical problem, the student must reached, what steps to be followed? Why this is appropriate? What is the limitation of this process? etc iii) Self knowledge : To acquire Metacognitive knowledge is the highest order is dimension. In the dimation the learner will be able to realise his own strength and weakness of knowledg. This will increase his self confidence at the sametime he will be eager to overcome the weaknesses. This self knowledge will initiate his creativity and the power of selection of might person, might direction and to think over right person for his/her guidance. To enhance this qualities, the students must invite relevent person. 2.5.4.6 Objectives in the cognitive process Dimation of Modified Bloom's Taxonomy. There are six domains in the cognitive process dimension 2.5.4.6.1 Remember It means to recall the exact facts from long term memory. It includes : a) Recognizing From the following geometrical figures recognise the circle. is the symbol for... 3 is the symbol far...

88 Which figure is an example for collinear ● ● ● ● ● Fig 1 Fig 2 b) Recalling i) What is prime number? ii) In the given matmix, which are the row and column elements 2 0 3 1 L N M O Q P 2.5.4.6.2 Understanding The students will be able to understand the concept of inequation, as any mathematical term with the charls! model etc. It includes the following a) Classifying Mathematical concepts can be classified by the learner exampls. Triangles can be classified with respect to sides as angles. Math the named the polygons and sum of the measures of interior angles. Quadilateral 720 0 Hexagon 360 0 Octagon 360 0 b) Interpreting ●●●● Students will be able to interpret verbal statement into algebraric equation ●●●● A geometrical statement can be interpreted by a geometrical diagram. ●●●● Students will be able to draw the concept map relating to a mathematical problem. c) Examplefying Students will be able to give examples of different mathematical concepts. ●●●● From the figure, identify the relation between the angles DCA, ABC, BAC)) A B C D

89 Observe the pattern and fill in the blanks $1^2 = 1$ $11^2 = 121$ $111^2 = 12321$ $1111^2 = 12342321$ $11111^2 = 123454321$ - - - - $111111^2 = 12345654321$ - - - - d) Summarizing If (

$(a + b)^2 = a^2 + 2ab + b^2$ $(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$ Then $(a + b)^4 = 21$
What will be the roots of a quadratic equation $ax^2 + bx + c = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ - e) Inferring Understanding the mathematical relation, a student will be able to inter the result Observe the pattern in the following and fill in the blanks $2^2 = 4 = 1 + 2 + 1$ $3^2 = 9 = 1 + 2 + 3 + 2 + 1$ $4^2 = 16 = 1 + 2 + 3 + 4 + \dots$ $5^2 = \dots = \dots$ $6^2 = \dots = \dots$ - - - Write the two numbers in the space provided between which the square roots of the following numbers lie. $3 < \sqrt{11} < 4$ $4 < \sqrt{53} < 7$ $7 < \sqrt{50} < 8$

90 f) Comparing ●●●● Students will be able to use Venn diagram for comparing real and imaginary numbers. ●●●● Compare the reciprocals of realnumber and that of a fruction. ●●●● Compare the areas of different circles with that of their is squire of radius. $\pi 4^2 = \pi 5^2 = \pi 6^2 =$ g) Explaining Students will be able to explain the cause and effect of any mathematical operation. Explain with examples why the square of a real number increases but this square of a fraction as decimal numbers decreases Than the original number $5^2 > 5$; but $(0.5)^2 < 0.5$; $1.5^2 > 1.5$ F H G I K J >gt; $6^2 < 6$; but $(0.6)^2 < 0.6$; $1.6^2 > 1.6$ F H G I K J >gt; 2.5.4.6.3 Analysing Students will be able to break a mathematical ideas into its components and to analyse the parts with the whole concepts. This objective will include. a) Differentiating ●●●● What is the different between ratio and proportion? ●●●● What is the difference between Histogram and frequency polygon? b) Organising Students will be able to organise different mathematical activities for realising the inner concepts. ●●●● How a mathematical tool box can be used to clear the idea of speed and time?

91 ●●●● By organising a 'Mathematical quest competition' the teacher can enhance the reasoning power of students. c) Attributing Students will be able to be motivated from the contribution of great mathematicians, or history of mathematics. ●●●● During Vedic period (3000 B.C to 1000 B.C), at one place of samhita we see the relationship $39^2 = 36^2 + 25^2$. Can you mention this is a particular case of which geometrical theorem? An : Pythagoras theorem. This will motivate the students to be acquainted with ancient Indian Mathematics. ●●●● A comprehension test in Mathematics may be given to the students. 2.5.4.6.4 Evaluating Students will be able to evaluate the performance for giving judgement value. This can be done by the following ways. a) Checking After completing or solving a mathematical problem, The students must check different steps or realise by reasoning the correctness of the solutions. ●●●● What is the value of $(999)^2$? The student will check whether the result is below $(1000)^2 = 1000000$ and above $(900)^2 = 810000$. b) Critiquing Students will be able to criticise the pros and cons as suitability of a process for solving a complex mathematical problem. Example : a) For solving an arithemtical problem whether algebraic equation formation is more suitable that can be justified. b) That there is a wide difference between astronomy and astrology that can be established by the learner.

92 2.5.4.6.5 Creating This objective is the highest order in cognitive dimension of Bloom's Taxonomy. This is the manifestation of mathematical creativity. Here the learner will be able to reconcile the small concepts into a general or new mathematical concepts. The graphical representation of linear equation includes the concepts of straight line, nature of straight line, the locus of a point, the co-ordinates of different points which lie on the st-raight line etc. It comprises of the following sub themes. a) Planning ●●●● For enhancing the creativity the students will be able to submit a project proposal say for using multimedia is learning Mathematics or depicting concept maps for different mathematical concepts. ●●●● To fulfill the self inquirtiveness student may submit a proposal for showing the contribution of Sir Asutosh Mukherjee on Mathematics. b) Producing The students will be able to produce new or novel mehtod / thought provocating activities etc. ●●●● Alternative ways of solving a mathematical problem. ●●●● Will be able to produce self learning materials for slow or advance learner. c) Generating ●●●● Students will be able to generate alternative hypothesis for judgement of objectives. ●●●● Students will be able to generate the self evaluating mechanism etc. 2.5.4.6

Achievement Test a) The next step of pedagogical analysis is the construction of Achievement Test. For time saving combined Taxonomic Table is to the prepared is which both the necessary objectives for a particular Unit along with number of questions together with total marks will be defected.

93 All the objectives may not be suitable for questions is a topic. Find out the number of questions suitable for each type of objectives and decide on marks for each question. Now in your combined Taxonomic Table, in each cell, fit in the number of questions and put the total marks for those questions in brackets. The questions you will give must correspond to the objectives you have written. An objective may also account for more than one question. write the total marks for each category of cognitive dimension and knowledge dimension in the extra column and row : Similarly percentages of mark in each column and row are to be noted b) Write items (questions or items) to match the information in each cell of the Taxonomic Table. Beside each questions write the objective number from which it arises. Also write the answer and marks for the question. Cognitive dimension Knowledge dimension Factual Knowledge (F.K.) Conceptual Knowledge (C K) Procedural Knowledge (PK) Metacognitived know MK Total % of marks Remember No. of questions (total marks) Total Marks for remember Understand Total Marks for Understand Apply No. of question (total marks) Total marks for Apply Analyze Total marks for Analyze Create Total marks for create Total Total Marks for PK Total Marks for CK Total Marks for PK Total Mark for MK Grand total 100% % of marks

94 c) Make the final version of the Test so that it can be presentable to the students as a complete question paper. The items should be suitably arranged eg, easy to difficult, same type of questions put together etc. Instruction is to be given at the top of the such question papers mentioning the class, with time, total marks etc. d) Probing questions with answers 2-3 questions are to be set with answer as brainstorming questions. 2.5.4.7 Pedagogical Analysis following Revised Bloom's Taxonomy. Subject Mathematics (Geometry) Class X Unit Theorems related to circle and angles. Unit analysis Subjects Period 1. The Pedagogical analysis on Sub Unit I is made. 1 The angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle 2. The angle in a semi-circle is a right angle and its converse 3. Angles in the same segment of a circle are equal 4. The sum of the either pair of the opposite angles of a cyclic quadrilateral is 180° 5. If a pair of opposite angles of a quadrilateral is supplementary, then the quadrilateral is cyclic. 6. A remedial test on the achievement of above five theorems. 6 Previous knowledge :

95 The following are the necessary background knowledge for the theorem i) Students can define arch, circumference, centre etc ii) They can point out the angle subtended by an arc at the centre and on the circumference iii) They know the measure of an external angle is equal to sum of two opposite interior angles. iv) They are able to draw geometrical figures with the help of geometrical instruments. To Test the necessary background knowledge the teacher may ask the following questions even by drawing figures. a) Draw a circle, name an arch, point out the angle subtended by the arc at the centre. b) Draw any angle subtended by the arc at any point on the remaining part of the circle. c) What is the relation between exterior angle and interior opposite angles of a triangle. Objectives : After the completion of this subunit, the students will be able to acquire the following objective both in cognitive domains as well as in the knowledge domain. 1. Remembering 1.1 (Factual) The students will be able to define arc and angle subtended at the centre. 1.2 (Conceptual) That an arc can subtend many angles on the circumference of a circle. 1.3 (Procedural) Which instruments are essential for drawing circle and arc? 2. Understanding 2.1 (Factual) The students will understand that there is relation between two angles subtended by an arc. 2.2 (Conceptual) Students will be able to state the theorem. 3. Applying 3.1 (Factual) Students will be able to verify the theorem with the help of models 96 3.2 (Conceptual) Students will be in a position to apply the theorem in solving relevant riders. 3.3 (Procedural) Students will be able to prove the theorem by drawing different figures 3.4 (Metacognition) Students will be able to apply the theorem in solving critical relevant problems. 4. Analyzing 4.1 (Factual) Students will be able to analyse the relationship of this theorem with other theorems of subtopics. 4.2 (Conceptual) The expected outcome of the theorem will help the students to form the mathematical concepts relating to subtended angles at the centre and on the circumference. 4.3 (Procedural) The students will be able to analyse the necessary and sufficient conditions for proving the theorem. 5. Creating 5.1 (Factual) Students will be able to draw different figures by changing the arc. They will be able to prepare model on the theorem. 5.2 (Conceptual) They will be able to create different problems by changing the arc and the case when the arc will be semi circle. 5.3 (Procedural) They will be able to prove the theorem by drawing different figures (like Fig 1, 2 & 3) etc. 5.4 (Metacognition) Students will be able to frame different probing questions to express their mathematical creativity. Affective domain : a. Interest 1. Students will show their interest in proving such geometrical theorem. Fig 2 Fig 1 Fig 3 97 2. They will be interested to develop their logical argument. b. Attitude. 1. Students will generate positive attitude towards Geometry 2. They will develop the logical and sequential argument in establishing a geometrical theorem. c. Appreciation. 1. They will appreciate the necessary and sufficient argument in favour of proving a theorem. 2. They will appraise the contribution of great mathematicians d. Habit Students will form the habit of establishing a fact by logical way. Psycho motor Domain : Students will be able to use geometrical instruments in drawing accurate figures with speed. Teaching Strategy : Module related to math concept 1. Verbal statement to mathematical statement of the theorem 2. Drawing figure and necessary constructions 3. Verification with model 4. Logical Proof Teaching Method Question-answer method Analytic method Experimentation Problem solving Relation between $\angle AOD = \angle OAC + \angle OCA = 2 \angle OCA$ $\angle BOD = 2 \angle OCB \therefore \angle AOB = 2 \angle ACB$ Teaching aid Geometrical instrument Showing model. Colour Chalk, Black board, model showing the relationship of C B A D 98 Probing questions with answer 1. How will you prove angle subtended by a semicircle is the greatest angle. Ans. $\angle MOP = 2 \angle MNP$ $2 \angle MNP = 180^\circ \therefore \angle MNP = 90^\circ = 1$ right angle. 2. O is the centre. The angle subtended by the arc $\angle AOB$ at the circumference is 45° . The angle $\angle AOP$ is 40° , what is the measure of $\angle POB$? Ans. $\angle ACB = 45^\circ$ $\angle AOB = 2 \times 45^\circ = 90^\circ$ $\angle AOP = 40^\circ \therefore \angle BOP = 90^\circ - 40^\circ = 50^\circ$ Combined Taxonomic Table Number within the bracket indicates number of question and number outside the bracket indicates value of the question. N O P M C B A P 40 0 U J /4 ? Total 25 Factual Knowledge (F K) Conceptual (CK) Procedural (PK) Metacognitive Knowledge (MK) Total % of mark Remember (Q 1) 3 (Q 2) 2 Total marks for Remember 5 20% Understanding (Q 4) 2 (Q 9) 3 Total marks for understand 5 20% Apply (Q 6) 2 (Q 3) 2 Total marks for apply 4 10% Analyze (Q 7) 2 (Q 5) 3 (Q 8) 3 Total marks for Analyzes 32% Create (Q 10) 3 Total marks for create 3 12% % of Mark] 20% 24% 32% 24% 100% Knowledge dimension Cognitive dimension

99 Question Paper Subject : Mathematics Class X, Subject : Relation between F.M = 25, the angles subtended by an arc at the centre and at circumference. 1. Fill up the gaps : (i) $\angle NMO = \dots\dots\dots$ (ii) $\angle MOQ = ?$ When $\angle NMO = 110^\circ$. (iii) Largest arc of a circle is $\dots\dots\dots$ 2. Define arc of a circle. 3. Draw a circle and mention angles subtended by an arc at the centre and at the circumference of the circle. 4. In the adjacent figure find the ratio of two angles $\angle XZP$ and $\angle XWY$. 5. Prove that the angle subtended by an arc at the centre is double of the angle subtended by the arc at the circumference. 6. In the adjacent figure $\angle ACB = 60^\circ$, $\angle AOD = 25^\circ$, Find $\angle BOD$. 7. In the adjacent figure AC is the diameter. Prove That $\angle ABC : \angle AOC = 1 : 2$ 8. Prove that the angle subtended by an arc which is not a semicircle at the circumference is an acute angle. 9. O is the Centre of the circumcircle of the triangle $\angle ABC$. If $\angle BOC$ is 110° , find the value of $\angle BAC$. 10. Prepare a teaching aid to verify the theorem. $\angle PNM = 110^\circ$, $\angle Q = 60^\circ$, $\angle XYZ = ?$ $\angle O \rightarrow ?$ C B A D 25 \circ O J / 6 O C B A

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Strategies for Learning and Teaching Mathematics Structure 3.1 Concept Formation and Concept Attainment 3.1.1 Introduction 3.1.2 Meaning of Concept 3.1.3 Characteristics of Concept 3.1.4 Steps of teaching concepts 3.1.5 Concepts Attainment Model for Learning and Teaching of concept. 3.1.5.1 Strategy of concept Attainment Model. Bruner as mentioned four strategies of the Model namely 3.1.5.2 Types of concept attainment model. 3.1.5.3 The Reception model of concept attainment. 3.1 Concept Formation and Concept Attainment 3.1.1 Introduction The Pioneer of 'concept attainment' is Georm. S. Bruner and his associates Jackue line Goodnow and George Austin. The concept is developed from their research 'A study of Thinking' (1967) the basic considerations of concept Attainment model are : i) Man posses the ability of discrimination and classification of things, persons in groups. ii) For adjustment with the environment, a person encounter varried situations and experiences. It is impossible for a person to restore such huge experiences. So he tries to assimilate such experiences and try to adjust with the environment with these assimilated experiences. In general, the assimilation of such experiences is called concept. iii) A concept has three elements a) example b) attributes and c) attribute values. For example, triangle is concept then each triangle is an example. Here rectangle and pentagon are negative and equilateral triangle is positive.

112 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 112 08.07.2016 Triangles have all the sides are equal is the attribute and all angles are also equal be the attribute values. iv) The categorizing activity has two components (a) The act of category formation (concept formation) and (b) The act of concept attainment. The concept formation is the first step for concept attainment. 3.1.2 Meaning of Concept According to Bruner "A concept is a class as grouping response, an act of categorization, involves rendering different Things equivalent." Archer (1969) mentioned "A concept is simply the level of a set of things that has something is common" A concept is different from a fact, a principle and even a generalization. Halse states 'A concept is a set of feature connected by some rules. A concept of quadrilateral is a geometrical figure bounded by four straight lines selvens (1993) has cleared the idea is the following ways "A concept consists of an individual's organised information about one or more things, objects, ideas, or relations that enable the individual to discriminate a particular thing or class of things and as classes of things. Thus concept is a class or category of all the members of which share a particular combination of attributes or critical properties not shared by another class. 3.1.3 Characteristics of Concept Knowledge of common feature i) It is the knowledge of common feature of person, object, animal or circumstances of similar characteristics Characteristics observational experiences ii) It is observational experiences. Greater the extend of observtional area greater will be the concept area. In framing the concept of triangle the barner must pay attention minutly to the length of different sides of a triangle. iii) Individual differences In concept formation individual differences play active role. Different persons form mathematical concepts in their own ways to some extend. iv) Experience of object At the initial stage a child forms the concept based on the experiences of real

113 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 113 08.07.2016 object. At the later stage due to development, he forms the concept is absence of real objects. At the begining, a child forms the concept of circle as triangle by observing circular as trianglular objects but later stage by imagination only. v) Complex process : Mathematical Concept formation is a complex process. It follows the following route. Observation of symmetry Analysis Comparison Abstraction Generalization Concept formation by name vi) Concept formation may be of three types a) Conjunctive (Combination of different traits, Geometrical figures included may type of figures) b) Disjunctive (A concept may be subdivided into many sub concepts. Fractions may be subdivided is to proper and improper or deciwal etc) c) Relational concept (When there is/are relation among concepts, (Rectangle, Trapezium, Rhombus, Square vii) Conceptual Hierarchies. Each concept is not found in isolation, but rather is relation to other concepts. Simth describes this process of forming new concepts as one of breaking down old categories into smaller and more specialized one. One way of describing the relationship of concepts formed is in terms of super ordinate, co-ordinate and sub- ordinate concepts. These terms refers not only to the scope or inclusiveness of a concept but also to its relationship to other concepts. For example, quadrilateral is more inclusive and also subsumes the concept of parallelogram which in term subsumes the concept of rectangle. In this respect rectangle is described as a sub- ordinate concept of quadrilateral. Related concepts such as parallelograms and trapezium form the co-ordinate concepts. In the conceptual hierarchy of quadrilaterals, parallelogram forms the super-ordinate concept to square. ? → ?? → ?? → ?? → ?? → ?? → ?? → ??

114 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 114 08.07.2016 Conceptual Hierarchy of Quadrilaterals
 Quadrilateral Trapezium Kite One pair of alternative Two pairs of adjacent sides are parallel sides are equal Parallelogram
 Isoscles Trapezium Oblic sides are Oblic sides are equal parallel is length (1) i i i i i i i i 1 2 3 Rectangle Rhombus Four
 sides are equal f Sides are equal and one angle is right angle. One pair of adjucent sides are equal. No angle is right angle
 One angle is right angle. One pair of adjacent sides are equal. No angle is right angle Square i •••••



115 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 115 08.07.2016 VIII) Concept Name Every concept have a name. The concept name is the word used to symbolize the given concept. A concept is an idea or obstruction that exists is people's mind, while the concept name is the word that we arbitrarily use to designate the concept. For example, parallelogram is a concept name designated to a quadrilateral is which both pairs of opposite sides are equal. There are two ways which the concept name is attached to a concept are a) The child learns the concept first and later learns to attach the name to the concept b) The child learns the symbol and then learns the concept IX) Concept definition The deffinition of a concept means to describe typically is verbal statement, the meaning of the concept. It focuses the summarization of important aspects of the experiences which ignoring others. It describes the boundaries of a concept. It helps to determine set inclusion and set exclusion. For example, when we define a quadrilateral as four sided closed geometrical figure, it means that all four sides closed geometrical figures like square, trapezium, parallelogram, rectangle etc can be included is the set of quadrilaterals. But others geometrical figures which are not closed and which do not have four sides can not be included is the set of quadrilaterals. X) Process of observation. Through the process of observation, the essential characteristics i,e the attributes are identified. Identifying the attributes of a concept is essential because without the knowledge of the attributes of a concept, the process of understanding the concept is difficult. For example, the characteristics or attributes of the concept square are four sides which are equal is length and angles are right angle each. These Characteristics are important or essential set where as characteristics such us size colour or special orientation are not important is the set of square. XI) Example in a concept : Examples of a concept are those members of a class which are positive instances of the concept. Examples can appear is word form, is pictorial form or is real life form. XII) Concept formation Concept formation takes place when members of a category are groued together

116 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 116 08.07.2016 and similarities are accepted which ignoring the differences among the members of the categories. Considering the similarities a rule is formed and conceptualization takes place. For example, $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{7}{8}, \frac{8}{9}, \frac{9}{10}$, etc are the examples of a concept rational numbers. Rational numbers are defined as numbers expressed in the form of $\frac{p}{q}$, where p and q are integers and p and q do not have common factors and $q \neq 0$.

3.1.4 Steps of teaching concepts Please add page 592 to 598 (Content cum Methodology of Teaching Math B.Ed MC - 06/07 (09) NSOV . 3.1.5 Concepts Attainment Model for Learning and Teaching of concept. The concept learning includes both the phases i.e concept formation and concept attainment.

3.1.5.1 Strategy of concept Attainment Model. Bruner as mentioned four strategies of the Model namely i) Simultaneous Scanning Strategy In this strategy for a particular concept formation, the learners will be given a branch of cards in which different attributes and attribute values are mentioned. The learner will select the cards having positive attributes as well as positive attribute values and will reject which are negative attributes. Concept of Isosceles right angle triangle. For right angle triangle he will select card No 3 and Card No. 4 In card No. 3, one angle is right angle but the others two angles are unequal. So considering the attribute value he will reject So considering the attribute value he will reject card No 3 and will select card No. 4. right angle Card No 4 Card No 1 Card No. 2 Card No. 3 Card No 5

117 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 117 08.07.2016 But he will reject card No. 1 as it is not triangle. He will reject Card No. 2 as it is equilateral triangle and also reject card No 5 as it is not right angle triangle. ii) Successive scanning strategy Here the learner only select the cards having. Positive attributes successively . In this strategy the learner must know the necessary and sufficient positive attributes of the concept. Though he mentally rejects the negative attributes oriented cards iii) Conservative Focusing Strategy : Here every card will contain only one attribute of positive or negative nature. Considering the positive instance he will reject all the negative all the negative instances or non examples. By showing the non example cards he will reject those with classification. Student is asked to pick up red circular disc having less diameter. He will reject circular disc No 1 to 5 by showing reasons and will select disc No 6 as positive instance. iv) Focus Gambling - Here in each card all the attributes (positive example and negative attribute/non examples) are mentioned and in only one and only the positive attributes are mentioned. Students will be asked to pick up the right and as quickly as possible. Here like gambling chance factors will be effective. If adequate time is given, students will be able to form the right concept of circular disc. 3.1.5.2 Types of concept attainment model. On the basis of research work done by Bruner and his associates several models of teaching have been developed. The concept attainment model has three variations. i) The reception model ii) The Selection model iii) The model for unorganized material. Fig 1 r 1 Red Fig 2 r 1 White Fig 3 r 1 Blue Fig 4 r 2 Red Fig 5 r 1 Red Fig 6 r 3 Red r 1 r 3 r 1

118 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 118 08.07.2016 3.1.5.3 The Reception model of concept attainment. A. Focus : Here weightage is given on the development of logical powers. Training is given how conclusion can be drawn by inductive reasoning through use of examples. The focus of the model is to form conception through the stages a) observation b) analysis c) comparison d) abstraction e) generalization and finally naming. Therefore, in addition to help the students in the attainment of a particular concept, it enables them to become aware of the process of conceptualizing. Concept formation The learner can name the concepts by classifying his/her own experience. (Disjunctive) Concept attainment •••• The learner will be able to know the nature of the concepts •••• For learning the concept he will apply the thought process B. Syntax. The sequence of these phase and activities are given in the table. Phase one. Presentation of data and identification Activities i) Presenting examples with 'yes' or 'no' labels by the teacher in a pre-arranged order ii) Ask the students to compare attributes in positive and negative examples iii) Students will frame hypothesis and compare with teacher's hypothesis i

119 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 119 08.07.2016 iv) Naming the concept by students v) Will state the rule as definition of the concept according to needed attributes. a) Students will frame hypothesis for identifying the similarities and dissimilarities of the facts. b) Considering each hypothesis, attributes will be judged. c) By analysis and synthesis of the attributes they will find out the inner concepts d) Will be able to generate own examples. i) Teacher will give more information but will not mention the concept like before. ii) Teacher will ask to identify which information attribute is related to which concept iii) If the student's role is satisfactory he will ask to give more examples iv) Teacher will give general statement about the concept a) Students will be asked to analyse and discuss the process by which they have attained the concept. b) Students will discuss the role of hypotheses and attributes. c) Students will evaluate the process concept attainment. d) They will be encouraged to follow the process for obtaining experiences by this way . Testing for attainment of inner concept General Statement about the concept You are aware about the process of concept formation and thinking strategy Phase Two Phase Three Phase Four

120 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 120 08.07.2016 C. Principle of reactions : The important principles of reaction are the following i) The teacher will be supportive to the student's hypothetical in nature. ii) He will help the students to distinguish between two hypothesis and to evaluate the thinking process by themselves. iii) He has to maintain record about the focus attention on specific feature of examples. iv) He is to encourage the students to analysis the merits of various strategies. D. Social System In this model, in most part of the teaching, the teacher has to exercise control over the social system. The teacher has to collect information as well as examples has a fixed up conception. He has to divide the experiences into positive and negative attributes for the concept. He will communicate the students that the solution of the problem of identifying concepts lies not within the teacher but in the data (examples). The teacher gradually relax the controll and encourage the students to work independently and collaborately. The functions of teacher will include a) to record the activities b) to give clue for collecting attributes c) and to give extra information in the form of examples. The social system functions on the mutual interaction between teacher and taught. For concept attainment, the teacher gives the possitive and negative examples or attributes to the students. The students explain the examples and justify his hypothesis on the basis of positive attributes The interactions are noted on the black board as on the T ag board. The concept is deduced and rule or definition is framed. E. Support systems In this model students will not discover a new concept but will deduce the concept on the basis of examples/experiences /attributes put forward by the teachers. In the first stage, keeping is mind the appropriateconcept, the teacher will give different information or examples to the students. This will include both positive and negative attributes which are essential. By discriminating the positive i,e relevant attributes, the concept is formed. By giving more examples by the students, the teachers from the definition of the concept so is the concept attainment model, the support system is the relevant information is the form of examples. F . Application Concept loyce and will are of the opinion that the concept attainment model is an excellent evaluation tool when teachers want to determine whether important ideas introduced 121 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 121 08.07.2016 earlier have been mastered. It quickly reveals the depth of students understanding and reinforces their previous knowledge'. Mathematics contains a good number of concepts inter related to each other. The model includes both concept formation and concept attainment. In most cases concept is formedby inducting reasoning and follow the process of generalisation and discrimination. 1) So the model is effective is teaching mathematical concepts, grammer and language. 2) For the introduction of this model in class-room teaching, the students may be divided in to small groups so that each of them can participate in the discussion. 3) Before teaching following the model, the teacher may explain the different phases examples (both positive and negative) for a concept. 4) For each group, there will be one leaders who will controll the group discussion, but the teacher will supervise all the group activities. G. Effects of Concepts Attainment Model. Sensitivity to logical reasonning in communication Instructional effect Understanding the nature of concepts Concept Attainment Model Acquire imporved concept building strategies Nurturant effect A wareness of alternative perspectives Develop Inductive reasoning power Tolerance towards ambiguity A wareness about alternative relevent

122 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 122 08.07.2016 3.1.5.4 Advantages/Merits of concept Attainment Model i) Normal environment of class teaching-learning process is maintained. ii) Reasoning powerspecially inducting reasoning power of students is developed iii) In this model the power of observation and imagination of the students are increased iv) In this model the students can apply his/her knowledge in real life is tuation. v) Students get the opportunity to justify their own hypothesis by judging the experiences and drawing conclusions. 3.1.5.5 Disadvantages The model demands the participation of all students and teacher in the teaching learning process. But a good number of students generally remain pasive. So the introvert and under achiever students are not benefited in the model of teaching. Limitation of concept attainment model i) To follow the model both the teacher and students are to take enough responsibility ii) There are individual differences among the learners. So the introvert type students do not participate in this model of teaching iii) All the contents of the syllabus can not be taught using this model. But the model has revolutionised the face to face teaching process. 3.2 Learning By Exposition : Advance Organizer's Model 3.2.1 Introduction There are two terms 'Models of teaching' and 'teaching models' used in teaching learning process. 'Teaching models' are just instructional design where as 'models of teaching' consists of guidelins for designing educational activities and environment. It also specifies ways of teaching and learning for fulfilling the intended goal of teaching. So the function of models of teaching is depicted below.

123 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 123 08.07.2016 It has been accepted that Mathematics should be taught in such a way that each learner is trained to think, reason, analyse and articulate logically. As far as possible the discovery approach followed by teaching through designing and planning suitable aids and models. The fundamentals essential for learning mathematics and solving of problems of daily life should be borne in mind while teaching one should aim to learn the concepts at the mastery level. Activity oriented programme should be used in teaching Mathematics. The most essential thing is that joy and achievement should prevail while learning Mathematics.

3.2.2 Advanced Organizer's Model of Ausubel—David Ausubel designed this model to increase the efficiency of information processing capacities of children. The ideas of this model have emerged in his book 'Theory of Meaningful Learning' According to him the types of learning material related with the content can be learned by the learner quite effectively if presented through. Visual graphics, charts and picture, film, audio tapes and transparencies. He is of opinion that for meaningful verbal learning, the teacher must know the following three issues (i) How knowledge (content of curriculum) (ii) How knowledge (content of curriculum) is organised - (iii) How the mind works during the process of presenting new information (learning) and c) How the above two can be presented to the students (instruction)

According to Ausubel

new ideas can be learned or retained only to the extent that

those ideas can be related to already available cognitive structure of the learner. That acts as necessary linkage or anchors. Designing and mentioning instructional objectives Functions of models of teaching Developing and fixing instructional materials Specifying needed teaching learning activities for cognitive organisation

124 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 124 08.07.2016 Advance organisers, as Ausubel maintains, are the primary means of strengthening learners's cognitive structure. The advance organiser may be of two types i) expository (which is helpful in providing the basic concepts at the highest level of abstraction and essential for understanding new content) and ii) Comparative (designed to discriminate between the old and new concepts to prevent confusion. For teaching the equation of a circle, expository advance organiser may use different shaped circular disc and as comparative advance organiser a diagram showing geometrical figure of circle and the locus of points which are equidistant from a fixed point, called its centre. 3.2.3 Before presenting the Advance organiser Model of teaching we must keep in mind the following Objectives of teaching To enhance the cognitive structure in respect of mathematical content To reconcile /link the new concept with previous knowledge of students Process i) Progressive differentiation (Presenting first simple concept) i Then gradually in depth / related concepts and finally new content) ii) Integrative reconciliation (newly learned content to be assimilated with the old for upgradation) i R O P Q

125 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 125 08.07.2016 Fig 1 Types of learning Meaningful (can be applied in new situation with creativity. Effective in learning of Mathematics) Rote Learning (Collection of informations / data through memorisation which has the scope of forgetting). Output in Mathematics learning Perceptual or direct knowledge about content Abstraction Level - I (At this primary stage, students can present symbolically) i Higher abstraction level (can solve the mathematical problem by using formula / rule etc) i i Conceptual structure of learning (At this stage the learner can deduce the law, can apply in new situation even able to solve the mathematical problem alternatively i Presentation of advance Organizer (A.O) by the teachers Presentation of A.O before teaching Teacher Presentation of Learning material Nature of A.O showing set of verbal or visual information Expository Comparative Creating a linkage between background knowledge with new knowledge Related to learning material but more abstract and coverage. To be presented in logical and psychological sequence

129 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 129 08.07.2016 3.2.4.6 Advantages The wide application area of the model as suggested by Joyce and will (2003) can be stated is teaching Mathematics. i) This model can be used almost all franchises of mathematics systematically in normal classroom situation having mixed ability group. ii) It can help the teachers to understand the existing necessary background knowledge before presenting the advance organiser iii) It follows the mechanism of direct instruction and reorganise the cognitive structure in though advance organiser. iv) Though the Advance organiser at the initial stage act as deductive way on subsequent discussion it is subject to inductive concept attainment stage and evaluate the student's acquisition of new knowledge v) It has both instructional and nurturant effects is different domains. vi) It helps the student to develop critical thinking and interest is mathematical inquiry. 3.2.4.6 Disadvantages i) Sometimes it is difficult to prepare relevent advance organiser of mathematical tpoics. ii) It is different from ordinary teaching aids Effect of Advance organiser Model Instructional effect Formation of conceptual structure Nurturant effect Meaningful assimilation of information and ideas Retention and application of mathematical experiences Interest is mathematical inquiry Habit of specific and precise thinking

130 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 130 08.07.2016 iii) Prior to apply the model, the mathematics curruculum is to be reorganised and teacher must know the interdisciplinary nature of Mathemaics 3.3 Analytic-synthetic, Problem-solving and Project. 3.3.1 Analytic-Synthetic Introduction Most Mathematics orginates from the ideas and concepts associated with physical form, shape and size of objects. Those concepts are present as a systematic abstractstructure in logico-deductive form Analysis and synthesis are methods which use reasoning and systematic arguments arts to find out relationship Meaning. The word 'analytic' means to take a part as to seperate the things that are together or 'breaking up' of the problem so that it gets connected with already known. Analysis is a process of breaking a things into its smaller parts. It proceeds from unknown to known and conclusion to hypotheus. Thorndike says that all the highest intellectual activities of the mind are analysis. 'To analyse' means to loosen or seperate things that are together. Procedure : Ex 1. If $a^2 + b^2 = c^2$, Prove that $ac^2 + bc^2 = a^2c + b^2c$

The analysis will start from the unknown part of the given statement $ac^2 + bc^2 = a^2c + b^2c$ is to be proved $ac^2 + bc^2 = a^2c + b^2c$ will be true $acd - 2b^2d = bc^2 - 2b^2d$ (Cross multiplication) What is the next possibility of further simplification? $\therefore acd = bc^2$ ('c' can be cancelled on both sides as common) $\therefore ad = b^2c$ will be ture Dividing by bd on both sides we get $a^2c^2 = b^2c^2$ which is known and true. \therefore By going back through the chain of argument. We can say that $ac^2 + bc^2 = a^2c + b^2c$ is also true Example 2. Prove that the sum of the three angles of a triangle is two right angles.

131 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 131 08.07.2016 In analysis we start from the conclusion and break it up into simpler arguments for establishing connections with the relationships taken is the hypothesis. For this, we have to find out the missing logical connections and formulate a pattern for the proof. Assuming that the angle sum is 180° , a straight angle, then the angle sum of the triangle equals the angle sum on one side of a straight line such as D E. Again, if D E passes through the vertex A, which is parallel to the base or opposite side. From the properties of the parallel lines, it can be said that the correponding alternate angles are equal in pair. A line D E is drawn paralalled to B C through A. $\therefore \angle ABC = \angle DAB$; $\angle ACB = \angle EAC$ But $\angle DAC + \angle BAC + \angle CAE = 180^\circ$ (alternate angles) $\therefore \angle BAC + \angle ABC + \angle BCA = 180^\circ$ (straight angles) Example 3.

If $a + b + c = 0$, Then prove that $a^3 + b^3 + c^3 = 3abc$ Proof $a^3 + b^3 + c^3 - 3abc = 0$ (a+b) $a^3 + b^3 + c^3 - 3abc = 0$ (a+b) $a^3 + b^3 + c^3 - 3abc = 0$ or (a+b) $a^3 + b^3 + c^3 - 3ab(a+b+c) = 0$ (a+b) $a^3 + b^3 + c^3 = 0$ ($\therefore a + b + c = 0$) $\therefore (a+b)^3 = -c^3$ or, $a + b = -c$ or, $a+b+c = 0$

which is true. Advantages of the Analytic method : - 1. It is a logical mehtod and there is no doubts in teaching a content 2. It motivates the learners to discover and improves the level of understanding. 3. It does not depend on cramming. Each step in its procedure has its reason and justification. A D E C B

132 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 132 08.07.2016 4. In this method students are always guided by the questions like 'How to simplify the two sides of an equation?' 'How to prove the equality of two sides?' 'What are the possible ways of resolving a statement into simpler elements' etc 5. The method is applicable to all types of learners and content of Mathematics. Disadvantages / Drawbacks 1. It is lengthy method 2. It is difficult to acquire efficiency and speed 3. The method may not be applicable to all topics equally well. 4. This method is not suitable to the beginners as during the process many doubts may arise in the minds of the learners which can not be explained properly. Synthetic Method : Meaning and Procedure Meaning. In synthesis, the small constituents or parts are combined so as to give something new. Here one proceeds from known to unknown.

It proceeds with the data available or known and connects the same with the conclusions. In the process we start with hypothesis to conclusion. In practice, synthesis is the complement of analysis. Procedure : Ex-1 If $a^2 + b^2 = c^2$, Prove that $a^2c + b^2c = c^3$ Synthetic proof : $a^2 + b^2 = c^2$ (It is known, and hence the standing point) Subtracting $2bc$ on both sides. (But the question why? Why and how should the child remember to subtract $2bc$ and not any other quantity?) or $a^2 + b^2 - 2bc = c^2 - 2bc$ or $a^2 + b^2 - 2bc + c^2 = c^2 - 2bc + c^2$ -

133 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 133 08.07.2016 Cancelling $1c$ on both sides) Hence the identity is proved. Ex 2. In any triangle, the square on the side opposite to an acute angle

is equal to the sum of the squares on the sides containing the acute angle minus twice the rectangle containing by one of these sides and the projection upon it. Proof. Given $\triangle ABC$, acute $\angle C$ at C . CD is the projection of AC on AB . To prove $AC^2 = AB^2 + BC^2 - 2BC \cdot CD$ In $\triangle ACD$ is a right angle triangle $\angle ADC$ is not angle $AC^2 = AD^2 + CD^2$ (But why we have taken this as first step is not clear) Now $AC^2 = AD^2 + CD^2$ is expanded We have $AC^2 = AB^2 - BD^2 + (BC - BD)^2 \therefore AC^2 = AB^2 - BD^2 + BC^2 - 2BC \cdot BD + BD^2 = AB^2 + BC^2 - 2BC \cdot CD$ (No justification is given for each and every = step) Ex 3. If $a + b + c = 0$ Prove that $a^3 + b^3 + c^3 = 3abc$ $a + b + c = 0$ (It is known) $\therefore a + b = -c \therefore (a + b)^3 = (-c)^3$ (Cubing both sides) $\therefore a^3 + b^3 + 3ab(a + b) = -c^3$ as $a^3 + b^3 - 3abc = 0$ ($\therefore a + b = -c$) $\therefore a^3 + b^3 + c^3 = 3abc$ (proved) Merits of synthetic method 1) It is a short and elegant method 2) It is logical and psychological method because it starts from known to unknown 3) It glorifies memory 4) It is applicable to most of the topics 5) It suits both the teacher and students 6) It follows the same process as mentioned in the text books

Demerits of Synthetic Method : 1) It leaves many doubts in the mind of the learner and can not be explained properly 2) It does not provide full understanding 3) There is little scope of discovery and thinking in the process 4) Memory work and home work are heavy 5) It is not suitable for learner's full understanding 6) It is not suitable for all students and all the topics of Mathematics Conclusion : Synthesis is the complement of analysis and is teaching of Mathematics, the two methods, the two methods should always go together. Analysis leads to synthesis and synthesis makes the process of teaching learning more clear and complete. Analysis helps in understanding and synthesis helps in retaining knowledge. Analysis forms the beginning and synthesis advances the follow-up work. 3.3.1 A comparative study of Analytic and Synthetic Method. Analytic Method 1) Analysis means breaking up into similar elements 2) It proceeds from unknown to the

known facts 3) It starts from the conclusion and goes to the hypothesis Synthetic Method 1) Synthesis means building up separate elements as combination of separate elements to get something new. 2) It proceeds from known to the unknown facts

135 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 135 08.07.2016 Analytic Method 4) It is a general method 5) It is a method of discovery and requires thinking 6) It is a process of thinking (exploration) 7) It is a lengthy method which involves trial and error and time consuming 8) It is a method for the thinkers and discoverer 9) If question arises then it answers states factually 10) There are close contacts between the teacher and taught 11) The students can recall and reconstruct easily any step if forgotten 12) It is psychological 13) In this method we apply inductive reasoning 14) It is formational 15) Each step is explained with 'Why' and 'how'. 16) It is based on heuristic lines 17) It develops originality 18) It is the forerunner of synthesis 19) It builds up a scientific attitude and creativity among students Synthetic Method 3)

It starts with the hypothesis and ends with the conclusion 4) It is a special method 5) It is a process of presentation of the previous by discovered facts. 6) It

is a product of thought 7)

It is concise, elegant, straight forward and does not follow trial and error. 8) It

is a method for the crammers. No scope for thinking

and discovering 9) It does not start by the doubts and question evolved in the mind of learner. 10) There are little scope

for such intimate 11) It is not easy to recall or reconstruct any forgotten step. 12) It

is logical 13) We apply deductive reasoning 14) It is informational 15) 'Why' and 'how' are not explained clearly 16) There

is no heuristic approach is it 17) It develops memory 18) It is the follower of analysis. 19) Little scopes one there.

136 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 136 08.07.2016 3.3.2 Problem-Solving 3.2.2.1

Introduction Teaching any subject is general and teaching Mathematics is particular, we must consider the following

diagram. Teaching of Mathematics is generally done by traditional discussion method using chalk and talk. Some

teachers follow rigid and stereotyped content and methods. It is felt that problem-solving in mathematics may be helpful

to both the teachers and taught at the secondary level. 3.2.2.2 Meaning and Definition of problem solving Problem-

solving is an individual or a small group activity, most efficient when done co-operatively with the scope of discussion. It

is a method of thinking mathematically, analysing and of learning how to find out the answer of a mathematical problem

using known ideas. The productive work involved is the evaluation of the situation and the strategy worked out to reach

one's set goals is collectively known as problem solving. Woodworth and Marquis (1948) : Problem solving occurs in

novel or different situation in which a situation is not obtainable by habitual methods of applying concepts and principles

derived from past experience in very similar situations. Skinner (1968) is of the opinion problem solving is a process of

overcoming difficulties that appear to interfere with the attainment of a goal. It is a procedure of G. Goals R. Restriction

H. How to (Proceed) E. Empirical Background W. What (to teach) 1. Integration with other branches T. Traditional

Method M. Appropriate Methodology

137 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 137 08.07.2016 making adjustment in spite of

interferences. Lester (1975) states 'A problem is a situation in which an individual or group is called upon to perform a

task for which there is no readily accessible algorithm which determines completely the method of solution.' So problem

solving typically involves performing sets of actions to arrive at a solution to some particular task. Lester has defined

problem solving with a cognitive view point and clearly stresses the mental process rather than any overt behaviour of

the problem solver. The cognitive mathematical behaviour can be classified into three broad categories. First, the

memorisation of facts, definitions, rules and procedures. At this level the child is assumed to reproduce what has been

taught. What has been taught The second level of mathematical cognitive behaviour is the mental activity of generalising

or transferring learning from one context to another. The mental activity of recognizing and restructuring will form

relationship which will help in finding a solution in 3rd level. The third level is termed as 'open search' is the crucial stage in

problem solving process. So problem solving behaviour may be said to be a deliberate and purposeful act on the part of

an individual to realise the set goals or objectives by inventing some novel methods or systematically following some

planned step for removal of the interferences and obstacles in the path of the realization of their goals when usual

methods like trial and error, habit formation and conditioning fail. 2. Natural and Characteristics of problem-solving

behaviour i) Problem-solving behaviour arises when there is serious interference or obstacles are perceived to solve the

purposeful goal. ii) One has to utilise some well-organised steps for the removal of the difficulties and obstacles. iii) It

involves quite deliberate and serious efforts on the part of the problem solver. iv) It helps an individual to reach his goals

and also contributes to the process and development of the society. The psychological view point of problem solving :-

Gagne (1966) has presented a model where production of a solution depends on the learner already knowing

'subordinal' rules, searching his memory to find relevant

138 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 138 08.07.2016 rules, selecting the appropriate rules form among the rellevant remembered rules, combining the rules to form 'tries' at a solution and finally verifying the posible solution. In mathematic education George Polya (1957), in his famous work 'How to solve It', outlined a four-stage model for problem 'solving'. i) understanding the problem ii) Devising a plan iii) Carrying out the plan iv) Looking back Research findings as sub sequent years show that students benefited from all poiya's strategies except 'looking back' which was not realy used by the students. In 1962, 1965 Polya published a much, more detailed two-volume work 'Mathematical Discovery : On understanding, Learning and T eaching problem solving (V ol I & V ol V ol II) After a careful review of several models, Lester proposed six distinct stages, not necessarily sequential. i) Problem awareness ii) Problem comprehension iii) Goal analysis iv) Plan development etc. Merits of Problem - solving Method : The problem Method aims at presenting the knowledge to be learnt is the form of a problem. It begins with a problematic situation and consists of continuous, meaningful, well-integrated activity. The problems are set to the students is a natural way. Math is a subject of problems Efficiency and ability is solving problems is a guarantee for success is learning this subject. i) The method stimulates thinking, reasoning and critical judgement is the students. ii) It develops qualities of initiative and self-dependence is the students iii) It is a method of learning by self effort iv) It is a stimulating method. It acts as a great motivating forces. Production of Problems Selecting appropriate rules from subordinate rules 'Tries' at a solution V erifying the possible solution

139 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 139 08.07.2016 v) It develops desirable study habits in the students. It engaged the students is the analysis of the problem, reflectiong thinking, systematic data gathering, verification and critical study vi) It is a method of experience-based learning. vii) There is possibility of close contact between the teacher and taught viii) The students get valuable social experiences like patience, co-operation, self-confidence et. Limitation a) It is difficult to roganise the contents according to the requirements of this method. b) It is time consuming and slow . (c) All the topics and subject areas cannot be covered by this method (d) Teacher's burden becomes heavier (e) Mental activity dominates and there will be neglect of physical and practical experiences. He main objection has been that the Lester's model does not provide specific information about the diagnosis or the development of specific abilities necessary for solving mathematical problems. With this rationate, kulm and Bussmann have formulated a model called the 'Phase-Ability' model for watching specific abilities corresponding to specific problem solving process. STEPS IN EFFECTIVE PROBLEM-SOLVING BEHAVIOUR In general the following steps may be followed is the task of problem solving. i) Problem-awareness – (Semsing the problem) He must be faced with some obstacle in the path of the realization of his goals consequently he must be consious of the difficulty of problem. ii) Problem-Understanding – (Interpreting, defining and delimiting the problem) All the difficulties and obstancles in the path of the goal or solution must he properly naned and identified. iii) Collection of the relevant information – (Gathering data is a systemating manner) He is required to collect all the relevant information about the problem by all possible means. He may consult experienced persons, read the available literature, re call his own expearence etc iv) Formation of hypothesis or hunch for possible solution– (Organising and evalusing the data) He may start some cognitive activities to think out the various solutions to the problem.

140 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 140 08.07.2016 v) Selection of the correct solution – (Formulating tentative solutions) a) Identify the conclusion that completely satisfies all the demands of the problem. b) Find out whether the so....is consistent c) Make a deliberate search for negative aspects vi) V erification of the concluded solution as hypothesis :- The solution must be further verified far the solution if similar problems and then to be accepted for future solving. 5. FACTORS AFFECTING PROBLEM - SOLVING :- There are foru interacting categories of factors (variables) a) T ask V ariable (The nature of the problem) b) The Subject V ariables (The child readiness) c) The process variables (the behaviour of the child) d) The instructional V ariables (to make the child a good problem solves) Problem-Solving Guide UNDERSTANDING THE PROBLEM •••• Read the problem •••• Decide what you are trying to find •••• Find the important data SOLVING THE PROBLEM •••• Look for a pattern •••• Draw picture •••• Guess and check •••• Make an organized list •••• se logical reasoning •••• Use object or acto out •••• works back words •••• Simplify the problem

141 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 141 08.07.2016 ANSWERING THE PROBLEM AND EVALUATING THE ANSWER •••• Be sure you used all the important information •••• Check your work •••• Decide whether the answer makes sense •••• Write the answer is a complete sentence

Problem Solving Stages Guidelines for teachers in helping students solve problems :- Students may lose interest if they do not understand the questions. So the maxims will be :

1. Make sure students understand the problems. For this a) Students should understand the meaning of the terms of the mathematical problem. b) Students must take into consideration all the relevant information. If the student thinks that trapezium is isosceles, then their idea will lead to rhombus. c) They should be able to mention what the problem is seeking to solve. d) Students should be able to state the problems in their own words.
2. To help students to gather relevant though material (mathematical concepts) for creating the plan. a) To assist the students in gathering information in order to analyse the given condition of the problem. b) To help the students to obtain information by analysing an analogous mathematical problem.

1. Problem comprehension and goal analysis 2. Plan development 3. Plan implementation 4. Solution evaluation

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c) To help the students to analyse a problem from a different point of view if it is not solved by a particular approach. x < y < z < p but 3. To provide students an appropriate atmosphere for solving a problem. 4. To encourage the students to verify solutions obtained by inductive process and search for alternative. To find the sum of n natural numbers by induction and using the formula of A.P. series :

5. Help the students to generalise mathematical problems from real life situation.
6. To use the mathematical puzzles, quiz as interesting activities.

Project Method is based on John Dewey's philosophy of pragmatism. According to Dr Kilpatrick, 'A project is a unit of whole hearted purposeful activity, carried out preferably, in its natural setting. Stevenson defined it as 'A problematic act carried to the completion in its natural setting'. Balland described 'A project is a bit of real life that has been imported into the school' project is a modified form of 'concentration of studies' the main feature of this studies is that some subject is considered as the core or centre of all other school subjects. The principles of correction has been given a practical shape through this method. Project method is based on the principles of (i) Learning by doing (ii) Learning by living and (iii) Association, activity and cooperative learning. It is based on the fact that the different branches of knowledge are not separable, though they are studied separately has convenience. The project may be classified as i) Individual project which is to be carried out by the individual and ii) Social projects or group project which are carried out by a group of pupil.

Step of the project Method : follow page NV . 306 to 310 (To be added) Content cum Methodology of Teaching Math. B. Ed MC 06/07 (09)

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Initiation of a Project — Project proposal

1. Title of the project / Name of the topic
2. Elaboration of the Content
 - Focus of the problem
 - Content of the problem
 - Purpose to be covered (Area of coverage)
3. Objectives i) ii) iii) etc.
4. Equipment / Tools/ Resource required
 - a) Questionnaire
 - b) Information from different sources (Website, Report, documents)
 - c) Syllabus curriculum
 - d) Statical package
 - e) Computers
 - f) Calculator etc
5. Strategies
 - a) Hypothesis
 - b) Population
 - c) Sample
 - d) procedure for conducting project / Execution
 - e) Collection of data
 - f) Analysis of data
 - g) Findings covering objectives
 - h) conclusion
 - i) Submitting report.
- 6) Reflection and Feedback on the project Based on Expected out.
- 7) Limitation Obstacles faced Strategies to be adopted to overcome
- 8) Conclusion / Epilog.

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3.4 Techniques of Teaching Mathematics

oral work, written work, Drill work, Brainstorming and computer Assisted Instruction (CAI)

3.4.1 Introduction

In teaching Mathematics, teacher may adopt a particular method or a combination of methods to make the teaching effective and worthwhile. The clarity mathematics lesson tends to follow a standard pattern. Such lesson plan is prepared keeping in view the previously taught lessons. Hence, adequate practice or drill of previously learnt mathematical skills are important task. Similarly, for fulfilling the expected outcome or gaining mastery of new skills some techniques are used for teaching of Mathematics. Some of them are oral work, Written work, Drill work etc. They are discussed below.

3.4.2 Oral Work

It is the work which is done orally without the help of written work and record. It is the

mental work, where in a problem is solved orally or mentally.

In mathematical learning

much of mathematical work has to be completed mentally and many tables have to be learnt by heart :

In teaching elementary Math it is very essential. Oral work helps each child work at the optimum rate which gives maximum accuracy. Function of Oral Work – 1. At the introductory stage of teaching, oral questions are asked students to test the necessary back ground knowledge for today's lesson. Oral questions are also asked at the developmental stage module wise and at the recapitulatory stage. 2. It has an appeal for the eye and ear which is liked by students. 3. Some-time are saved by oral work. 4. Oral questions help the teacher to judge the level of understanding of the students in classroom situation. 5. It arises interest of pupils. 6.

It is a good mental exercise because it develops alertness, readiness of mind, quick hearing, quick thinking and quick responding.

145 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 145 08.07.2016 7. A mathematical idea can be effectively illustrated through a sufficient number of oral examples on questions without much loss of time. 8. It

is an effective means of maintaining class discipline 9. It encourages healthy competition among the students. 10. Oral work provides a rapid drill designed to habituate a fundamental process 11. It helps in completing morework in any given period. 12. Spontaneity in grasping the data and organization of thought in a limited time, are important aspect of oral question-answer 13. Any individual difficulties can be identified and effectively removed by oral work 14. A teacher can throughout remain active in the class with the help of oral question answer. Good planning and adequate preparation are necessary for constructing oral work for the students. 3.4.3 Written Work We know

the principle 'Reading makes a full man, conversation a ready man and writing an exact

man Oral work is not enough to understand and measure the higher order of learning in Mathematics when a teacher requires to check work done by each child or to give children practice in independent work, written work becomes a necessary. Hence oral work is to be supplemented by written work. In Mathematics, too much written work is needed.

Written work should be considered as an extension of oral work. They are complimentary to each other. The teacher in Mathematics class may follow the sequence 1. Oral fundamentals matter 2. Written fundamentals matter 3. Oral problems presentation 4. Written problem presentation Both will work in combination Importance of Written Work : i)

Throughout written work accuracy in computation, legibility of figures and symbols develop

146 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 146 08.07.2016 ii) It facilitates deep understanding of different mathematical concepts and rules iii) It improves speed consistency with accuracy, proper algorithm and neatness of work iv) It fosters thinking and reasoning power v) It motivates the learners to take active participation vi) It

helps the learner to maintain proper logical and sequential arrangement of steps in the mathematical solution vii) It fosters desirable attitude towards Mathematics viii) Written works also keep a collective record for assessing student's progress over a period. ix) It helps the student for self correction and identification of errors committed by him. x) It

helps to develop good study habit for improving achievement in Mathematics. 3.4.4 Drill work Drill is one of the most essential methods of learning Mathematics Drill is the process of repetition to make automatic certain process or activities. Drill work is the most efficient means of fixing the impression in mind. One can not expect to achieve speed and accuracy in solving mathematical problems without. Teacher teaches mathematics concepts, rules as application of those. After this he has to evaluate whether the knowledge given to students has been fixed in their minds and apply those in similar situation. For this drill work and followup action have to be carried out through drill work. Drill work are of three types The first type of lessons for obtaining mastery of basic subject matter like multiplication tables, addition combinations, percentages, factorization, fraction to decimal, construction in geometry etc. Those subject matters are to be learnt at mastery level with respect to speed and accuracy for future learning. The second category includes topics as mathematical concepts for the mastery of procedures. In this type of skill the students will be mastered in translate verbal problems into symbolic form, systematic arrangement of steps, apply correct algorithms, to scrutinise and check each step for finding error, sort out data, to label correctly the geometrical diagram, practice short cuts, back calculation etc.

147 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 147 08.07.2016 The most important i, e third type of drill consists of lesson which develop the power of thinking, reasoning, generalisation and interest, positive attitude of learner etc. Example of such skills are quizze, puzzle, math, talk etc. Teachers must be careful is developing few functional or meaningful drill in mathematics classes. These are prior understanding of content knowledge and its appropriate application, the necessary and sufficient condition for mathematical proof etc. Considerations to be kept in mind for making Drill work more effective. 1. Drill should follow learning as well as understanding of basic principles. It must not must rote memorization without understanding. 2. It should be individualised and follow the principles of reward and punishment 3. Drill should be varied and systematic Mare routine procedures make the learning monotonous and uninteresting 4. If must be sufficient is quantity. For better results the drill work may be divided into parts of appropriate interval. 5. Drill periods should not be planned merely to keep the students 'busy' at work. It must be based upon thought provoking situation. 6. Drill may provide students the diagnostic information and self checking 7. Drill should not be given in the form of punishment 8. Students should be given proper environment for individual and group drill work 9. Mistakes is drill work must be carefully checked and evaluated at an early time. 3.4.5 Brainstorming. 3.4.5.1 Introduction A.F . Osborn (1963) popularized this strategy through his writing 'Applied Imagination'. It is indicates storming of the brain to generate a number of ideas as quickly as possible without passing any judgement 3.4.5.2 Definition This is a strategy for the development of higher cognitive abilities like reflective thinking, creative imagination and problem solving capabilities. This stragegy is used with a group of students to explore a good number of ideas for solution of a problem.

148 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 148 08.07.2016 3.4.5.3 Procedure for using brainstorming as a teaching strategy i) At first a small group of students (10-15 students) of a particular class is formed. They will be asked to sit in a group and will be given a focus topic say . ' How will you findout the hight of a tower without climbing it' . 2) The teacher will then asks the students to think about the solution of the problem and give their ideas one by one or to list out the solution in a paper. They may be instructed as follows : i) The problem is placed before you, think about the possible solution on solutions as you may think suitable. ii) This is not an examination. Don't care for the criticism. Write down the possible solutions without any heritation even if they seem to you quite new or unusual. iii) Students are also free to alter or modify their ideas and solutions given by them earlier in the session. iv) Student members are also free to alter or modify their ideas after discussion with others. 3) In this way , students will be encouraged and inspired for submitting as many as ideas or solution procedures as possible. The group members and the teacher as leader are supposed to collect the different solutions so that : a) All the solutions as ideas are to be encouraged and there will be no criticism during the brainstorming session. b) Ideas are to be listed without any judgement or passing remarks. c) Members are encouraged to supplement this ideas with others. d) All the alternatives or solutions are to be recoded properly on the blackboard for free discussion. 4) At the end of the brains storming session, all the solutions and ideas collected from the group under the guidance of the group leader i, e the teacher will be dis usal for the approval of the experts. Thus a variety of the solution or ideas are evolved. Advantages of the brainstorming strategy. 1) Students become active and discovers of the solution of the problem or new ideas an concepts.

149 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 149 08.07.2016 2) T eachers act as guide. 3) The strategy helps the students to develop higher order cognitive abilities like think, analyse and synthaesize independently . 4) It helps the students to develop their creativity , originality, potentialities and problem solving ability. 5) As it is a group activity, there are scopes for exchange of views, cooperative spirit and development of reasoning power. 6) The student acquires a real understanding and clear notion of the subject as well as mastery of what he has discovered. Disadvantages and limitations : Brainforming strategy has the following dis advantages and limitations. i) It is a time consuming process and the syllabus may not be completed within the period of time ii) The group members may not be homogeneous with respect to cognitive level required for the discussion of the content. iii) The output of the brainstorming session may not be as per with teacher's expectations on expected outcomes. iv) At the concluding session, the result may not be the actual solution of the problem v) This stragegy can not be applied in large class having 50-60 students vi) All the members of the group may not be equally interested for find the solution vii) All the topics of Mathematics may not be covered by this strategy . 3.4.8 Computer Assisted Instruction Introduction : With the introduction of New Education Policy in 1986, initiatives have been taken to use computer in the teaching-learning activities. In Mathematics, the instructional work so carried out with the help of computer is generally known as computer - assisted Instruction (CAI) Definition Computer-assisted instruction is a method of instruction in which there will be a purposeful interaction between a learner and the teaching material as software of the

150 SPW/O/D/Education B.Ed./A 4/A 4 Part II Unit 2 1st Proof SPW 150 08.07.2016 computer. It helps the individual learner to achieve the expected instructional objectives designed by the teacher with student's own pace and abilities at his command. Characteristics : i) It is an interaction between a student and a computer controlled display materials. ii) The individual student observes the displayed material and responds to it iii) The instructional material as software is prepared by the teacher keeping in view the multidimensional need and capabilities of the learners. iv) It is a auto-individualised instructions which provides instruction to a large number of learners at a time. v) It provides the opportunity for automatic recoding of the learners performance. vi) It provides a wide variety of methods and approaches for imparting instruction vii) The computer-assisted instruction helps the individual learner to achieve the objectives with his own pace and abilities viii) This type of instruction involves three types of technologies namely , hardware, software and courseware. Fields of Instruction is Mathematics teaching through computer assisted instruction. For providing self individualized instruction to a learner, computer assisted instruction in Mathematics helps in the following fields

- 1) Discrimination of information related to Mathematics content. The main purpose of this type of CAI is to provide essential information as the context for example, a student wants to know the symmetric Matrix. The definition like symmetric matrix is a square matrix in which corresponding elements above and below the principle diagonal are equal should be mentioned. As Symmetric matrix is a square matrix in which the transpose of that is that it self is to be mentioned. Example $A = \begin{bmatrix} 1 & 2 & 3 & 2 & 4 & 6 & 3 & 6 & 7 & 8 \\ 2 & 1 & 3 & 2 & 4 & 6 & 3 & 6 & 7 & 8 \\ 3 & 3 & 1 & 2 & 4 & 6 & 3 & 6 & 7 & 8 \\ 2 & 3 & 2 & 1 & 4 & 6 & 3 & 6 & 7 & 8 \\ 4 & 4 & 4 & 4 & 1 & 6 & 3 & 6 & 7 & 8 \\ 6 & 6 & 6 & 6 & 6 & 1 & 6 & 3 & 6 & 7 & 8 \\ 3 & 6 & 3 & 6 & 3 & 6 & 1 & 6 & 3 & 6 & 7 & 8 \\ 6 & 7 & 6 & 7 & 6 & 7 & 6 & 1 & 6 & 3 & 6 & 7 & 8 \\ 8 & 8 & 8 & 8 & 8 & 8 & 8 & 8 & 1 & 6 & 3 & 6 & 7 & 8 \end{bmatrix}$ Similarly , Super-ordinate and sub ordinate concepts are to be given in the software.

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- 2) Drill and practice programme. CAI provides different types of drill and practice programme covering specific topics. Example : To draw the conceptual Hierarchy of quadrilaterals like parallelogram, Trapezium, Rhombus, Square etc.
- 3) Simulation type instruction Such type of instructional activities, carefully prepared programme are given to students. They practice it and are trained.
- 4) Problem solving type Here, the students are provided with programme that will allow them to think about the ways and means of solving the problem systematically like drawing of groups with two equations.
- 5) Tutorial type instruction The tutorial programme are prepared, where the students can play effectively through interaction and dialogue. The programme also provides remedial instruction.
- 6) Practical work related instruction CAI can provide help in supplementing practical work like drawing geometrical figures, calculations, checking the result, consultation with tables etc.

Limitation

- 1) It is expensive and uneconomical.
- 2) It is machine oriented it can never match the human beings. No sympathy or human touch are available.
- 3) It is basically a learner - controlled instruction, There is little scope to check the learner causing wasting of time.
- 4) Chances of machine failure are there causing a set back in the system.

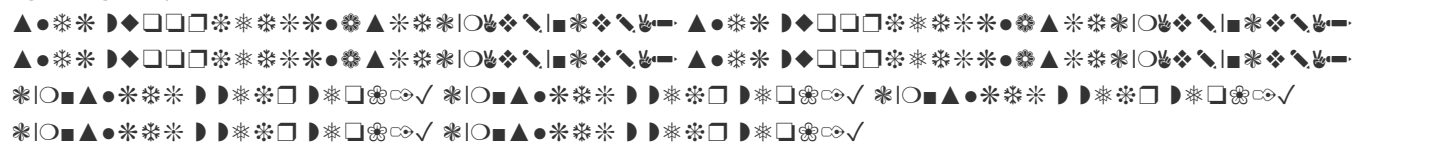
111 Unit 3 □

Strategies for Learning and Teaching Mathematics Structure 3.1 Concept Formation and Concept Attainment 3.1.1 Introduction 3.1.2 Meaning of Concept 3.1.3 Characteristics of Concept 3.1.4 Steps of teaching concepts 3.1.5 Concepts Attainment Model for Learning and Teaching of concept. 3.1.5.1 Strategy of concept Attainment Model. Bruner as mentioned four strategies of the Model namely 3.1.5.2 Types of concept attainment model. 3.1.5.3 The Reception model of concept attainment. 3.1 Concept Formation and Concept Attainment 3.1.1 Introduction The Pioneer of 'concept attainment' is Georm. S. Bruner and his associates Jackue line Goodnow and George Austin. The concept is developed from their research 'A study of Thinking' (1967) the basic considerations of concept Attainment model are : i) Man posses the ability of discrimination and classification of things, persons in groups. ii) For adjustment with the environment, a person encounter varried situations and experiences. It is impossible for a person to restore such huge experiences. So he tries to assimilate such experiences and try to adjust with the environment with these assimilated experiences. In general, the assimilation of such experiences is called concept. iii) A concept has three elements a) example b) attributes and c) attribute values. For example, triangle is concept then each triangle is an example. Here rectangle and pentagon are negative and equilateral triangle is positive.

112 Triangles have all the sides are equal is the attribute and all angles are also equal be the attribute values. iv) The categorizing activity has two components (a) The act of category formation (concept formation) and (b) The act of concept attainment. The concept formation is the first step for concept attainment. 3.1.2 Meaning of Concept According to Bruner "A concept is a class as grouping response, an act of categorization, involves rendering different Things equivalent." Archer (1969) mentioned "A concept is simply the level of a set of things that has something is common" A concept is different from a fact, a principle and even a generalization. Halse states 'A concept is a set of feature connected by some rules. A concept of quadrilateral is a geometrical figure bounded by four straight lines selvans (1993) has cleared the idea is the following ways "A concept consists of an individual's organised information about one or more things, objects, ideas, or relations that enable the individual to discriminate a particular thing or class of things and as classes of things. Thus concept is a class or category of all the members of which share a particular combination of attributes or critical properties not shared by another class. 3.1.3 Characteristics of Concept Knowledge of common feature i) It is the knowledge of common feature of person, object, animal or circumstances of similar characteristics Characteristics observational experiences ii) It is observational experiences. Greater the extend of observtional area greater will be the concept area. In framing the concept of triangle the barner must pay attention minutily to the length of different sides of a triangle. iii) Individual differences In concept formation individual differences play active role. Different persons form mathematical concepts in their own ways to some extend. iv) Experience of object At the initial stage a child forms the concept based on the experiences of real

113 object. At the later stage due to development, he forms the concept is absence of real objects. At the begining, a child forms the concept of circle as triangle by observing circular as trianglular objects but later stage by imagination only. v) Complex process : Mathematical Concept formation is a complex process. If follows the following route. Observation of symmetry Analysis Comparison Abstraction Generalization Concept formation by name vi) Concept formation may be of three types a) Conjunctive (Combination of different traits, Geometrical figures included may type of figures) b) Disjunctive (A concept may be subdivided into many sub concepts. Fractions may be subdivided is to proper and improper or deciwal etc) c) Relational concept (When there is/are relation among concepts, (Rectangle, Trapezium, Rhombus, Square vii) Conceptual Hierarchies. Each concept is not found in isolation, but rather is relation to other concepts. Simth describes this process of forming new concepts as one of breaking down old categories into smaller and more specialized one. One way of describing the relationship of concepts formed is in terms of super ordinate, co-ordinate and sub- ordinate concepts. These terms refers not only to the scope or inclusiveness of a concept but also to its relationship to other concepts. For example, quadrilateral is more inclusive and also subsumes the concept of parallelogram which in term subsumes the concept of rectangle. In this respect rectangle is described as a sub- ordinate concept of quadrilateral. Related concepts such as parallelograms and trapezium form the co-ordinate concepts. In the conceptual hierarchy of quadrilaterals, parallelogram forms the super-ordinate concept to square. ?→? ? →? ?→? ? →? ? →? ? →?

114 Conceptual Hierarchy of Quadrilaterals Quadrilateral Trapezium Kite One pair of alternative Two pairs of adjacent sides are parallel sides are equal Parallelogram Isoscles Trapezium Oblic sides are Oblic sides are equal parallel is length (1) i i i i i i i i 1 2 3 Rectangle Rhombus Four sides are equal f Sides are equal and one angle is right angle. One pair of adjucent sides are equal. No angle is right angle One angle is right angle. One pair of adjacent sides are equal. No angle is right angle Square i



115 VIII) Concept Name Every concept have a name. The concept name is the word used to symbolize the given concept. A concept is an idea or abstraction that exists in people's mind, while the concept name is the word that we arbitrarily use to designate the concept. For example, parallelogram is a concept name designated to a quadrilateral in which both pairs of opposite sides are equal. There are two ways in which the concept name is attached to a concept are a) The child learns the concept first and later learns to attach the name to the concept b) The child learns the symbol and then learns the concept IX) Concept definition The definition of a concept means to describe typically in verbal statement, the meaning of the concept. It focuses the summarization of important aspects of the experiences which ignoring others. It describes the boundaries of a concept. It helps to determine set inclusion and set exclusion. For example, when we define a quadrilateral as four sided closed geometrical figure, it means that all four sided closed geometrical figures like square, trapezium, parallelogram, rectangle etc can be included in the set of quadrilaterals. But others geometrical figures which are not closed and which do not have four sides can not be included in the set of quadrilaterals. X) Process of observation. Through the process of observation, the essential characteristics i.e the attributes are identified. Identifying the attributes of a concept is essential because without the knowledge of the attributes of a concept, the process of understanding the concept is difficult. For example, the characteristics or attributes of the concept square are four sides which are equal in length and angles are right angle each. These Characteristics are important or essential set whereas characteristics such as size colour or special orientation are not important in the set of square. XI) Example in a concept : Examples of a concept are those members of a class which are positive instances of the concept. Examples can appear in word form, in pictorial form or in real life form. XII) Concept formation Concept formation takes place when members of a category are grouped together and similarities are accepted which ignoring the differences among the members of the categories. Considering the similarities a rule is formed and conceptualization takes place. For example, $\frac{1}{2}, \frac{3}{5}, \frac{3}{12}, \frac{0}{1}, \frac{1}{3}, \frac{7}{4}, \dots$ etc are the examples of a concept rational numbers. Rational numbers are defined as numbers expressed in the form of $\frac{p}{q}$, where p and q are integers and p and q do not have common factors and $q \neq 0$.

3.1.4 Steps of teaching concepts Please add page 592 to 598 (Content cum Methodology of Teaching Math B.Ed MC - 06/07 (09) NSOV. 3.1.5 Concepts Attainment Model for Learning and Teaching of concept. The concept learning includes both the phases i.e concept formation and concept attainment. 3.1.5.1 Strategy of concept Attainment Model. Bruner as mentioned four strategies of the Model namely i) Simultaneous Scanning Strategy In this strategy for a particular concept formation, the learners will be given a branch of cards in which different attributes and attribute values are mentioned. The learner will select the cards having positive attributes as well as positive attribute values and will reject which are negative attributes. Concept of Isosceles right angle triangle. For right angle triangle he will select card No 3 and Card No. 4 In card No. 3, one angle is right angle but the others two angles are unequal. So considering the attribute value he will reject So considering the attribute value he will reject card No 3 and will select card No. 4. right angle Card No 4 Card No 1 Card No. 2 Card No. 3 Card No 5 117 But he will reject card No. 1 as it is not triangle. He will reject Card No. 2 as it is equilateral triangle and also reject card No 5 as it is not right angle triangle. ii) Successive scanning strategy Here the learner only select the cards having. Positive attributes successively. In this strategy the learner must know the necessary and sufficient positive attributes of the concept. Though he mentally rejects the negative attributes oriented cards iii) Conservative Focusing Strategy : Here every card will contain only one attribute of positive or negative nature. Considering the positive instance he will reject all the negative all the negative instances or non examples. By showing the non example cards he will reject those with classification. Student is asked to pick up red circular disc having less diameter. He will reject circular disc No 1 to 5 by showing reasons and will select disc No 6 as positive instance. iv) Focus Gambling - Here in each card all the attributes (positive example and negative attribute/non examples) are mentioned and in only one and only the positive attributes are mentioned. Students will be asked to pick up the right and as quickly as possible. Here like gambling chance factors will be effective. If adequate time is given, students will be able to form the right concept of circular disc. 3.1.5.2 Types of concept attainment model. On the basis of research work done by Bruner and his associates several models of teaching have been developed. The concept attainment model has three variations. i) The reception model ii) The Selection model iii) The model for unorganized material. Fig 1 r 1 Red Fig 2 r 1 White Fig 3 r 1 Blue Fig 4 r 2 Red Fig 5 r 1 Red Fig 6 r 3 Red r 2 < r 1 r 3 < r 1

118 3.1.5.3 The Reception model of concept attainment. A. Focus : Here weightage is given on the development of logical powers. Training is given how conclusion can be drawn by inductive reasoning through use of examples. The focus of the model is to form conception through the stages a) observation b) analysis c) comparison d) abstraction e) generalization and finally naming. There fore, in addition to help the students is the attainment of a particular concept, it enables them to become aware of the process of conceptualizing. Concept formation The learner can name the concepts by sclassifying his/her own experience. (Disjunctive) Concept attainment ••••• The learner will be able to know the nature of the concepts ••••• For learning the concept he will apply the thought process B. Syntax. The sequence of these phase and activities are given in the table. Phase one. Presentation of data and identification Activities i) Presenting examples with 'yes' or 'no' labels by the teacher in a pre-arranged order ii) Ask the students to compare at tributes in positive and negative examples iii) Students will frame hypothesis and compare with teacher's hypothesis i 119 iv) Naming the concept by students v) Will state the rule as definition of the concept according to needed attributes. a) Students will frame hypothesis for identifying the similarities and dissimilarities of the facts. b) Considering each hypothesis, at tributes will be judge. c) By analysis and synthesis of the attributes they will find out the inner concepts d) Will be able to generate own examples. i) Teacher will give more information but will not mention the concept like before. ii) Teacher will ask to identify which information attribute is related to which concept iii) If the students role is satisfactory he will ask to give more examples iv) Teacher will give general statement about the concept a) Students will be asked to analyse and discuss the process by which They have attained the concept. b) Students will discuss the role of hypotheses and attributes. c) Students will evaluate the process concept attainment. d) They will be encouraged to follow the process for obtaining experiences by this way. Testing for attainment of inner concept General Statement about the concept You aware about the process of concept formation and thinking strategy Phase Two Phase 3 Phase 4 120 C. Principle of reactions : The important principles of reaction are the following i) The teacher will be supportive to the student's hypothetical in nature. ii) He will help the students to distinguish between two hypothesis and to evaluate the thinking process by themselves. iii) He has to maintain record about the focus attention on specific feature of examples. iv) He is to encourage the students to analysis the merits of various strategies. D. Social System In this model, in most part of the teaching, the teacher has to exercise control over the social system. The teacher has to collect information as well as examples has a fixed up conception. He has to divide the experiences into positive and negative attributes for the concept. He will communicate the students that the solution of the problem of identifying concepts lies not within the teacher but in the data (examples). The teacher gradually relax the control and encourage the students to work independently and collaborately. The functions of teacher will include a) to record the activities b) to give clue for collecting attributes c) and to give extra information in the form of examples. The social system functions on the mutual interaction between teacher and taught. For concept attainment, the teacher gives the positive and negative examples or attributes to the students. The students explain the examples and justify his hypothesis on the basis of positive attributes The interactions are noted on the black board as on the Tag board. The concept is deduced and rule or definition is framed. E. Support systems In this model students will not discover a new concept but will deduce the concept on the basis of examples/experiences/attributes put forward by the teachers. In the first stage, keeping in mind the appropriate concept, the teacher will give different information or examples to the students. This will include both positive and negative attributes which are essential. By discriminating the positive i.e relevant attributes, the concept is formed. By giving more examples by the students, the teachers from the definition of the concept so is the concept attainment model, the support system is the relevant information in the form of examples. F. Application Concept loyce and will are of the opinion that the concept attainment model is an excellent evaluation tool when teachers want to determine whether important ideas introduced

121 earlier have been mastered. It quickly reveals the depth of students understanding and reinforces their previous knowledge'. Mathematics contains a good number of concepts inter related to each other. The model includes both concept formation and concept attainment. In most cases concept is formed by inductive reasoning and follow the process of generalisation and discrimination. 1) So the model is effective in teaching mathematical concepts, grammar and language. 2) For the introduction of this model in class-room teaching, the students may be divided into small groups so that each of them can participate in the discussion. 3) Before teaching following the model, the teacher may explain the different phases examples (both positive and negative) for a concept. 4) For each group, there will be one leader who will control the group discussion, but the teacher will supervise all the group activities. G. Effects of Concepts Attainment Model. Sensitivity to logical reasoning in communication Instructional effect Understanding the nature of concepts Concept Attainment Model Acquire improved concept building strategies Nurturant effect Awareness of alternative perspectives Develop Inductive reasoning power Tolerance towards ambiguity Awareness about alternative relevant

122 3.1.5.4 Advantages/Merits of concept Attainment Model i) Normal environment of class teaching-learning process is maintained. ii) Reasoning power especially inductive reasoning power of students is developed iii) In this model the power of observation and imagination of the students are increased iv) In this model the students can apply his/her knowledge in real life situation. v) Students get the opportunity to justify their own hypothesis by judging the experiences and drawing conclusions. 3.1.5.5 Disadvantages The model demands the participation of all students and teacher in the teaching learning process. But a good number of students generally remain passive. So the introvert and under achiever students are not benefited in the model of teaching. Limitation of concept attainment model i) To follow the model both the teacher and students are to take enough responsibility ii) There are individual differences among the learners. So the introvert type students do not participate in this model of teaching iii) All the contents of the syllabus can not be taught using this model. But the model has revolutionised the face to face teaching process. 3.2 Learning By Exposition :

Advance Organizer's Model 3.2.1 Introduction There are two terms 'Models of teaching' and 'teaching models' used in teaching learning process. 'Teaching models' are just instructional design whereas 'models of teaching' consists of guidelines for designing educational activities and environment. It also specifies ways of teaching and learning for fulfilling the intended goal of teaching. So the function of models of teaching is depicted below.

123 It has been accepted that Mathematics should be taught in such a way that each learner is trained to think, reason, analyse and articulate logically. As far as possible the discovery approach followed by teaching through designing and planning suitable aids and models. The fundamentals essential for learning mathematics and solving of problems of daily life should be borne in mind while teaching one should aim to learn the concepts at the mastery level. Activity oriented programme should be used in teaching Mathematics. The most essential thing is that joy and achievement should prevail while learning Mathematics. 3.2.2 Advanced Organizer's Model of Ausubel-David Ausubel designed this model to increase the efficiency of information processing capacities of children. The ideas of this model have emerged in his book 'Theory of Meaningful Learning' According to him the types of learning material related with the content can be learned by the learner quite effectively if presented through. Visual graphics, charts and picture, film, audio tapes and transparencies. He is of opinion that for meaningful verbal learning, the teacher must know the following three issues (i) How knowledge (content of curriculum) is organised - (ii) How the mind works during the process of presenting new information (learning) and c) How the above two can be presented to the students (instruction) According to Ausubel

new ideas can be learned or retained only to the extent that those ideas can be related to already available cognitive structure of the learner. That acts as necessary linkage or anchors. Designing and mentioning instructional objectives Functions of models of teaching Developing and fixing instructional materials Specifying needed teaching learning activities for cognitive organisation

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those ideas can be related to already available cognitive structure of the learner. That acts as necessary linkage or anchors. Designing and mentioning instructional objectives Functions of models of teaching Developing and fixing instructional materials Specifying needed teaching learning activities for cognitive organisation

124 Advance organisers, as Ausubel maintains, are the primary means of strengthening learners's cognitive structure. The advance organiser may be of two types i) expository (which is helpful in providing the basic concepts at the highest level of abstraction and essential for understanding new content) and ii) Comparative (designed to discriminate between the old and new concepts to prevent confusion. For teaching the equation of a circle, expository advance organiser may be a diagram of a circle and as comparative advance organiser a diagram showing geometrical figure of circle and the locus of points which are equidistant from a fixed point, called its centre. 3.2.3 Before presenting the Advance organiser Model of teaching we must keep in mind the following Objectives of teaching To enhance the cognitive structure in respect of mathematical content To reconcile /link the new concept with previous knowledge of students Process i) Progressive differentiation (Presenting first simple concept) i Then gradually in depth / related concepts and finally new content) ii) Integrative reconciliation (newly learned content to be assimilated with the old for upgradation) i R O P Q

125 Fig 1 Types of learning Meaningful (can be applied in new situation with creativity. Effective is learning of Mathematics) Rote Learning (Collection of information / data through memorisation which has the scope of forgetting). Output in Mathematics learning Perceptual or direct knowledge about content Abstraction Level - I (At this primary stage, students can present symbolically) i Higher abstraction level (can solve the mathematical problem by using formula / rule etc) i i Conceptual structure of learning (At this stage the learner can deduce the law, can apply in new situation even able to solve the mathematical problem alternatively i Presentation of advance Organiser (A.O) by the teachers Presentation of A.o before teaching Teacher Presentation of L e a r n i n g material Nature of A.O showing set of verbal or visual information Expository Comparative Creating a linkage between background knowledge with new knowledge Related to learning material but more abstract and coverage. To be presented in logical and psychological sequence

126 3.2.4 Fundamental elements of Advance organiser model 3.2.4.1 Focus The model focuses 1. Assisting the teacher for improving the method of presentations for this must know how content is organised 2. Organising large amount of content information teacher must realize meaningfully. For this what is the cognitive structure of students in respect of new content 3. To help the learner to strengthen their existing cognitive structure. For this relevant questions are to be asked and necessary information to be provided. 3.2.4.2 Syntex Activities are to be performed sequentially in the following three phases. Phase I: Presentation of the advance organisers i) the aim of the lesson is to be clarified. By stating the aims and objectives of the lesson, the students will be motivated for acquisition of the presented material ii) Presentation of the advance organiser. The teacher will present the advance organiser (expository or comparative) to the students which contain ideas more distinct and inclusive than the learning content for understanding and grasping the information. ii) Prompting awareness learner's knowledge. The teacher will realise learner's existing cognitive structure in terms of their previous knowledge and experience through questioning related to advance organiser. Phase II presentation of learning task. (Executive i) The teacher will present the content stage) modulewise through appropriate method like discussion, question answer method as problem solving method with necessary teaching aids ii) Presentation will be in line with existing cognitive structure as well as the information supplied to them through advance organiser. iii) As mentioned by Joyce and Will (2003) "The organisation of the learning material needs to be made explicit to the students so that they have an overall sense of direction and can see the logical order of the material and how the organization relates to the advance organiser.

127 Phase III Strengthening Cognitive organisation (Follow-up stage Joyce and Will states "

The purpose of phase three is to anchor the new learning mathematics in the student existing cognitive structure,

that is to strengthen the students' cognitive organization". The following activities are performed in this phase i) Integrative reconciliation Teacher will relate process of solving solving a math problem taking a similar problem. ii) He may ask the students the definition of term, process of solution. He may repeat the concept once again. Teacher may ask the student the relevance of Advance organizer as the teaching aids with the present topic. ii) Active reception learning The teacher may ask students to give additional examples related to the discussion For promoting active reception, the teacher will allow the student to ask question for their reception of facts, while teaching congruence of a triangle, the teacher may ask 'Why the triangles having three angles equal are not congruent? He may ask the students to make a teaching aid for understanding the concept. iii) Eliciting critical approach to content knowledge or the learning material The teacher may ask the students a) How the problem as geometrical theorem can be proved is alternative way? b) Without discussing the concept of probability. The teacher may ask the students to toss a coin 10 times on 20 times and record the result is respect of head' on 'tail'. c) Contradiction or exception of a rule may be asked to explain like $5 < 3 < 2 < 1$ but $1 < 5 < 3 < 1 < 2 < 1 > > > >$; iv) Classification of confusion or source of errors . In this stage the teacher will apply all the techniques, strategies or methods to clarify the misconception, source of error etc. He may apply error correction test or show some practical demonstration to eradicate mis understanding.

128 a) $7 \times 7 = 7 \times 2 < 7 \times 5 = 5 \times 2 < 5$ but $0.7 \times 0.7 = .49 > 0.7$ or $0.5 \times 0.5 = .25 > 0.5$ b) $25 \div 5 = \pm$ or $49 \div 7 = \pm$ but $- \neq \pm 25 \div 5$ or $- \neq \pm 49 \div 7$

3.2.4.3 Social System The social system of the advance organiser model is structured and teacher centered. He relates the advance organiser to the learning material. This acts as an anchor between existing knowledge of the learner to the new knowledge. The social system starts with interaction with the students. Students may ask questions, may improve the advance organiser for their understanding and assimilation of new knowledge. So to devise the advance organiser is a difficult activity which will be appropriate to the students as well as to new content. Moreover, deliberation, discussion and relating the A.O with new learning materials require the efficiencies of the teachers.

3.2.4.4 Support system : To make the model more effective and meaningful in teaching Mathematics the following support system is essential. 1. A well thought and structured learning material 2. Preparation of a well thought, relevant and appropriate advance organiser in the form of story telling, model, software, activity based performance etc 3. Integrating the advance organiser with learning material and presenting before the students keeping in mind their level of understanding 4. The appropriate competencies, teaching skill. Professional efficiency and concern for student's preparedness will help the teacher to make the model more effective. 3.2.4.5 Learning output / Effect of Ashbel's Advance organiser Model The effect is expressed in the following diagram.

129 3.2.4.6 Advantages The wide application area of the model as suggested by Joyce and Will (2003) can be stated in teaching Mathematics. i) This model can be used almost all branches of mathematics systematically in normal classroom situation having mixed ability group. ii) It can help the teachers to understand the existing necessary background knowledge before presenting the advance organiser iii) It follows the mechanism of direct instruction and reorganise the cognitive structure in through advance organiser. iv) Though the Advance organiser at the initial stage act as deductive way on subsequent discussion it is subject to inductive concept attainment stage and evaluate the student's acquisition of new knowledge v) It has both instructional and nurturant effects in different domains. vi) It helps the student to develop critical thinking and interest in mathematical inquiry. 3.2.4.6 Disadvantages i) Sometimes it is difficult to prepare relevant advance organiser of mathematical topics. ii) It is different from ordinary teaching aids Effect of Advance organiser Model Instructional effect Formation of conceptual structure Nurturant effect Meaningful assimilation of information and ideas Retention and application of mathematical experiences Interest in mathematical inquiry Habit of specific and precise thinking

130 iii) Prior to apply the model, the mathematics curriculum is to be reorganised and teacher must know the interdisciplinary nature of Mathematics 3.3 Analytic-synthetic, Problem-solving and Project. 3.3.1 Analytic-Synthetic Introduction Most Mathematics originates from the ideas and concepts associated with physical form, shape and size of objects. Those concepts are present as a systematic abstract structure in logico-deductive form Analysis and synthesis are methods which use reasoning and systematic arguments arts to find out relationship Meaning. The word 'analytic' means to take a part as to separate the things that are together or 'breaking up' of the problem so that it gets connected with already known. Analysis is a process of breaking a thing into its smaller parts. It proceeds from unknown to known and conclusion to hypothesis. Thorndike says that all the highest intellectual activities of the mind are analysis. '

To analyse' means to loosen or separate things that are together. Procedure : Ex 1. If $a^2 + b^2 = c^2$, Prove that $ac^2 + b^2c = bc^2 + 2abd$. The analysis will start from the unknown part of the given statement $ac^2 + b^2c = bc^2 + 2abd$ is to be proved $ac^2 + b^2c = bc^2 + 2abd$ will be true $acd - 2bd = bc^2 - 2bd$ (Cross multiplication) What is the next possibility of further simplification? $\therefore acd = bc^2$ ('c' can be cancelled on both sides as common) $\therefore ad = bc$ will be true Dividing by bd on both sides we get $a^2 + b^2 = c^2$ which is known and true. \therefore By going back through the chain of argument. We can say that $ac^2 + b^2c = bc^2 + 2abd$ is also true Example 2. Prove that the sum of the three angles of a triangle is two right angles.

131 In analysis we start from the conclusion and break it up into simpler arguments for establishing connections with the relationships taken is the hypothesis. For this, we have to find out the missing logical connections and formulate a pattern for the proof. Assuming that the angle sum is 180° , a straight angle, then the angle sum of the triangle equals the angle sum on one side of a straight line such as DE . Again, if DE passes through the vertex A , which is parallel to the base or opposite side. From the properties of the parallel lines, it can be said that the corresponding alternate angles are equal in pair. A line DE is drawn parallel to BC through A . $\therefore \angle ABC = \angle DAB$; $\angle ACB = \angle EAC$ But $\angle DAC + \angle BAC + \angle CAE = 180^\circ$ (alternate angles) $\therefore \angle BAC + \angle ABC + \angle BCA = 180^\circ$ (straight angles) Example 3.

If

$a + b + c = 0$, Then prove that $a^3 + b^3 + c^3 = 3abc$ Proof $a^3 +$

$b^3 + c^3 = 3abc$ If

$a^3 + b^3 + c^3 - 3abc = 0$ $(a+b)^3 - 3$

ab (

$a + b) + c^3 - 3abc = 0$ or (

$a + b)^3 + c^3 - 3ab(a+b+c) = 0$ $(a + b)^3 + c^3 = 0$ ($\therefore a + b + c = 0$) $\therefore (a + b)^3 = -c^3$ or, $a +$

$b = -c$ or, $a+b+$

$c = 0$

which is

ture. Advantages of the Analytic method : - 1. It is a logical method and there is no doubts in teaching a content 2. It motivates the learners to discover and improves the level of understanding. 3. It does not depend on cramming. Each step in its procedure has its reason and justification. A D E C B

132 4. In this method students are always guided by the questions like "How to simplify the two sides of an equation?"

How to simplify the two sides of an equation? How to prove the equality of two sides? "What are the possible ways of resolving a statement into simpler elements" etc 5. The method is applicable to all types of learners and content of Mathematics. Disadvantages / Drawbacks 1. It is lengthy method 2. It is difficult to acquire efficiency and speed 3. The

method may not be applicable to all topics equally well. 4. This method is not suitable to the beginners as during the

process many doubts may arise in the minds of the learners which can not be explained properly. Synthetic Method :

Meaning and Procedure Meaning. In synthesis, the small constituents or parts are combined so as to give something new. Here one proceeds from known to unknown.

It proceeds with the data available or known and connects the same with the conclusions. In the process

we start with hypothesis to conclusion. In practice, synthesis is the complement of analysis. Procedure : Ex-1 If $a^2 + b^2 = c^2$,

Proved that $ac^2 + b^2c = bc^2 + 2abd$ Synthetic proof : $a^2 + b^2 = c^2$ (It is known, and hence the standing point) Subtracting

$2bc$ on both sides. (But the question why? Why and how should the child remember to subtract $2bc$ and not any other quantity?) or $a^2 + b^2 - 2bc = c^2 - 2bc$ or $ac^2 + b^2c - 2bc^2 = c^2d - 2bcd$ or $ac^2 + b^2c - 2bc^2 = c^2d - 2bcd$

133 Cancelling $1c$ on both sides) Hence the identity is proved. Ex 2. In any triangle, the square on the side opposite to an acute angle

is equal to the sum of the squares on the

sides containing the acute angle minus twice the rectangle containing by one of these sides and the projection upon it.

Proof. Given $\triangle ABC$, acute $\angle d$ at B . BD is the projection of AB on BC . To prove $Ac^2 = AB^2 + Bc^2 - 2BC \cdot BD$ In $\triangle ACD$ is a right Angle triangle $\angle ADC$ is not angle $Ac^2 = AD^2 + CD^2$ (But why we have taken this as first step is not clear) Now $AC^2 = AD^2 + CD^2$ is expanded We have $Ac^2 = AB^2 - BD^2 + (BC - BD)^2 \therefore CD = BC - BD = AB^2 - BD^2 + BC^2 + BD^2$

$-2BC \cdot BD = AB^2 + BC^2 - 2BC \cdot BD$ (No justification is given for each and every = step) Ex 3. If $a + b + c = 0$ Prove that

$a^3 + b^3 + c^3 = 3abc$ $a + b + c = 0$ (It is known) $\therefore a + b = -c \therefore (a + b)^3 = (-c)^3$ (Cubing both sides) $\therefore a^3 + b^3 + 3ab$

(

$a+b) = -c^3$ as $a^3 + b^3 - 3abc = 0$ ($\therefore a + b = -c$) $\therefore a^3 +$

$b^3 + c^3 = 3abc$ (proved) Merits of synthetic method 1) It is a short and elegant method A B C D
 134 2) It is a short and elegant method 3) It is logical and psychological method because it starts from known to unknown 4) It glorifies memory 5) It is applicable to most of the topics 6) It suits both the teacher and students 7) It follows the same process as mentioned in the text books Demerits of Synthetic Method : 1) It leaves many doubts in the mind of the learner and can not be explained properly 2) It does not provide full understanding 3) There is little scope of discovery and thinking in the process 4) Memory work and home work are heavy 5) It is not suitable for learner's full understanding 6) It is not suitable for all students and all the topics of Mathematics Conclusion : Synthesis is the complement of analysis and in teaching of Mathematics, the two methods, the two methods should always go together. Analysis leads to synthesis and synthesis makes the process of teaching learning more clear and complete. Analysis helps in understanding and synthesis helps in retaining knowledge. Analysis forms the beginning and synthesis advances the follow-up work. 3.3.1 A comparative study of Analytic and Synthetic Method. Analytic Method 1) Analysis means breaking up into similar elements 2) It proceeds from unknown to the known facts 3) It starts from the conclusion and goes to the hypothesis Synthetic Method 1) Synthesis means building up separate elements as combination of separate elements to get something new. 2) It proceeds from known to the unknown facts 135 Analytic Method 4) It is a general method 5) It is a method of discovery and requires thinking 6) It is a process of thinking (exploration) 7) It is a lengthy method which involves trial and error and time consuming 8) It is a method for the thinkers and discoverers 9) If a question arises then it answers satisfactorily 10) There are close contacts between the teacher and taught 11) The students can recall and reconstruct easily any step if forgotten 12) It is psychological 13) In this method we apply inductive reasoning 14) It is formational 15) Each step is explained with 'Why' and 'how'. 16) It is based on heuristic lines 17) It develops originality 18) It is the forerunner of synthesis 19) It builds up a scientific attitude and creativity among students Synthetic Method 3) It starts with the hypothesis and ends with the conclusion 4) It is a special method 5) It is a process of presentation of the previous by discovered facts. 6) It is a product of thought 7) It is concise, elegant, straight forward and does not follow trial and error. 8) It is a method for the crammers. No scope for thinking and discovering 9) It does not start by the doubts and question evolved in the mind of learner. 10) There is little scope for such intimate 11) It is not easy to recall or reconstruct any forgotten step. 12) It is logical 13) We apply deductive reasoning 14) It is informational 15) 'Why' and 'how' are not explained clearly 16) There is no heuristic approach in it 17) It develops memory 18) It is the follower of analysis. 19) Little scope is there. 136 3.3.2 Problem-Solving 3.2.2.1 Introduction Teaching any subject is general and teaching Mathematics is particular, we must consider the following diagram. Teaching of Mathematics is generally done by traditional discussion method using chalk and talk. Some teachers follow rigid and stereotyped content and methods. It is felt that problem-solving in mathematics may be helpful to both the teachers and taught at the secondary level. 3.2.2.2 Meaning and Definition of problem solving Problem-solving is an individual or a small group activity, most efficient when done co-operatively with the scope of discussion. It is a method of thinking mathematically, analysing and of learning how to find out the answer of a mathematical problem using known ideas. The productive work involved is the evaluation of the situation and the strategy worked out to reach one's set goals is collectively known as problem solving. Woodworth and Marquis (1948) : Problem solving occurs in a novel or different situation in which a situation is not obtainable by habitual methods of applying concepts and principles derived from past experience in very similar situations. Skinner (1968) is of the opinion problem solving is a process of overcoming difficulties that appear to interfere with the attainment of a goal. It is a procedure of G. Goals R. Restriction H. How to (Proceed) E. Empirical Background W. what (to teach) 1. Integration with other branches T. Traditional Method M. Appropriate Methodology

137 making adjustment inspite of interferences. Lester (1975) states "A problem is a situation in which an individual or group is called upon to perform a task for which there is no ready accessible algorithm which determines completely the method of solution :'. So problem solving typically involves performing sets of actions to arrive at a solution to some particular task. Laster has defined problem solving with a cognitive view point and clearly stresses the mental process rather than any overt behaviour of the problem solver. The cognitive mathematical behaviour can be classified into three broad categories. First, the memorisation of facts, definitions, rules and procedures. At this level the child is assumed to reproduce what has been taught. What has been taught The second level of mathematical cognitive behaviour is the mental activity of generalising or transferring learning from are context to another. The mental activity of recoginzing and restructuring will for form relationship which will help is finding a solution in 3rd level. The third level is terned as 'open search' is the crucial stage is problem solving process. So problem solving behaviour may be said to be a deliberate and purposeful act on the part of an individual to realise the set goals or objectives by inventing some novel methods or ..ptematically following some planned step for removal of the interferences and obstacles in the path of the realization of then goals when usual methods like trial and error, habit formation and conditioning tail. 2. Natural and Characteristics of problem-solving behaviour i) Problem-solving behaviour arises when there is serious interference or obstacles are perceived to solve the purposeful goal. ii) One has to utilise some well-organised steps for the removal of the difficulties and obstacles. iii) It involves quite deliberate and serious efforts on the part of the problem solves. iv) It helps an individual to reach his goals and also contributes to the process and development of the society. The psychological view point of problem solving :- Gagne (1966) has presented a model where production of a solution depends on the learner already knowing 'subordinal' rules, searching his memory to find relevant 138 rules, selecting the appropriate rules form among the rellevant remembered rules, combining the rules to form 'tries' at a solution and finally verifying the posible solution. In mathematic education George Polya (1957), in his famous work 'How to solve It', outlined a four-stage model for problem 'solving'. i) understanding the problem ii) Devising a plan iii) Carrying out the plan iv) Looking back Research findings as sub sequent years show that students benefited from all poiya's strategies except 'looking back' which was not realy used by the students. In 1962, 1965 Polya published a much, more detailed two-volume work 'Mathematical Discovery : On understanding, Learning and Teaching problem solving (Vol I & Vol Vol II) After a careful review of several models, Lester proposed six distinct stages, not necessarily sequential. i) Problem awareness ii) Problem comprehension iii) Goal analysis iv) Plan development etc. Merits of Problem - solving Method : The problem Method aims at presenting the knowledge to be learnt is the form of a problem. It begins with a problematic situation and consists of continuous, meaningful, well-integrated activity. The problems are set to the students is a natural way. Math is a subject of problems Efficiency and ability is solving problems is a guarantee for success is learning this subject. i) The method stimulates thinking, reasoning and critical judgement is the students. ii) It develops qualities of initiative and self-dependence is the students iii) It is a method of learning by self effort iv) It is a stimulating method. It acts as a great motivating forces. Production of Problems Selecting appropriate rules from subordinate rules 'Tries' at a solution Verifying the possible solution

139 v) It develops desirable study habits in the students. It engaged the students is the analysis of the problem, reflecting thinking, systematic data gathering, verification and critical study vi) It is a method of experience-based learning. vii) There is possibility of close contact between the teacher and taught viii) The students get valuable social experiences like patience, co-operation, self-confidence etc. Limitation a) It is difficult to reorganise the contents according to the requirements of this method. b) It is time consuming and slow. (c) All the topics and subject areas cannot be covered by this method (d) Teacher's burden becomes heavier (e) Mental activity dominates and there will be neglect of physical and practical experiences. The main objection has been that the Lester's model does not provide specific information about the diagnosis or the development of specific abilities necessary for solving mathematical problems. With this rationale, Kulm and Bussmann have formulated a model called the 'Phase-Ability' model for watching specific abilities corresponding to specific problem solving process.

STEPS IN EFFECTIVE PROBLEM-SOLVING BEHAVIOUR In general the following steps may be followed in the task of problem solving.

- i) Problem-awareness – (Sensing the problem) He must be faced with some obstacle in the path of the realization of his goals consequently he must be conscious of the difficulty of problem.
- ii) Problem-Understanding – (Interpreting, defining and delimiting the problem) All the difficulties and obstacles in the path of the goal or solution must be properly named and identified.
- iii) Collection of the relevant information – (Gathering data in a systematizing manner) He is required to collect all the relevant information about the problem by all possible means. He may consult experienced persons, read the available literature, recall his own experience etc
- iv) Formation of hypothesis or hunch for possible solution – (Organising and evaluating the data) He may start some cognitive activities to think out the various solutions to the problem.

140 v) Selection of the correct solution – (Formulating tentative solutions)

- a) Identify the conclusion that completely satisfies all the demands of the problem.
- b) Find out whether the so...is consistent
- c) Make a deliberate search for negative aspects
- vi) Verification of the concluded solution as hypothesis :- The solution must be further verified for the solution if similar problems and then to be accepted for future solving.

5. FACTORS AFFECTING PROBLEM - SOLVING :- There are four interacting categories of factors (variables)

- a) Task Variable (The nature of the problem)
- b) The Subject Variables (The child readiness)
- c) The process variables (the behaviour of the child)
- d) The instructional Variables (to make the child a good problem solver)

Problem-Solving Guide

UNDERSTANDING THE PROBLEM •••• Read the problem ••••
Decide what you are trying to find •••• Find the important data

SOLVING THE PROBLEM •••• Look for a pattern ••••
Draw picture •••• Guess and check •••• Make an organized list •••• use logical reasoning •••• Use object or act out •••• works back words •••• Simplify the problem

141 **ANSWERING THE PROBLEM AND EVALUATING THE ANSWER** •••• Be sure you used all the important information •••• Check your work •••• Decide whether the answer makes sense •••• Write the answer in a complete sentence

Problem Solving Stages Guidelines for teachers in helping students solve problems :- Students may lose interest if they do not understand the questions. So the maxims will be :

1. Make sure students understand the problems. For this
 - a) Students should understand the meaning of the terms of the mathematical problem.
 - b) Students must take into consideration all the relevant information. If the student thinks that a trapezium is isosceles, then their idea will lead to a rhombus.
 - c) They should be able to mention what the problem is seeking to solve.
 - d) Students should be able to state the problem in their own words.
2. To help students to gather relevant though material (mathematical concepts) for creating the plan.
 - a) To assist the students in gathering information in order to analyse the given condition of the problem.
 - b) To help the students to obtain information by analysing an analogous mathematical problem.

1. Problem comprehension and goal analysis
2. Plan development
3. Plan implementation
4. Solution evaluation

142 c) To help the students to analyse a problem from a different point of view if it is not solved by a particular approach. x < y < z < p but 3. To provide students an appropriate atmosphere for solving a problem. 4. To encourage the students to verify solutions obtained by inductive process and search for alternative. To find the sum of n natural numbers by induction and using the formula of A P series : 5. Help the students to general mathematical problems from real life situation. 6. To use the mathematical puzzles, quiz as interesting activities. Project Project method is based on John Dewey's philosophy of pragmatism. According to Dr kilpatrick, "A project is a unit of whole hearted purposeful activity, carried an preferably, in its natural setting. Stevenson defined it as "A problematic act carried to the completion is its natural setting". Balland described "A project is a bit ob real life that has been imported into the school" project is a modefied form of "concentration of studie's the main feature of this studies is that some subject is considered as the core or centre of all other school subjects. The principles of correction has been given a practical shape through this method. Project method is based on the principles of (i) Learning by doing (iii) Learning by living and (iii) Association, activity and co operative learning. It is based on the fact that the different branches of knowledge are not seperable, though they are studied seperately has convenience. The project may be classified as i) Individual project which is to be cried out by the individual and ii) Social projects or group project which are carried out by a group of pupil. Step of the project Method : follow page NV. 306 to 310 (To be added) Content cum Methodology of Teaching Mulh. B. Ed MC 06/07 (09)

143 Initiation of a Project — Project proplal 1. Title of the project / Name of the topic 2. Elaboration of the Content • Focus of the problem • Content of the problem • Purpose to be coverd (Area of coverage) 3. Objectives i) ii) iii) etc. 4. Equipment / Tools/ Resource required a) Questionnaire b) Information from different sources (Website, Report, documents) c) Syllabus curriculum d) Statical package e) Compules f) Calculator etc 5) Stratigies a) Hypothesis b) Population c) Sample d) procedure for conducting project / Execution e) Collection of data f) Analysis of data g) Findings covering objectives h) conclusion i) Submitting report. 6) Reflection and Feedback on the project Based on Expected out. 7) Limitation Obstacles faced Strategies to be adopted to overcome 8) Conclusion / Epilog.

144 3.4 Techniques of Teaching Mathematics oral work, written work, Drill work, Brainstorming and computer Assisted Instruction (CAI) 3.4.1 Introduction In teaching Mathemaitcs, teacher may adopt a particular method or a combination of methods to make the teaching effective effective and worthwhile. The claity mathematics lesson in tends to follow a standard pattern. Such lesson plan is prepared keeping is view the previously taught lessons. Hences, adquate practice or drill of previously learnt mathematical skills are important task. Similarly, for fulfilling the expected out come or gainin mastery of new kills some techniques are used for teaching of Mathematic. Some of them are oral work, Written work, Drill work etc. They are discussed below. 3.4.2

Oral Work It is the work which is done orally without the help of written work and record. It

is the

mental work, where in a problem is solved orally or mentally.

In mathematical learning

much of mathematical work has to be coupleted mentally and many tables have to be learnt by heart :

In teaching elementary Mathe it is very essential. Oral work helps each child work at the optimum rate which gives maximum accuracy. Function of Oral Work – 1. At the introductory stage of teaching, oral questions are asked students to test the necessary back ground knowledge for today's lesson. Oral questions are also asked at the developmental stage module wise and at the recapitulatory stage. 2. It has an appeal for the eye and ear which is liked by students. 3. Some-time are saved by oral work. 4. Oral questions help the teacher to judge the level of understanding of the students is calssroom situation. 5. It arises interest of publish. 6.

It is a good mental exercise because it develops atertness, readiness of mind, quick hearing, quick thinking and quick responding.

145 7. A mathematical

idea can be effectively illustrated through a sufficient number of oral examples on questions without much loss of time.

8. It

is an effective means of maintaining class discipline 9. It encourages healthy competition among the students. 10. Oral work provides a rapid drill designed to habituate a fundamental process 11. It helps in completing morework in any given period. 12. Spontaneity in grasping the data and organization of thought in a limited time, are important aspects of oral question-answer 13. Any individual difficulties can be identified and effectively removed by oral work 14. A teacher can throughout remain active in the class with the help of oral question answer. Good planning and adequate preparation are necessary for constructing oral work for the students. 3.4.3 Written Work We know

the principle "Reading makes a full man, conversation a ready man and writing an exact

man Oral work is not enough to understand and measure the higher order of learning in Mathematics when a teacher requires to check work done by each child or to give children practice in independent work, written work becomes a necessary. Hence oral work is to be supplemented by written work. In Mathematics, too much written work is needed.

Written work should be considered as an extension of oral work. They are complementary to each other. The teacher in

Mathematics class may follow the sequence 1. Oral fundamentals matter 2. Written fundamentals matter 3. Oral

problems presentation 4. Written problem presentation Both will work in combination Importance of Written Work : i)

Throughout written work accuracy in computation, legibility of figures and symbols develop

146 ii) It facilitates deep understanding of different mathematical concepts and rules iii) It improves speed consistency with

accuracy, proper algorithm and neatness of work iv) It fosters thinking and reasoning power v) It motivates the learners to

take active participation vi) It helps the learner to maintain proper logical and sequential arrangement of steps in the

mathematical solution vii) It fosters desirable attitude towards Mathematics viii) Written works also keep a collective

record for assessing student's progress over a period. ix) It helps the student for self correction and identification of

errors committed by him. x) It helps to develop good study habit for improving achievement in Mathematics. 3.4.4 Drill

work Drill is one of the most essential methods of learning Mathematics Drill is the process of repetition to make

automatic certain process or activities. Drill work is the most efficient means of fixing the impression in mind. One can

not expect to achieve speed and accuracy in solving mathematical problems without. Teacher teaches mathematics

concepts, rules as application of those. After this he has to evaluate whether the knowledge given to students has been

fixed in their minds and apply those in similar situation. For this drill work and followup action have to be carried out

through drill work. Drill work are of three types The first type of lessons for obtaining mastery of basic subject matter like

multiplication tables, addition combinations, percentages, factorization, fraction to decimal, construction in geometry

etc. Those subject matters are to be learnt at mastery level with respect to speed and accuracy for future learning. The

second category includes topics as mathematical concepts for the mastery of procedures. In this type of skill the

students will be mastered in translating verbal problems into symbolic form, systematic arrangement of steps, applying correct

algorithms, to scrutinise and check each step for finding error, sorting out data, to label correctly the geometrical diagram,

practice short cuts, back calculation etc.

147 The most important, the third type of drill consists of lessons which develop the power of thinking, reasoning,

generalisation and interest, positive attitude of learner etc. Example of such skills are quizzes, puzzles, math, talk etc.

Teachers must be careful in developing few functional or meaningful drills in mathematics classes. These are prior

understanding of content knowledge and its appropriate application, the necessary and sufficient condition for

mathematical proof etc. Considerations to be kept in mind for making Drill work more effective. 1. Drill should follow

learning as well as understanding of basic principles. It must not be rote memorization without understanding. 2. It

should be individualised and follow the principles of reward and punishment 3. Drill should be varied and systematic

Monotonous routine procedures make the learning monotonous and uninteresting 4. There must be sufficient quantity. For better

results the drill work may be divided into parts of appropriate interval. 5. Drill periods should not be planned merely to

keep the students 'busy' at work. It must be based upon thought provoking situations. 6. Drill may provide students the

diagnostic information and self checking 7. Drill should not be given in the form of punishment 8. Students should be

given proper environment for individual and group drill work 9. Mistakes in drill work must be carefully checked and

evaluated at an early time. 3.4.5 Brainstorming. 3.4.5.1 Introduction A.F. Osborn (1963) popularized this strategy through

his writing 'Applied Imagination'. It indicates storming of the brain to generate a number of ideas as quickly as possible

without passing any judgement 3.4.5.2 Definition This is a strategy for the development of higher cognitive abilities like

reflective thinking, creative imagination and problem solving capabilities. This strategy is used with a group of students to

explore a good number of ideas for solution of a problem.

148 3.4.5.3 Procedure for using brainstorming as a teaching strategy i) At first a small group of students (10-15 students) of a particular class is formed. They will be asked to sit in a group and will be given a focus topic say. "How will you find out the height of a tower without climbing it". 2) The teacher will then ask the students to think about the solution of the problem and give their ideas one by one or to list out the solution on a paper. They may be instructed as follows : i) The problem is placed before you, think about the possible solution or solutions as you may think suitable. ii) This is not an examination. Don't care for the criticism. Write down the possible solutions without any hesitation even if they seem to you quite new or unusual. iii) Students are also free to alter or modify their ideas and solutions given by them earlier in the session. iv) Student members are also free to alter or modify their ideas after discussion with others. 3) In this way, students will be encouraged and inspired for submitting as many as ideas or solution procedures as possible. The group members and the teacher as leader are supposed to collect the different solutions so that : a) All the solutions as ideas are to be encouraged and there will be no criticism during the brainstorming session. b) Ideas are to be listed without any judgement or passing remarks. c) Members are encouraged to supplement their ideas with others. d) All the alternatives or solutions are to be recorded properly on the blackboard for free discussion. 4) At the end of the brainstorming session, all the solutions and ideas collected from the group under the guidance of the group leader i, e the teacher will be discussed for the approval of the experts. Thus a variety of the solution or ideas are evolved. Advantages of the brainstorming strategy. 1) Students become active and discover the solution of the problem or new ideas and concepts.

149 2) Teachers act as guide. 3) The strategy helps the students to develop higher order cognitive abilities like think, analyse and synthesise independently. 4) It helps the students to develop their creativity, originality, potentialities and problem solving ability. 5) As it is a group activity, there are scopes for exchange of views, cooperative spirit and development of reasoning power. 6) The student acquires a real understanding and clear notion of the subject as well as mastery of what he has discovered. Disadvantages and limitations : Brainstorming strategy has the following disadvantages and limitations. i) It is a time consuming process and the syllabus may not be completed within the period of time ii) The group members may not be homogeneous with respect to cognitive level required for the discussion of the content. iii) The output of the brainstorming session may not be as per with teacher's expectations on expected outcomes. iv) At the concluding session, the result may not be the actual solution of the problem v) This strategy can not be applied in large class having 50-60 students vi) All the members of the group may not be equally interested to find the solution vii) All the topics of Mathematics may not be covered by this strategy. 3.4.8 Computer Assisted Instruction Introduction : With the introduction of New Education Policy in 1986, initiatives have been taken to use computer in the teaching-learning activities. In Mathematics, the instructional work so far carried out with the help of computer is generally known as computer - assisted Instruction (CAI) Definition Computer-assisted instruction is a method of instruction in which there will be a purposeful interaction between a learner and the teaching material as software of the

150 computer. It helps the individual learner to achieve the expected instructional objectives designed by the teacher with student's own pace and abilities at his command. Characteristics : i) It is an interaction between a student and a computer controlled display material. ii) The individual student observes the displayed material and responds to it iii) The instructional material as software is prepared by the teacher keeping in view the multidimensional need and capabilities of the learners. iv) It is a self-individualised instruction which provides instruction to a large number of learners at a time. v) It provides the opportunity for automatic recording of the learner's performance. vi) It provides a wide variety of methods and approaches for imparting instruction vii) The computer-assisted instruction helps the individual learner to achieve the objectives with his own pace and abilities viii) This type of instruction involves three types of technologies namely, hardware, software and courseware. Fields of Instruction in Mathematics teaching through computer assisted instruction. For providing self-individualized instruction to a learner, computer assisted instruction in Mathematics helps in the following fields 1) Discrimination of information related to Mathematics content. The main purpose of this type of CAI is to provide essential information as the context for example, a student wants to know the symmetric Matrix. The definition like symmetric matrix is a square matrix in which corresponding elements above and below the principal diagonal are equal should be mentioned. As Symmetric matrix is a square matrix in which the transpose of that is that it self is to be mentioned. Example $A = \begin{pmatrix} 1 & 2 & 3 & 2 & 4 & 6 & 3 & 6 & 7 \\ 2 & 1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 3 & 0 & 1 & 0 & 0 & 0 & 1 & 0 & 0 \\ 2 & 0 & 0 & 1 & 0 & 0 & 0 & 1 & 0 \\ 4 & 1 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 6 & 3 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\ 3 & 6 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 6 & 7 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 7 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ R & S & T & U & V & W & X & Y & Z \end{pmatrix}$, $B = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ L & M & N & O & P & Q & R & S & T & U & V & W & X & Y & Z & \end{pmatrix}$ Similarly, Super-ordinate and sub-ordinate concepts are to be given in the software.

151 2) Drill and practice programme. CAI provides different types of drill and practice programme covering specific topics. Example : To draw the conceptual Hierarchy of quadrilaterals like parallelogram, Trapezium, Rhombus, Square etc.

3) Simulation type instruction Such type of instructional activities, carefully prepared programme are given to students. They practice it and are trained.

4) Problem solving type Here, the students are provided with programme that will allow them to think about the ways and means of solving the problem systematically like drawing of groups with two equators.

5) Tutorial type instruction The tutorial programme are prepared, where the students can play effectively through interaction and dialogue. The programme also provides remedial instruction.

6) Practical work related instruction CAI can provide help in supplementing practical work like drawing geometrical figures, calculations, checking the result, consultation with tables etc.

Limitation 1) It is expensive and uneconomical. 2) It is machines oriented it can never match the human beings. No sympathy or human touch are available.

2) It is machine oriented it can never match the human beings. No sympathy or human touch are available. 3) It is basically a learners - controlled instruction, There is little scope to check the learner causing wasting of time.

4) Chances of machine failure are there causing a set back in the system.

152 3.5 Creating Different Situations of Learning Engagement 3.5.1 Group Learning Students grouped together, who are emotionally intellectually engaged in solving a mathematical problem is called group learning, such students grouped together working on usually one project. It is an assembly in which each learner learns autonomously and through the ways of learning of others. In teaching of Mathematics, often teaching one or two Units of contents, the teacher prepares some problems covering the mathematical concepts of those Units and assesses the students to solve the problems in groups. For example, after discussing the topic 'Height and Distance'. The teacher may form two groups comprising of at least 20 students in each group have similar emotional and intellectual levels. Topics of discussion :

1) Devise a plan for finding the height of a tower without climbing on the top of a tower. 2) Solve the following problems related to 'Height and distance' and give the suitable diagrams.

a) Find out the height of a tower situated at a distance of 3 meters whose angle of elevation when viewed from point is 60° and 30° when viewed from the top of a house (height 10 mts) b) The second group of students will be assigned to frame a question paper consisting of items as per table of specifications or the test blue print.

Unit Trigonometry Class IX Behaviour/ Recall Identify Change Find Verify Total Concept Magnitude 4 4

— — 8 of an angle Unit measure 2 — 4 — 6 of an angle Trigonometric 4 — 2 — 4 10 ratio

153 Variations in 2 2 — — 4 trigonometric ratio for $0 < \theta < 90^\circ$ Trigonometric 2 2 — 4 4 12 ratio of specific angles

Angles of 2 — — 2 — 4 elevation and depression Simple cases — — — 4 2 6 of heights and distances 16 8 6 10 10 50

Features of group learning— 1. Members of learning groups include adult (teacher) as well as students of the class. 2. Documentations of learning outcomes must be maintained to evaluate the progress. 3. Members are to be engaged in cognitive, affective and psychomotor dimensions of learning. 4. Learning will be extended beyond the learning of individuals to create a collective body of knowledge. 5. The make up of the group (i.e size, competencies, interest, motivation etc.) is an important consideration. 6. Group learning focuses on how to learn in groups and understanding of others. Advantages of Group learning in Mathematics teaching :

(a) Group learning encourages peer dependence, especially by students with learning difficulties. (b) Working in a group in Mathematics teaching and learning provides learners the opportunities to articulate ideas and understanding.

154 (c) It helps to negotiate with others to create new understanding as reach consensus. (d) It proves the scope to uncover assumptions and misconceptions. (e) It enables the students to discover deeper concepts of Mathematics in the context and improves thinking power. (f) Group learning engages students with higher level content i.e thought provoking, difficult to understand on the multiple interpretations of a simple or concept. 3.5.2 Individual Learning : 3.5.2.1 Meaning Individual learning

is a strategy of instruction in which content, materials and pace of learning are based upon the abilities and interest of each individual learner. This method presumes that needs and capabilities of individual students are different with respect to mathematics learning and thus be differently addressed. 3.5.2.2 Perspective of individual learning 1. Each student learn differently. 2. All students are talented in Mathematics in different ways. 3. This process will meet the unique mathematical needs of the child. 4. This process will meet the unique educational needs of the child in Mathematics. 5. Careful progress are to be carried out in the process. Thus Individualised instruction strategy refers to those classroom practices of teaching which recognise the uniqueness of each student learner and for this provide adequate guidance and other support services suited to them. 3.5.2.3 Characteristics of Individualised Learner : Mathematics develops the ability to each and every student :

(a) How to analyse a situation (b) To make proper estimates and approximations

155 (c) To devise and use formulae, rules of procedure and methods of making comparisons. (d) To represent designs and spatial relations by drawing. (e) To be accurate and to be systematic in our work habits. In this perspective the characteristics as purposes of individual learning are the following : (i) Individual learning provides opportunities to learn at this own pace, in their own way and to be successful. (ii) To prove a learning environment that will maximise the potential for student success in Mathematics. (iii) In this strategy teachers do not stick to the same pattern of teaching rather adopt new ways so that students get multiple options. (iv) The process enables the teacher to explain a lesson or demonstrate to small group of students at a time. (v) In individual learning, importance is given to a child as individual not as group or class. (vi) The method intends to maximise each student's growth and success. (vii) In this process each student has to note down what he/she usually understands which helps the long term retention of mathematical concepts, laws or proceduse. (viii) Individual learning is concept focused and principle driven. 3.5.2.4 Principles of Individual Learning In executing the individual learning strategy, the following principles are adopted: (a) To make the students clear about the key concept and necessary knowledge for gaining strong understading. (b) Assesment should occur before, during and following the instructional strategy. (c) Emphasis and stress will be given more on critical and creative thinking of the students while preparing a lesson plan.

156 (d) Engaging all learners is essential. (e) Guiding factors will be (Tomlinson 2001) (i) Contents (include concepts, generalization of principles, mathematical law, rule and skill) (ii) Process (Varying learning activities to provide appropriate methods for students to explore the concepts) (iii) Products : Below grade students show reduced performance. Above grade students exhibit more advance thinking, understanding and application. 3.5.2.5 Steps of Individual learning Eight steps are followed to support individual learning. 1. Read the curriculum Teachers to be entrusted for the individual learning strategy must be conversent of the goals, subject matter (content) and evaluation criteria of the whole course. 2. Define the core skills of the course : Expectation to be taught. For this the specific content, facts, concepts and skill are to be identified. 3. Mix and match a wide range of learning methods: Any single method can not be the best way for us to learn. Various methods are to be adopted for complete learning. 4. Revise the skills. Repeations is necessary for obtaining mastery on a skill. 5. Allow the students to set this own learning goals. 6. Teach, coach, encourage experiments and evaluate progress at every phase. 7. Give continuous feed back through monitoring and evaluation. 8. Give move support and give more challenging tasks individually.

157 3.5.2.6 Advantages of Individual Learning (i) Individual Learning is student centric. Focus is given on the academic needs and learning abilities of every individual student. (ii) Raises the standard of learning in a big way. (iii) It meets the needs and interests of diverse learns. (iv) Individual learning provides the opportunity for students to learn at this own pace. (v) The strategy recognises students, varying background knowledge readines and preferences in learning. (vi) The method maximises each student's growth and success. (vii) Individual learning helps students in provides the opportunity for students to learn at this own pace. (v) The strategy recognises students, varying background knowledge, readiness and preterences in learning. (vi) The method maximises each student's growth and success. (vii) Individual learning helps students is providing opportunities for the uniqueness of each child interms of his learning style, potentials, talent as well as learning deficiencies. 3.5.2.7 Criticism against individual learning (Disadvantages) ••••• In the individual learning method, students will get insufficient interactions with peers. ••••• The students feel lonelines and the strategy may create boring. ••••• It neglects the norms and values of all round development. ••••• The method requires self discipline which may not be available in mathematics learning. ••••• The strategy of individual learning focuses on self-interest and personal success and ignores the success and/or failues of others. ••••• Class size and teaching load are two biggest constraints in the method. ••••• There is a time constraint in the process. ••••• Teachers preparedness is difficult for the process.

158 •••• In case of drill and practice oriented content, this method is time consuming and not economic. 3.5.3 Small group learning 3.5.3.1 Introduction Like the group learning, small group learning is an educational approach. Here the class is to be divided into few small groups consisting of 5-7 students in each small group. After teaching a unit of Mathematics in a class, the strategy of small group teaching is to be applied for more attention to individual learner. 3.5.3.2 Procedure : The small group work has to be carefully planned and requires a facilitator to ensure group progress group function needs to be assessed and evaluated. A structured activity is to be given to the members of small group to work together. They are individually accountable for their work and the work of the group as a whole. Teachers become learners at times and learners sometime teach. The meta-analysis demonstrate that various forms of small group learning are effective in promoting greater academic achievement in Mathematics. A favourable attitude towards mathematics learning will be developed. In this process every member will respect others. Members must draw upon their past experience and knowledge. Group members are to be invested in their own learning. Diversity is to be celebrated and all contributions by members to be given due value. Advantages 1. Small group learning allows students to develop problem solving ability, interpersonal, presentational and communication skills. 2. It offers tolerance and positive interaction facilities among participant learners. 3. In small group learning students become capable of ownership of new knowledge and skills. 4. They get the opportunity to solve real world problems. 5. Positive attitude towards the content and motivation to learn are also developed.

159 6. Each member gets the opportunity to contribute in small group learning. They learn to deal with conflict. Each of the group members gets the opportunities for personal feedback about their ideas. Disadvantages— 1. Some claim, small group work is an avoidance of teaching. It allows the teacher to escape his/her responsibility. 2. In this learning students' abilities are not accurately reflected. Both high and low achiever get same reward. Suggestion : Teacher will resolve small groups conflicts as soon as they arise. They must help the students to reflect on their progress on a regular basis. Gigsaw Cooperative Learning : Introduction : Gigsaw puzzle is a mysterious problem that can only be solved by connecting several pieces of information. 1. Introduction : It is a research based Co-operative learning technique invented and developed in the early 1970s by Elliot Aronson and his students at The Univ. of Texas and The Univ. of California. It is used with great success. In teaching Mathematics, this technique promotes better learning, improves student motivation thus removes mathematics anxiety and increases enjoyment of the learning experience. 2. Principles : •••• Like Gigsaw puzzle, each part of a lesson as well as each student's participation is essential for the completion and complete understanding of the learnt topic. •••• As each student's participation in the class room teaching is essential so students' absenteeism is reduced. •••• To shift the emphasis from a quite competitive environment of Mathematics class to a more Co-operative one. 3. Steps in Gigsaw techniques of teaching : There are 10 easy steps in the technique.

160 Step one The students of the class is to be divided into 5 or 6 person Gigsaw groups. The groups should be diverse in terms of gender, race and mathematical ability. Step two : One student from each group is to be appointed as the group leader. Initially, this group leader should be a matured and advanced level student in Mathematics. Step three : (i) The day's lesson is to be divided into 5-6 segments. For example in teaching the area and circumference of a circle, the segments may be i) examples of circular figures and objects. (ii) Definition of circle, circumference, area, radius, Diameter etc. (iii) To deduce the formula of the area of a circle with geometrical concepts. (iv) To deduce the formula of the circumference of a circle with geometrical concepts. (v) Practical Verification of the area and circumference with aids. (vi) To solve the problems related to the formulae (Simple to Complex). Step Four Each student is to be assigned with one segment. Care is to be taken so that students have direct access only to their own segment. Step Five Students will be given time to go through or thinkover their segment and become familiar with the content part. Thus is no need to memorise the segment. Step Six Temporary "expert groups" are to be formed having one student from each gigsaw group as leader. Other students will be assigned to the respective segment. Students of these expert groups will be given time to discuss the main points of their segment and to rehearse the presentation that they will give to their gigsaw group.

161 Step Seven All the students are to bring back into their Gigsaw groups. Step Eight Each student will be asked to present his or her segment to the group. Other students of the group will be encourage to ask questions for clarification. Step Nine The teacher/instructor will float from group to group for observing the process. If any group is having trouble (for example, a member is dominating, disrupting or not presenting up to the mark), then the teacher will take appropriate intervention. It will be best for the group leader to handle the task. The leaders can be trained by whispering an Instruction on how to intervenl or controll by the teachers untid it is solved. Step Ten At the end of the session, a quiz session on the topic will be organised. The students will particepate and will come to realise quickly that though the session is enjoyable but it is not just a fun but realy essential.

4. Flow chart of the process Today's Lesson (Topic T) is divided into few sub topics (T 1 , T 2 , T 3 , T 4 T 5) based on sub concepts of Mathematics. Students of the class (S) is divided into few groups having 5-6 students in each groups. These groups are called gigsaw groups (G 1 , G 2 , G 3 , G 4 etc.) Expert Group (E) will be five (E 1 , E 2 , E 3 , E 4 , E 5) for each sub concepts. Gigsaw Groups (G 1G 4) G 1 S 11 , S 12 , S 13 , S 14 , S 15 Assignment to each student (S 11 , T 1); (S 12 , T 2); (S 13 , T 3) (S 14 , T 4) (S 15 , T 5) G 2 S 21 , S 22 , S 23 , S 24 , S 25 (S 21 , T 1); (S 22 , T 2)(S 23 , T 3) (S 24 , T 4) (S 25 , T 5)

162 G 4 S 41 , S 42 , S 43 , S 44 , S 45 (S 41 , T 1); (S 42 , T 2)(S 43 , T 3) (S 44 , T 4) (S 45 , T 5) G 3 S 31 , S 32 , S 33 , S 34 , S 35 (S 31 , T 1); (S 32 , T 2)(S 33 , T 3) (S 34 , T 4) (S 35 , T 5) Assignd E 4 (S 14 , T 4); (S 24 T 4); (S 34 , T 4) (S 44 , T 4) E 2 (S 12 , T 2); (S 21 , T 2); (S 22 , T 2) (S 32 , T 2) (S 42 , T 2) E 3 (S 13 , T 3); (S 23 , T 3); (S 33 , T 3) (S 43 , T 3) E 1 (S 11 , T 1) (S 21 T 1), (S 31 , T 1) (S 41 , T 1) E 5 (S 13 , T 3) (S 23 T 5); (S 33 , T 3) (S 43 , T 5)

Expert groups (E 1 ---E 5) Expert groups formed by subtopics specific Original Groups, (G 1 + G 2 + G 3 + G 4) G 1 + G 2 + G 3 + G 4 Reconvene and listen to final presentation on from each members Similarly for gigsaw groups

163 5. Advantages 1. The techniques works even if only used for a period per day. 2. It can be applied in teaching different subjects along with Mathematics. 3. The teachers feel comfortable by woming with it 4. It is very simple but effective. 5. It is an efficient way for students to become engaged in this learning. 6. Students learn a lot of material quickly. 7. Gigsaw method maximizes intereaction and establishes an atmosphere of Co- operation and respect for others students. 8. This method maximises accountability for students learning. 9. It is verified that students performed significantly better, their interpersonal skill and communication skills are developed. 10. This method helps the students to minimise listing time but expands their thinking and understanding. 6. Limitation (i) It is very difficult to control when a dominant student will talk too much or to control the whole group. (ii) The weak or Underachiever may not be able to create a good report for their group. (iii) The talent group on the other hand may be bored working with slower students. (iv) Teacher may not be satisfied with the expected out comes from the students. 7. Conclusion : The theoretical aspect of gigsaw method has been included in B.Ed curriculum. But to find out the efficacy of the method in teaching Mathematics, the allthough has undertaken a project under centre for pedagogical studies in Mathematics (CPSM).

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3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

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Unit-1

Nature of Social Science Structure : 1.1 Introduction 1.2 Objectives 1.3 Concept, Scope and nature of Social Science 1.4
Difference between Social Science and Social Studies 1.5 Aims and objection of teaching Social Science at school 1.6
Significance of Social Science as a core subject 1.7 Role of Social Science teacher an egalitarian Society 1.8 Check Your
Progress 1.9 Let Us Sum Up 1.10

References 1.1 Introduction Social Science is an integral part of School education. Along with other subject like language,
science and mathematics social science gives the students knowledge and understanding of the concrete realities and
situations of life and aims at developing the skills to deal with several requirements of life. The course on teaching of
Social Science is designed not only to provide the teachers with
the pedagogical principle involved in teaching of

Social Science. In this unit the course focuses on concept, scope and nature of social science, difference between Social Studies and Social Sciences, significance of social science and the role of social science teacher for an egalitarian society. 1.2

Objectives At

the end of

this sub-unit, you will be able to State the meaning of the

concept of

social science. Describe the significance of learning social science.

10 Determine the concept of social science teaching. Know the different perspective of the concept of social science. 1.3

Concept, Scope & Nature of Social Science Concept : Social science has a broader aspect which is related with the diverse concerns of society. Social science include in its course the disciplines of history, geography, political science, economics, psychology and sociology. It is a course of study with the society. It denotes the history of society with its emergence and downfall along with its continuous process. In a broader term "social science is a major categories of academic disciplines concerned with society" but it should be added that social science reveals the relationship among individuals, and their outlook to society. Moreover, it can also be said that the social science exerts an important responsibilities to make the base for social values and also human values, freedom, trust, mutual respect, sense for heritage etc. According to James High "Social Sciences are those bodies of learning and study which recognizes the simultaneous and mutual action of physical and non-physical stimuli which produce social

relation" Social Science is defined as any scholastic discipline that investigates human society. The concept of social science teaching basically should be aimed of

investing in a child a moral energy and mental supports so that he or she can think independently and deal with the social forces,

that threaten these values. Thus, the concept of social science and the

teaching of social science has been linked up to the role of an individual in contributing to this development of personality. Gender concern also

need to be addressed in terms of the perspectives of women.

Environment studies is viable with the concept of social science. From primary education only it should

be introduced, then a child may be initiated to locate and comprehend the relationship between the natural environment and social

science. Later, in higher classes the concept of social science among them could be more explicable and it can discuss the relation between natural diversity and socio-cultural diversity. The skill of observation and experience can create cognitive capacity within the learner thus, the concept of learning and teaching of social science creates a new approach in education.

11 Scope & Nature : The scope of social sciences is multifarious. The study of social science is vital for the future of our civilization and society. The answer of modern problems and its remedies can be detected through social science. As social science is contained with different subjects so

the scope of social science is vast. The scope of analysis of the facts and

figures, problems and other things can provide society with so many important answers and observations that may improve the understanding of our lives

which helps us to improve our interaction with each other. Thus, social science will provide all types of social situation & psychological condition. There are different subjects in social science. It is an important scope to inculcate different areas of social science. As for instance, we should say that

geography and economics may together help in developing a proper perspective related to the issue concerning environment, resource and development at different levels from local to national level similarly Indian history will be taught

emphasizing the concept of plurality and change. Nature : The

nature of

social science is classical based on

a wide range of content drawn from the disciplines of history, geography, political science, economics and sociology.

Social science always tries to find out its relevance with the society. The nature and outlook of social science is

based on scientific approach. Social science advocate for scientific inquiry like other science subjects. To search the logic and reason of human sciences (History, geography, economics, political science etc.) is the specific nature of social science.

The major thrust of social science curriculum has remained utilitarian in nature and it put more emphasis on developmental issues for mankind. Thus social science makes a broader outlook and classic nature. 1.4 Difference between Social Science and Social Studies : There is a debate regarding the difference between social science and social studies. Social science develop ideas on subjects but social studies has an objective outlook regarding subject.

It is social study through which students understand their own social environment and they use to learn the pedagogical approach of subjects. Social science allows them more to learn. It is the philosophy and meaning of the subject which social science brings to them.

12 Generally it can be said that the social studies are concerned with man and his interaction as well as his relation with social, cultural economic and physical environment. In a nutshell it can be said that in social studies, studying human beings and its perspective towards society is important. If we carefully try to understand what is the difference between social science and social studies, we will see that the area of social studies and its objective has a more wider space. In NPE core curriculum (1986) it is described that social studies should deal with the ideas of humanism, secularism, socialism and democracy. The chief aim of reading social studies is to know the society and to develop skills and attitudes for producing conscientious citizens. Through social studies a teacher can equip himself with the needed attitude and outlook absorbed in making a good citizen as well as good students. On the part of learner the social studies has a promising outlook. Actually social studies prepare a student to investigate his past. It can be done through history, learner should be attentive about his whereabouts and surrounding as well as environment through studying geography. Social studies supplies the information on needs and desires of the people along with their psychological condition through reading psychology. How people will be supported financially, what would be his procurement, all of these things can be discussed through economics, sociology and political science. It shows them the way of a broader aspect of administration, nations and civilisation. Thus it is seen that through social studies students would be well aware of his time, space, society, background and outcome. These studies have a confluencing effort. Now we can compare social science with social studies to a specific point. The point is that social science deals with facts and material objects, language with communication and mathematics with quantity accounts but social studies deals mainly with the socio-economic relationship among the people. It makes the study of the life of the pupil in society and it tries to discover society's needs and priorities, the emerging aims and objectives of teaching social studies should be discussed here. In this context we should say that social studies help learners to develop greater awareness among themselves, to classify and examine their values and to establish a sense of self-

identity. It provides learners with a knowledge of human system in areas of economics, culture, and governmental administrative process. Social science is the branches of the study of human society and social relationship. Social science is a subject that deals with the study of social life of people or groups

13 of individual. Social science is related with study and observation. Social science includes different subjects such as history, geography economics, psychology, political science and sociology. All of the subjects are important in relation with social science but study of sociology, history, geography and economics form a very important part of social science. The scope of social studies has a multifarious direction. The objective is also different. Social study is the combined study of social science and humanities. Social study helps to make healthy citizens. Social studies varies greatly among the countries according to their social, cultural and economic set up. The texture of social science remains same and it has a common area in different countries. Social science is the study of society and the manner in which people behave and work and influence the world around us. John Dewey opined that the concept of social science is a social enquiry. According to NCERT. "

The social science encompass diverse concerns of society and include a wide range of content, drawn from the disciplines of history, geography political science, economics and sociology.

The social science carry a normative responsibility to create and widen the popular base for human values, namely freedom, trust, mutual respect for diversity etc." Social

studies has a practical base regarding the utility of education which could be meaningful and necessary for society. It has a wider range of action. It is not only confined to the classroom. It tries to prepare students to become well informed and constructive participants in society and capable of developing healthy relationships. The aims and objectives of social Science are more dynamic because it has to change itself by generation after generation. New generations have started facing new challenges. New social rules are introduced new ideas which used to challenge the old ones due to the change in Socio politico and economic situation. There is a comparative study regarding the difference between social science and social studies. Some scholars say that social studies is no doubt a separate branch of studies but it is called 'Social science' when studied at a higher level. The term social studies is an age old term. According NCERT social studies is 'a field of study which deals with man, his relation with other men and his environment on understanding of human relationships, knowledge of the environment, dedication to the basic principle and values of the society in which it is taught and a commitment to participate in the process through which that society is maintained and improved. A careful analysis will prove that social studies touches all aspect of human life and human relationship, side by side it derives and inculcate knowledge of all social

14 sciences. When not a student but a common man think of social studies, he or she give stress on social problems or current events but in the case soical science he or she will be attentive on subjective mood. Poeples generally concentrate on the theory part of human and social affairs, problems etc. in term of social science but no doubt social studies is the practice part of human and social affairs. Commonly it is told that social science and social studies receiprocate each other from different angle but at a higher level of studies, Social Science concentrate on investigation, research and solutions to social problem. Social scientist is eager to expand the bond of human knowledge. His treatment is more analytical than the treatment given by a specialist of social studies. Social studies is more or less of a descriptive type when the information is truly Presented Social Studies provide a good foundation on which the structure of Social Science can be built. The concept of social studies has been discussed by different scholars. In the words of J. F. Forrester "Social studies as the very name suggest in the study of society and its chief aim

is to help pupils to understand the world in which they have to live and how it came to be, so that they may become responsible citizens. It aims of promoting critical thinking and

a readiness for social change, at creating a dispositions for acting on behalf of the general welfare at an appreciation of other culture and

a realisation of the interdependence of man and man and of nation and nation." The secondary education commission in India (Mudaliar commission 1952-53) states "social studies as a term is comparatively new in Indian education. It is meant, it cover the ground traditionally associated with history, geography economics, civils etc. The whole group of studies has therefore to be viewed as a compact whole where object is to adjust the students to their soical environment which includes the family. Community, state and nation." Thus it is seen that social studies has a seperate identity. Obvioulsy there are some differences between social studies and social science. The focus and emphasis of both are different. Social Science represent an adult approach, while the social studies represent a child approach. Social Science are the theory part of human affairs Social Studies are the practice part of human affairs. The Social Sciences are far larger than the Social Studies.

15 1.5 Aims & objectives of Teaching Social Science

at school level. Aims and objectives of teaching social science of school level has a far reaching effect.

Social science curriculum consist of

a wide range of contents drawn from the disciplines of history, geography, political science, economics and sociology. The selection and organisation of material into a meaningful social science curriculum is the primary aim and objectives of teachig social science at school level. To enable student to develop a critical understanding of society is another aim of social science. Social science expresses the views that student's own life experiences is very important.

The objective of social science is

to create and widen the popular base for human values, nearly freedom, trust, mutual respect, respect for diversity etc.

Thus,

it is seen that

social science teaching basically should be aimed at investing in a child a moral and psychic energy so that he or she can think independently and deal with the hostile social forces while threaten their values. Aim and objectives of teaching social science at school level is to prepare a student philosophically so that he or she can understand the meaning of (Co-existence) between individual good and collective good. Social science tries to create a non-coercive & participatory mode, among childrens and teachers so that the best chance of making teaching and learning interesting as well as enjoyable.

Social science created different disciplines like history, geography, political science and economics and its methodology with pedagogy, gradually social science put some new ideas on teaching different subjects at school level.

Planning the curriculum at the primary stage,

the natural and social environment should be taught as an integral part of language and mathematics

along with other subjects. Children should be engaged in

such activities that

would help them in promoting and understanding about the natural and social environment. Another aim and objective of teaching social science at school is to make the students conscious with gender sensitivity. It is new ideas of

contemporary age. It is also to

be mentioned that

understanding in social sciences

at school level should be based on observation and illustration which is needed to be drawn from

the physical, biological, social and cultural aspects of life

because

it is important for the child to develop the skill of observation, identification and classification.

Through these power of observations, identification and classification a student can be competent to draw the analogies between natural diversity and socio-cultural diversity. Thus, the social science teaching based on observation and experience which can create cognitive

16 capacity within the child.

At the upper primary stage the subject area of social science is generally based on history, geography, political science and economics.

Side by side a new syllabus should be framed by

introducing the learner to social & economic problems and emphasis

should be made on issue like poverty, illiteracy, child and bonded labour, gender and environment.

Indian history will be taught defining and giving stress on the concept of plurality and change. At the secondary stage

the aim and objectives of social science will be broader. It should comprise the elements of history, geography, political science and economics. The higher secondary stage is

considered important as it offer different choice of streams to the students according to their Issues, During this period the teaching of history should be placed on a broader sense. Issues related to

geography should be taught keeping in mind the need to inculcate in the child a critical appreciation for censure and environmental concerns. In political science

the focus should be on discussing the philosophical foundations based on the value framework of the Indian constitution.

If economics as a subject should be discussed from the perspective of the masses, the sense of economic reason to clarify any social economic matter is important. To sum up it can be said that the foundation of teaching social science needs basic knowledge, skills and attitudes to make meaningful contribution in any field, they choose. Thus, it is seen that the aim and objectives of social science are larger to expand the bonds of human knowledge and teachers should resort to the techniques of Team teaching wherever possible to develop and socio scientific culture which is the general need of the hour.

1.6 Significance of Social Science

as a core subject The subject social sciences indicate the importance of the relationships between the key disciplinary contributors to this learning area. Together they provide a broad understanding of how societies work, and how people can participate as critical, active, informed and responsible citizens with high level skills needed for the twenty-first century. Social Science as a core subject of school

aims at enabling the student not only to adjust himself to the environment but also to improve his social, cultural, economic

and physical environment as an active group member.

Social Science also

includes development of knowledge, skills, attitudes and values through the activities of reading, writing, observing, discussing, creating, practicing, playing, problem solving, exhibiting and developing relationships etc.

The significance of Social Science as a core subject has multi-dimensions. It can provide us with so many important answers and observations that may help to improve the understanding of our lives and then help us to improve our interaction with each other. In this context the philosophy of Social Science related with core subject is to be discussed.

It may be defined as the rational and systematic study of human society in all its forms with the aim of arriving at an enduring understanding, acknowledged as such by a broad consensus of researchers of social phenomena. It gives scientific explanations of certain social phenomena. Here, conceptual analysis is needed. Actually the objective of social and behavioural science component of a core curriculum is to increase students knowledge, to discover, describe and explain the behaviour and interaction with individual group, institutional event and ideas. Students develop knowledge and skills to enable them to: better understand, participate in and contribute to the local, national and global communities in which they live and work; engage critically with societal issues; and, evaluate the sustainability of alternative social, economic, political and environmental practices. Social Science/learning as a core subject involves : critically examining society, social practices and social issues incorporating a range of theoretical perspectives such as socio-cultural, feminist, postmodern, postcolonial, indigenous and others used in the contributing disciplines using teaching approaches that are constructivist, socio-ecological, participatory, experiential, inquiry- or problem-based using teaching strategies that promote questioning, problematising, critical inquiry, values exploration, social decision-making gathering, verifying, evaluating and synthesizing multiple sources of data and using information communications technology allowing for personal growth, and the development of individual and collective responsibility

18 connecting with students' social, affective, aesthetic, moral and spiritual development making judgments about appropriate personal and social actions. The Social Science learning as a core subject will be the activity of gathering, analyzing and interpreting information for a variety of social, economic, educational and political purposes. So the Social Science teacher needs to be familiar with a range of social research method. Ability to conduct proper social research is significant to any social science qualification. Thus, it is seen that as a core subject Social Science is important because it helps to knowledge structure. Simultaneously. to prepare the environment of relevant understanding the role of Social Science teacher is creative. Social science as a core subject not only defines and validates societal aims. it also has the capacity to provoke learners to critically examine them on the anvil of universal values of social justice and environmental susiainability.

In most democratic countries Social Science make the greatest possible contribution to citizenship education in the broad sense of maximum personal development, human relationship and loyalty to the principles and practices that support freedom.

Thus, the objective of teaching Social Science as a core subject is to help students to acquire knowledge of their own physical. social and economic environment, and understanding of human relationship. It also helps to achieve certain attitudes and values which are vital for intelligent participation in the affairs of the community, the region, the state, the

nation and the world. 1.7 Role of Social Science Teacher for an Egalitarian society : Egalitarian society is a favourable society for a social science teachers. An egaliterian society believes in treating people equally through giving people equal right and opportunity. This society advocates for the protection of human quality with respect to economic, social and political right. It advocates to drive out of inequality in the society and determination based on gender, race, religion etc. Role of social science teacher in this respect is very important. They should take the role of pioneers to precach these ideas. Social science teacher deals with attitudes, ideas and other knowledgable matter to a large extent. Teacher of social scince have the duties

to assist

pupils to understand this complex world in which we live.

Social science teachers should have faith on the socialisation of the people in society and will

19 develop trust, equality, logical thinking among the students. He should be careful to the mission of egalitarian society for making good citizens of the nation. The role of social science teacher would be as a guide, philosopher and friend. In this respect teacher should make his school as a centre of social reconstruction for a new social order. The teacher should arouse intellectual interests and would be careful to open social insight and understanding. Now, the question comes what the students will learn from the teacher? In this respect we can say that philosophical ideas are important. An egalitarian society is based on philosophical ideas which would be useful for the students. So a social science teacher must be careful about different sociological ideas. Indian society is a multicultural society. In India there are different religions. So an assimilation is important. Teacher will develop the spirit of tolerance and democratic ideas among the students. This role of teacher is very much helpful to form an egalitarian society depends on democracy. After the Renaissance the idea of democratisation in the sphere of education achieved a new dimension in educational thoughts. The idea of citizenship based on it. In this respect teacher should make the student very much aware of social interaction. There are different subjects in social science, so social science teacher should have some preliminary ideas on these subjects. A basic knowledge on social science is also needed. Teacher should try to combine the family, community, state, nations and international understanding through a scientific process. A knowledge of methodology is needed to specify gender, race & religions. Now it is noticed that the process and arena of social science is changing very fast. A teacher must be well aware of it. The reciprocating process is more important to deal with the student. To arouse interest in the matter is more important. Teacher will find the stimulus and helpful areas of social science. Competency of teachers is needed in all respects. Thus it is seen that performance, competency and transaction related competency are important in the life of a social science teacher. Now social inequalities are more prominent especially in developing countries of the world because of the limited capacity for economic growth. In the sphere of education, egalitarian process has identified three aspects to the questions of equal educational opportunities to the people. It gave stress on the idea that a social science teacher should make equal treatment during education irrespective of social origin. The second approach to equalising educational opportunities is to ensure that all students will get equal treatment during educational process. The third approach is to provide equal opportunities for

20 the students. So education is one of the instruments through which most societies advocate for social equality. In an egalitarian society the scope of teaching are based on various mediums. A social science teacher should be well conversant with the use of teaching aids like (epidiascope), films, strips, projector, computers etc. Side by side a social science teacher should be well aware of suitable source material and appropriate method of teaching, good command over the language and good conversational pattern is important. The power of correlation is necessary and ability in planning, supervision, organisation and management makes a teacher competent. Modern educational world opines that "the content of social science changes as the world changes time to time so a social science teaching would be versatile and he/she should cope up with the change. It is expected that he/she should have a full hold on any of the two subjects among, history, geography, sociology and political science. Teacher shall be well aware of extra-curricular activities as well as co-curricular activities. Co-curricular activities like games, daily performance, excursion community and group activities should be guided by social science teacher because these activities help the student to realise the subjects. It provides different thoughts and derived social qualities in students. Lastly, it can be said that to make a successful egalitarian society a teacher should know the proper teaching method. He/she should be careful to choose source material. He/she should have good command over the language and he/she should have the abilities to prepare and use relevant teaching aids. Thus, a teacher would be able to create the atmosphere of learning for all and the aims of egalitarian society.

1.8 Check Your Progress 1. What does social Science decide as an area of study?

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21 2. State the concept of social science.

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3. What is the nature of social science?

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4. State the differences between social studies & social science.

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5. What are the aims and objectives of teaching social science at school level?

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6.

Mention the main aspects you would consider Social Science subject as a core subject.

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7. What is Egalitarian Society?

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22 8. State the

role of social Science teacher for an egalitarian society?

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1.9 Let Us Sum Up

The present unit has attempted to provide the basic concepts about the meaning, nature, scope and significance of social science and various approaches of social science curriculum. This unit also deals with the role of social science teacher which is very significant to develop in pupils an outlook in egalitarian society for making good citizens and new social order. And it is expected that a teacher will be able to create the atmosphere of learning for all and the aims of egalitarian society. 1.10

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23 Unit 2 Curriculum

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a) Principles of framing history curriculum 2.3.1(b) Principles of Organising Geography Curriculum at school level 2.3.2 History

Curriculum at school level 2.4 Instructional Planning : Concept, need and importance 2.5 Unit Plan and Lesson Plan : need and importance 2.6 Procedure of Unit and Lesson Planning 2.6.1

Unit plan procedure : 2.6.1.1 Organising the subject matter and learning experiences 2.6.1.2 How to proceed 2.6.1.3 Unit plan format 2.6.2 Procedure of lesson plan 2.6.2.1 Model lesson plan format: I 2.6.2.2 Model lesson plan format II. 2.7

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References 2.1 Introduction

The vital and most significant component of any teaching learning process is the curriculum which reflects the ideology and Philosophy of a nation as enshrined in its constitution. Keeping in mind the learning objectives of a particular stage of education, certain planned experiences are presented before the learners of that stage of education which would help the learners to achieve those specific learning objectives in the long run. These experiences are termed

as 'curriculum'. "The experiences are

24 suited to the age of the learner, the emotional, physical and intellectual maturity of the learner and his previous experiences and learning." Curriculum derives from a Latin word "couriere" which means a 'race course' to be covered within a specific time period to reach the goal. The Secondary Education Commission (1952-53) defined curriculum in a very comprehensive way

that

it "includes the

totality of experiences that a pupil receives through the manifold activities that go on

in the school, in the classroom, library, laboratory, workshop, playground and in the numerous informal contact between teachers and pupils.

In this sense the

whole life of the school becomes the curriculum which can touch the life of the students at all points and keep in the evolution of

a balanced personality."

Curriculum can broadly be classified as (a) subject-matter curriculum which includes separate subjects, correlated subjects and broad fields (b) developmental activity curriculum which takes into account the basic social and organic needs of the learners. In the broad field curriculum subjects are grouped into broad areas like language, natural science, social science etc. "

The social sciences

encompass diverse concerns of society and include

a wide range of content, drawn from the disciplines of history, geography, political science, economics and sociology.

The selection and organisation of material into a meaningful social science curriculum, enabling students to develop a critical understanding of society, is therefore a challenging task. The possibilities of including new dimensions and concerns are immense especially

in view of the student's own life experiences."

The Secondary Education Commission (1952-53) states that, "

The basis of teaching must be the organisation of subject-matter into units or projects which would create opportunities for self-activity on the part of the students." 2.2

Objectives After going through this unit you will be able to : 1.

Explain

how to organize history and Geography curriculum at school level. 2. Describe the various principles of organizing history and Geograph curriculum at school level.

25 3. Analyse the concept of instructional planning, its needs and importance. 4. State the concept of unit plan and lesson plan, its needs and importance. 5. Prepare unit and lesson plan of history and Geography for children with disabilities at school level. 6. Discuss the concept of pedagogical analysis. 7. Construct pedagogical analysis in Social Science for school level. 2.3

Organization of Social Science (History & Geography) Curriculum at School Levels

History is most often said to be the "mother" of the social sciences. The definition of history given by Johnson in his book 'Teaching of History' is very comprehensive. He said "History, in its broadest sense, is everything that ever happenedhistory, in its usual acceptance of the term means history of man."

History is the scientific study of the past, concerned with man in time and space which put emphasis on evolution, growth and development of human civilization through the ages. The scope of history is very wide, vast and comprehensive as it has expanded vertically and horizontally. Therefore, the selection of content and organization of content of history have to be made very carefully and logically while framing the curriculum of history at school levels.

2.3.1(

a) Principles of framing history curriculum : Following principles should be kept in mind for curriculum construction in history : a. The curriculum should be based on the aims and objectives of teaching history at school level. b. The curriculum should be suited to the age, capacity and ability of the pupils for whom it will be framed. So it should be learner centered. c. There should be a functional relationship between the content of the study. d. Curriculum should provide a totality experience of man's evolution on earth. e. It should lay emphasis on promotion of social justice, democratic values, national integration and international understanding.

26 2.3.1.(

b) Principles of Organising Geography Curriculum at school level: a.

Proceed from known to unknown:

Teaching of Geography should start from the micro level or local Geography study. It will follow the maxims of teaching: ? Proceed from known to unknown ? Proceed from concrete to abstract ? Proceed from near to far b.

Emphasis on empirical observations of the learner in selection of Subject matter: The curriculum should provide ample opportunity to the learners so that they can learn by actual experience. Therefore, the curriculum should be practical work oriented. c. Use of Geographical Terminology based on home Geography: An all out effort should be made to provide to the child Geographical vocabulary from their surroundings. For learning island, delta etc. it is essential that they have ample knowledge of the geography of their area for this the geographical vocabulary from their surrounds should be used. d. Idea of human life throughout the world: The Geography curriculum should give an idea of human life and activities throughout the world to understand man-environment relationship. Keeping this aim in mind, students will be able to enter the world as practical citizen. e. Study in the synthetic way:

Various geographical facts should be presented to the child in a synthetic way. Geography is a practical subject and it should not be a collection of Geology and Astronomy etc. It should be presented as an integrated subject.

e. Emphasis on physical and economic Geography: In any curriculum of Geography, physical and economic geography must be given their proper place. More emphasis is placed of these branches of Geography in later school days. e. International understanding: We cannot make a systematic study of all the countries of world in any curriculum of Geography. It makes it all the more important that we make our selection very carefully. An effort is made to put more stress on international understanding and interdependence of nations. h. Selection of subjects: Only elementary things of remote countries are included

27 in curriculum so that students know their situation. Only such topics which have international significance should be taught about these countries. 2.3.2.(b) Curriculum of Geography at school level:

There are three major components of Geography at school level. These are as follows: Physical geography and weather observation Regional geography and Map work The curriculum of geography at school level may be subdivided under the following headings. 1. General study of the world other than the country in which pupil resides. II. Study of home country and its relationship with other countries of the world III. While studying the world geography the following areas may be emphasized:

a. Movement of various planets, sun, earth etc. b.

Formation of day and night, change of seasons, movement of earth, change of weather, longitude and latitude.

c.

Surface of the land, flow of river and its causes, various water divisions of the world, currents, ebb and tide etc. d.

Atmosphere, weather, climate, temperature, pressure, rainfall, bands and divisions of the world, cyclone etc.

e.

Influence of physical conditions on human activities f. Important cereals and crops of the world, raw material.

g.

Mineral wealth and power, industry. h. Routes of trades, communication and development of big cities.

While carrying out the study of home country an effort should be made to acquaint the child about maximum of details of the country. For this purpose, maps, atlases and other teaching aids should be used. To acquaint students with home country

tours and excursions may be organized. For this specific purpose the regional method of teaching geography must be followed. The study of the following should be incorporated while framing the curriculum.

28 I.

Situations and locations of various physical divisions of the world, their longitude, latitude etc. II. Students are asked to measure the length and breadth of a specified region from the map so that they get a clear idea of physical divisions of the world. III. Study of natural or physical conditions including study of mountains, rivers, peaks etc. IV. To know the climate and its qualities a study of maximum minimum thermometer should be included. V. Study of pressure of area and wind. VI. Study of rain fall in the area. VII. A detailed study of mineral wealth of area. VIII. A complete study of animal wealth of area. IX. Study of industry, art, craft and trade. X. Comparative study of location of various trades and industries. XI. Study of industrial tours and cities. XII. Study of population.

While taking up the teaching of world geography different teachers follow different order of treatment of continents. However, it has now been concluded on the basis of various studies that the three southern continents should always be taught before Europe and North America.

The regional study of India should be taught at lower classes. Practical work: Map work should be given due importance and in junior classes we should try to clarify the meaning of map and scale. Maps should be used to teach relief. Before taking up the contour line method of showing relief, heights may be shown by shading. Three dimensional models can be used for interpretation of maps for the visually impaired students.

29

Study of physical and political divisions of the map of the world. Various means of communications like sea routes, land routes, air routes etc. Trade of perishable goods. Science and its influence on human life. Modern inventions. Local environmental studies. To keep a record of weather and seasons and to maintain charts for this purpose. 2.3.2 History Curriculum at school level : History has been given an important place in the school curriculum

for a long time. The scope of history is very large and vast, wide and long. It deals with human achievements in all walks of life-political, social, economic, cultural etc. There are also many types of history like local, regional, national and international. It is comprehensive in nature. There should be a reflection and an adequate coverage of all the aspects and all types of history in any school curriculum, so that the students will be able to get an over all idea of history.

The curriculum of

history can usually be divided into three broad categories : Ancient Period, Medieval Period and Modern Period. The landmark happenings led to the evolution of human civilization both nationally and internationally are selected as content for each period. Ancient Period of history should cover the following topics :

Concept of history-Pre-historic period and the Early man-The stone age-The copper bronze age- The sources of history- The River centric civilizations (

The Harappan civilization, the Mesopotemian civilization, the Egyptian civilization, the Chinese civilization). The iron age-The Roman civilization and the Greek civilization, The Vedic and the later Vedic Civilization, The Protest Movement- rise of Jainism and Buddhism, The rise of Empire or the age of imperialism in India - The Mauryan Empire, The Kushana Empire, The Gupta empire- The history of Bengal, The Deccan and South India, Relations with the outside world.

30 Medieval Period should deal with the following topics : Beginning of the medieval

period and its features, the sources of history-

rise of regional powers in Bengal, North India and South India- The tripartite struggle centering around Kanauj-contact of India with Islam- The Delhi Sultanate, The Mughal Empire, The

history of Vijaynagar and Bahamani kingdom in the south, Administration, society, economy and culture, Relation of India with the outside world. The Arab Empire and

rise of Islam, The Byzantine Empire, Feudalism in Europe, Rise of towns, Trade and commerce, History of China and Japan. Modern Period Should consist of the following topics : Beginning of the Modern Age-Renaissance in Europe, Reformation Movement in Europe, Geographical discoveries and exploration, growth of Nation States, The English Revolution.

The

Industrial Revolution, The American War of Independence, The French Revolution, The Democratic and Nationalist Movement in Russia,

Imperialism and

the First World War, The League of Nations, Rise of Fascism in Italy and Rise of Nazism in Germany, The Second World War, The United Nations Organisation and The Cold War.

The

Indian States and Society in the 18 th Century – The Rise of Regional Powers in Bengal, Maharashtra, Mysore and in Punjab. The beginning of the European settlements in India and the East India Company, The Anglo French Rivalry in the Deccan. The British conquest of India (1757-1856) : Expansion of the British Empire British occupation of Bengal, British imperialist policy, Anglo Maratha, Anglo Mysore, Anglo Sikh war. British administrative policy and the structure of government. British economic policies the drain of wealth, British agrarian policies impact of British economic policies, development of modern industries. British education policies and beginning of modern education. Social and cultural awakening in 19 th century India : Raja Rammohan Roy, Brahma Samaj Movement, Young Bengal Movement, Pandit Iswar Chandra Vidyasagar, Ramkrishna Mission Movement, Prathana Samaj Movement, Arya Samaj Movement, Aligarh Movement.

31 The Revolt of 1857- administrative policies and reform after 1858. India and her neighbours : war with Nepal, Burma and Tibet. The Peasant Movements and the Tribal Movement. Emergence of Indian Nationalism (1858-1950) : Factors behind the emergence of national consciousness, political associations and birth of Indian National Congress, activities of Congress from 1885 to 1995 National Movement (1905-1920) : Growth of militant nationalism and extremist politics, partition of Bengal and Swadeshi Movement, The Muslim League and rise of communalism, the First World War, the Home Rule League, growth of revolutionary movement. Struggle for Swaraj (1920-1947) : National movement after the First World War, Rise of Mahatma Gandhi in Indian National Politics- Three Satyagraha Movements by Gandhiji, Montagu Chelmsford Reform, Rowlatt Act, Jalianwalabag Massacre, Non Co-operation and Khilafat Movement, the Swaraj', Civil Disobedience Movement, The Government of India Act 1935, Growth of Socialist Politics, Working class movement, The Second World War- Quit India Movement, Netaji Subhas Chandra Bose and INA, Royal Navy Movement, Wavel Plan, Transfer of power, partition and independence, New Constitution of Independent India. 2.4

Instructional Planning :

concept, need and importance Planning is preparation for action. It is an essential tool for effective teaching.

Instructional planning is a process of using appropriate curricula, instructional strategies and available resources by a teacher to address various needs of the students. It is the systematic selection of educational goals and objectives and their design for use in the classroom. Prior to each lesson, unit, semester, while teachers are planning the content of instruction, selecting teaching materials, designing the learning activities and grouping methods, and deciding on the pacing and allocation of instructional time, they are actually determining what learning opportunities their students are going to have. Teachers could use learning outcomes developed by professional organisations or school curriculum goals and objectives to plot the sequence of subject topics. However, the most informative source of any instructional planning is the students to whom the teacher would teach in the classroom.

32 A solid planning process is integral to a teacher's efforts in identifying appropriate curricula, instructional strategies, and resources to address the needs of all students. Research shows the following key areas that a teacher should follow while making instructional planning. What should be taught? Effective student learning requires a progressive and coherent set of learning objectives. Effective teachers excel in delineating the intended outcomes of each lesson and describing the behaviours or actions that students should be able to perform after participating in the learning activities. Expert teachers conceive a lesson along two dimensions simultaneously: Teacher's own actions, thoughts, and habits; and students' thinking and understanding of the content. Thus, effective teachers not only plan what to teach, but more importantly, they plan for whom they are going to teach. How should it be taught? After developing the learning objectives, the next step is to translate the instructional plans into actions. Effective teachers follow the predefined plan while remaining open to changes and continuously adjusting their instruction based on student needs. How should instruction and student learning be assessed? Teachers need to link assessment plan to learning objectives. Before the actual instruction starts, teachers need to decide upon valid and reliable assessment techniques that are available to solicit student learning data and judge the success of the instructional plan. Teachers should communicate to their students about what they are expected to achieve and inform them about how they will be assessed after participating in the learning activities. Need and importance of instruction planning Instructional planning assures improved delivery of instruction. It helps in creating effective, meaningful lessons. It helps students make sense of information. Effective lessons make sense of information. Teacher feels comfortable about instruction and giving them a sense of understanding and ownership over the teaching they plan.

33 It established a sense of purpose and subject matter focus. It provides a change to review and become familiar with the subject matter before actually begins to teach it. It links daily lessons to broader integrative goals, units or curriculum topics. Instructional Objectives:

The teacher has to place before the students some definite and specific objectives within a specified classroom period and resources in hand at the time of imparting a particular lesson. Through these specific objectives, commonly known as instructional objectives, the teacher tries to bring necessary behavioural changes among the students. Therefore, the term instructional objectives may be defined as "a group of statements formulated by a teacher for describing what the pupils are expected to do or will be able to do once process of classroom instruction is over."

Instructional objectives are specific and quite narrow. They are predetermined. They are learning outcomes and stated in terms of desired behavioural changes of the learners. Taxonomy of Instructional Objectives: Taxonomy means a system of classification. The taxonomy of educational objectives are framework for classifying statements of what we expect or intend students to learn or show behavioural changes as a result of instruction. The taxonomy of educational and instructional objectives are divided into three domains: cognitive, affective and psychomotor.

The taxonomy related to cognitive domain has been presented by Benjamin S. Bloom and his associates in 1956 under the title, 'Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook 1: Cognitive Domain'. The second or the affective domains was presented by Krathwohl (1964) and the third one or psychomotor domain by Harrow and Simpson (1966). Structure of Bloom's Taxonomy: Bloom and his associates have classified the objectives related to cognitive domain into six categories arranged from the lowest to the highest level of thinking process which is mentioned below:

34 1.0 Knowledge 1.10

Knowledge of specific 1.11 Knowledge of terminology 1.12 Knowledge of specific facts 1.20 Knowledge of ways and means of

dealing with specifics 1.21 Knowledge of conventions 1.22 Knowledge of trends and sequences 1.23 Knowledge of classifications and categories 1.24 Knowledge of criteria 1.25 Knowledge of methodology 1.30 Knowledge of universals and abstractions

in field 1.31 Knowledge of principles and generalizations 1.32 Knowledge of theories and structures 2.0 Comprehension 2.1

Translation 2.2 Interpretation 2.3 Extrapolation 3.0 Application 4.0 Analysis 4.1 Analysis of relationship 4.3 Analysis of organizational principles 5.0

Synthesis 5.1

Production of unique communication 5.2 Production of a plan, or proposed set of operations 5.3 Derivation of a set of abstract relations 6.0 Evaluation 6.1

Evaluation

in terms of internal evidence 6.2 Evaluation in terms of external criteria

35 The Revised Bloom's Taxonomy The original Bloom's Taxonomy was revised in 2001 (Anderson, Krathwohl, et al., 2001) where any objective is represented in two dimensions – cognitive process dimension and knowledge dimension.

Structure of the cognitive process dimension of the Revised Taxonomy : 1.0 Remember-Retrieving relevant knowledge from long-term memory 1.1 Recognising 1.2 Recalling 2.0 Understand- determining the meaning of instructional messages including

oral, written and graphic communication. 2.1 Interpreting 2.2 Exemplifying 2.3 Classifying 2.4 Summarising 2.5 Inferring 2.6 Comparing 2.7 Explaining 3.0

Apply- Carrying out or using a procedure in a given situation. 3.1 Executing 3.2 Implementing 4.0 Analyze- Breaking material into constituent parts and detecting how the parts relate to one another and to an overall structure of purpose.

4.1 Differentiating 4.2 Organising 4.3 Attributing 5.0 Evaluate-Making judgements based on criteria and standards. 5.1

Checking 5.2 Critiquing 6.0 Create- Putting elements together to form a novel, coherent whole or make an

36 original product. 6.1 Generating 6.2 Planning 6.3 Producing Structure of Knowledge Dimension of the Revised

Bloom's Taxonomy : A. Factual Knowledge- The basic elements that students must know to be acquainted with

a discipline or solve problems in it. Aa. Knowledge of terminology Ab. Knowledge of specific details and elements

B. Conceptual Knowledge- The interrelationships among the basic elements within a larger structure that enable them to function together. Ba. Knowledge of classification and categories Bb.

Knowledge of principles and generalisations Bc. Knowledge of theories, models and structures C. Procedural

Knowledge- How to

do something;

methods of inquiry; and criteria for using skills, algorithms, techniques, and methods. Ca. Knowledge of subject specific-skills and algorithms Cb. Knowledge of subject-specific techniques and methods Cc. Knowledge of criteria for

determining when to use appropriate procedures D. Metacognitive Knowledge-

Knowledge of cognition in general as well as awareness and knowledge of one's own cognition. Da. Strategic Knowledge Db.

Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge Dc. Self-knowledge

Taxonomy of Objectives in the Affective Domain : 1. Receiving (attending) (a) Awareness (b) Willingness to receive (c)

Controlled or selected attention

37 2. Responding (a) Acquiescence in responding (b) Willingness to respond (c) Satisfaction in response 3. Valuing (a)

Acceptance of a value (b) Preference for a value (c) Commitment 4. Organisation (a) Conceptualisation of a value (b)

Organisation of a value system 5. Characterisation by a value or value complex (a) Generalised set (b) Characterization

Taxonomy of Objectives of Psychomotor Domain : 1. Imitation (a) Impulsion (b) Overt repetition 2. Manipulation (a)

Following direction (b) Selection (c) Fixation 3. Precision (a) Reproduction (b) Control 4. Articulation (a) Sequence

38 (b) Harmony 5. Naturalisation (a) Automatism (b) Interiorization The Cognitive Process Dimension The 1.Remember 2.

Understand 3.Apply 4. Analyse 5. Evaluate 6. Create Knowledge Dimension A.Factual Knowledge B.Conceptual

Knowledge C.Procedural Knowledge D.Metacognitive Knowledge Revised Bloom Taxonomic Table 2.5 Unit plan and

lesson plan of Social Science : A unit is a related learning segment made up of a few lessons along with an outline of its actual execution in the class room. Thus a unit will consist of both the subject matter and methodology of its delivery to students. Hoover defines unit as, "

the teaching unit is a group of related concepts from which a given set of instructional and educational experiences

is desired. Unit generally ranges for three to six weeks long". After having divided the prescribed syllabus into a number of teaching units the teachers will decide the time that could be allotted to each unit. After that he can break up each unit in

a number of lessons and each lesson should be complete in itself. Need and importance of unit plan: It provides a basic

course structure around which specific class activities can be organized.

39 It enables the teacher to integrate the basic course concept and those of related areas into various teaching experiences. It provides an opportunity to the teacher to keep a balance between various dimensions of the prescribed course. It enables the teacher to break away from traditional text book teaching. If the prescribed course has to be covered in a number of years then it is necessary to distribute the course into units spread over a number of years.

Lesson Plan : Lesson planning is the most important part of teaching. It means "the planning of a daily lesson related with a particular unit of that subject to be covered by the teacher in a specific school period for the realization of some stipulated instructional objectives."

A teacher has to keep in mind certain things while preparing a lesson plan. These are : Broader objectives of the subjectives. Setting and defining the classroom objectives. Organisation of the relevant subject matter. Selection of appropriate teaching strategies. Provision for feedback and evaluation. Need and importance of lesson plan : Lesson planning makes the work regular, organized and more systematic. It induces confidence in the teacher. It makes teacher quite conscious of the aim which makes him conscious of attitude he wants to develop in his students. It saves a lot of time. It helps in making correlation between the concepts with the pupils' environment. It stimulates the teacher to ask striking questions. It provides more freedom in teaching.

40 It helps a teacher to improvise his teaching. It helps the teacher to prepare, organize and arrange for necessary teaching aids for a particular topic. The criteria of an effective lesson planning The criteria of an effective lesson planning can be summarised as below: 1. An effective lesson planning always needs its planning in the written form. 2. It must have instructional objectives properly expressed in behavioural terms. 3. The teaching aid materials used should be mentioned specifically. 4. It should clearly mention the procedure or the activities adopted for introduction of the lesson. 5. The subject matter should be properly selected, organised and presented in the planning. 6. The methods, techniques and devices related to the presentation should be properly selected and utilised. 7. An effective lesson plan should provide due place and have adequate provision for the effective interaction between the teacher and the students. It should ensure active cooperation and involvement of the students in the teaching- learning process. 8. An effective lesson plan should take care of the age, mental level, previous knowledge, duration of the period, teaching-learning conditions and resources available at the time of delivery of the lesson. 9. It should mention the type of black board work or summary to be developed during the presentation stage. 10. It should follow the principles of correlation and integration in the presentation of subject matter. Approaches to Lesson Planning : For planning the lesson and writing, it various styles and approaches are followed. However, the most common and popular is Herbatian five steps Approach. These steps are : 1. Preparation : This step is concerned with the task of preparing the students for receiving new knowledge. The Herbatian approach puts more emphasis on

41 this step and considers it as a base for the delivery of the lesson. It is also termed as introductory stage. Following points should be taken into consideration : (a) The previous learning of the students (b) The factors responsible for capturing students' attention and motivation (c) The objectives of the lesson 2. Presentation : New learning material is presented before the students and efforts re made to help in acquiring new learning in this stage. This step requires following considerations on the part of the teacher: (a) What learning experiences to be presented and how much (b) How much is to tell and how much the students are to find for themselves (c) What type of techniques, methods, devices to be adopted to deliver the lesson 3. Comparison and association : The step is related with the task of strengthening the acquisition of new learning material. It is based on the assumption that a child grows in knowledge through comparison and association. A teacher requires to compare, contrast and associate every new knowledge to be learnt with the previous knowledge of the learners. 4. Generalisation : it is concerned with arriving at some general ideas or drawing out the necessary conclusion by the students on the basis of the different comparisons, contrasts and associations observed in the presented learning experiences. 5. Application : Efforts are made to seek applications of generalised facts in this step. In fact, it is a step for the fixing up or consolidation of the newly acquired knowledge. Difference between unit plan and lesson plan Unit planning is meant for the division, organisation and planning of the prescribed syllabus being covered in the whole session while daily lesson planning helps in the organisation of teaching- learning in terms of a lesson delivered during a classroom period. The scope of unit planning is much wider than the scope of daily lesson planning.

42 The duration of unit planning may be extended to several days but in case of lesson planning its duration is strictly limited to a single day task. The objectives of unit planning may have wider coverage in comparison to the objectives of daily lesson planning. Unit planning may give birth to a number of daily lesson planning depending upon the number of subunits divided from the main unit.

2.6 Procedure of unit and lesson planning

2.6.1 Unit plan procedure : 2.6.1.1

Organising the subject matter and learning experiences Formation of proper units out of the prescribed syllabus of history of a particular class Combination of various topics of the syllabus in view of the contents and learning objectives to form a unit is important. For example, topics like the Non- cooperation movement, the Civil disobedience movement, the Quit India movement may be combined into a single unit termed as 'Nationalist movement in India (1920- 1947) A.D.' The total number of days and working hours should be kept in mind. Suitability in terms of age, interest, needs and abilities of the learners. Available resources and teaching learning conditions Realization of teaching-learning objectives of the subject Proper correlation, coordination and integration among the different units

2.6.1.2 How to proceed

A unit should be divided into some suitable sub-units. The content of a sub-unit should be selected keeping in mind the duration of a class hour. Teaching-learning objectives should be formulated in behavioural terms and it should be predetermined. Proper decisions should be taken about the methods of teaching, use of teaching aids and the learning experiences provided to achieve the desired goals. Proper decisions should be taken for the evaluation of the unit.

43 2.6.1.3 Unit plan format :

Name of the unit Division of the unit into sub-units Formulation of objectives in behavioural terms Teaching strategies including teaching methods, use of teaching learning materials The utilization of the outcomes of the evaluation for the proper follow-up and remedial teaching.

2.6.2 Procedure of lesson plan

A teacher should take into care the following principles while preparing the lesson plan :

- Principle of clarity and definiteness of the objectives
- Principle of availability of resources and conditions
- Principle of the knowledge of entry behaviour
- Principle of motivating the students
- Principle of maintaining interest in the classroom
- Principle of appropriateness of teaching methods and techniques
- Principle of mastery over the subject matter and related activities
- Principle of active participation of the students
- Principle of providing feedback and reinforcement
- Principle of adequate class control and discipline
- Principle of appropriate evaluation
- Principle of adequate fixation of the learning
- Principle of flexibility

44 2.6.2.1 Model lesson plan format:

I Name of the school: ABC Class: VII Section: B Total no. of students: 40 Duration: 40 minutes Name of the teacher: XY Subject: Social Science Unit: Advent of Middle Age in the West Sub- units: Division and fall of the Roman Empire The migration of the Germanic Tribes into western part of the Roman Empire The invasions of the Huns, Visigoths, Vandals and other Germanic tribes Social, political and religious life of the Germanic tribes- the Roman-German fusion The rise and impact of Christianity Day's lesson: The invasions of the Huns, Visigoths, Vandals and other Germanic tribes Learning objectives in behavioural terms: (According to Revised Bloom's Taxonomy) The students will be able to-

1. Recall the meaning of barbarians (remembering factual knowledge).
2. Memorise the date when they invaded the Roman Empire (Remembering factual knowledge).
3. Distinguish between the characteristic features of the various Germanic tribes (Analysing conceptual knowledge).
4. Compare the invasion pattern of the tribes respectively (understanding conceptual).
5. State reasons for the entry of the Germanic tribes from various parts of North, Central and Eastern Europe (remembering conceptual).
6. Discuss about the military strategies that each of these tribes took to invade the Roman Empire (Understanding conceptual).

45 7. Name the first Germanic tribe to enter to the Roman Empire (remembering factual). 8. List the names of most powerful leaders of each barbarian clans(remembering factual). 9. Justify the statement that the Roman slaves welcomed the invasion of these barbarians(evaluation conceptual). 10. Describe the clever trick used by Pope Leo I to stop Attila from attacking further(remembering factual) 11. Estimate the success and failure of each of these barbaric tribes in the Western Roman Empire.(evaluating conceptual). 12. Discuss the procedure by which each of the tribes attacked Western Roman Empire(Remembering procedural). Previous Knowledge: The students can state and write: 1. About the classification of the barbaric tribes like Huns, Goths, Franks, Vandals and Anglo-Saxons. 2. Time period as to when these barbarians invaded the Empire. 3. The reason behind the invasion of the barbarians. 4. The definition, characteristics and nature of these barbaric tribes. 5. Causes of the migration of the Germanic tribes into the Empire. 6. The procedure used by the tribes to enter the heartland. 7. The direction from where each of these tribes entered Roman heartland. 8. The time span of the Medieval Age in the west with the fall of the Western Empire and coming of the barbarians. 9. The difference between the Ancient Roman culture, habits, ways of life with that of the barbarians. Brief summary: People belonging to various races used to live in North, East and Central Europe outside the territory of the Roman Empire. Their primitive history is not known. But they were not as civilized as the Romans. They were different from the Romans in language, culture, customs, manners and natures etc. They were called barbarians.

46 Teaching strategies: Evaluation: In order to assess how far the students have understood the day's lesson the teacher will ask the following questions: 1. How did the Roman manage to stop the Huns from invading further into the territory? (U/CK) Teaching Strategies Necessary information will be presented partly by lecture method and partly through conversational method. To specify the locations and places the teacher will use outline maps of the world and Europe relevant to the topic. Necessary information, for the first time mentioned names, dates, events will be written on the board. Charts, diagrams, timelines etc. can be drawn on the board. To keep the students interactive In the class developmental and probing questions will be asked. Teaching Method Lecture and conversational method will be followed to deliver the lesson and to make the class interactive question answer technique will be followed. Teaching Aid An outline map of Europe and World to locate different places related to the subunit. A time line Roman Empire. A chart depicting the main points related to the subunit. Work sheet will be given to each student. Use of Board Diagrams showing the classification of the Germanic tribes, their place of origin and the leaders of each tribe will be on written on the board. First time mentioned names, dates and other important information related to the topic will also be written.

47 2. Distinguish between the nature of the Germanic tribes and Huns.(A/CK) 3. Why was Attila called the 'Scourge of God'? (U/CK) 4. Justify the statement that a small gesture on the part of the Romans moved Atilla from invading Rome further.(E/CK) 5. Explain the invasion of the Visigoths under Alaric(U/FK) 2.6.2.2 Model lesson plan format II Name of the School : ABC Subject : Social Science Class X Unit : Work of river and glacier Section B Total no of students : 40 Sub Unit : Work of river in-Middle course. Duration : 45 minutes Name of the teacher : XY To Day's lesson : work of river in middle course. Previous knowledge The teacher is aware about the fact that the students have already learnt the following : (a) Basic knowledge that transportation is the main work of the river in the middle courses with wome deposition and lateral erosion. (b) Idea that some landform are formed in the middle course of a river. Learning objectives in behavioural terms : (According to Revised Bloom's Taxonomy) 1. Remembering : The students will be able to (a) Recall : Recall the extension of the middle course of a river (Remembering Factual) (b) Identify : Identify the different landforms formed in the middle course (Remembering conceptual). 2. Understanding : The students will be able to (a) Differentiate : Differentiates between Alluvial come and Alluvial Fan (Understanding Factual) (b) Explain : Explain the formation of wide 'V shaped Valley (Understanding Procedural)

48 3. Applying : The students will be able to (a) clarify : clarify how sand banks and Braided River are formed. (Applying Factual) (b) Construct : Construct a chart showing the different land form formed in the middle course. (Applying Meta cognitive) 4. Analysing : The students will be able to : (a) Explain : Explain the formation of Flood Plain and Natural Levee (Analysing conceptual) (b) Difference : Difference between Braided river and Meander (Analysing Procedural) 5. Evaluating : The students will be able to (a) Assess : Assess the formation of Ox-bow Lake (Evaluating conceptual). (b) Redefine : Redefine the landforms in the middle course of a river. 6. Creating : The students will be able (a) Imagine : Imagine the different landforms formed in the middle course of river. (Creating Conceptual) (b) Construct : Construct a model representing a landform formed in the middle course. (Creating Metacognitive) 3. Brief summary of the concept : (a) River flowing through a plain land is called the middle course land formed in the middle course. 1. Alluvial Fan or Cone : At the foot of the mountains where the slope of the land is reduced suddenly the velocity of the river is also checked consequently, most of the river load are dropped them and forms a fan shaped or cone- shaped deposit. 2. Wide V shaped Valley : Lateral erosion widens the river valley and it becomes shallow due to deposition. 3. Sand Bank and Braided River : Deposition of stones, pebbles and silts on the river bed forms sand bank over islands in the river. Because of the sand bars and islands, the river divides into branches and rejoin again after going past the obstacle. 4. Flood Plain and Natural Levee : Deposition of silt takes place on both the bank forming an embankment called Natural Levee : In the rainy season, the river floods and deposits the silt carried by it on the banks and forms flood plains. 5. Meander : The meandering course of a river is called Meander.

49 6. Ox-Bow Lake : A meander becomes prominent to form a loop as the river cuts the concave slopes and deposits silts on the concave slope of meander. The river cannot flow straight and leaves its old course which takes the shape of the horse shoe and is called Horse-Shoe or Ox-bow Lake. MAJOR TEACHING STRATEGIES Strategies Teaching Strategy while teaches in the class, she might be followed following techniques which must be associated to upbring the quality of teaching. In that case teacher will demonstrate today's questions Lesson and put some questions in front of the students to recapitulate the interest regarding the day's lesson. Use of Blackboard Teaching Aid Use of Software Technique 1. Observation Method 2. Discussion Method 3. Question Answer Method 4. Demonstration Method Use of Coloured Chalk Use of Charts Use of Model Experiment Power Point Presentation Applicability Teacher will crade some chawks and will show the transportation process by pouring water on the dust. Teacher will discuss the different land forms produced in the Middle course. Teacher will apply Question Answer Method to discuss today's topic more scientifically among the students. To enhance interest among the students, teacher will use various charts to describe the landforms formed. The teacher will use coloured chawks to write the names of the landforms formed. Teacher will use a chart to show some land forms formed in the Middle course. Teacher will perform an experiment to show the process of transportation. No Power Point Presentation will be used to demonstrate the lesson.

50 2.7

Adaptation of unit and lesson plans for children with disabilities:

Inclusion or inclusive education is the most contemporary issue in the field of education now a days. A requirement for inclusionary practices and proper educational facilities for special children has placed greater responsibility and challenge on a classroom teacher. A teacher has to prepare the lesson plan considering the diverse needs of the learners in the classroom. Adaptation of innovative practices or techniques according to the needs of the disabled children is the key for achieving learning objectives. For children with disabilities following things can be incorporated in the plans for teaching: 1. Content should be selected on the basis of the students' needs. 2. Content should be simple and generalised. 3. Principle of individual difference always should be kept in mind. 4. Securing attention and arousing motivational level of the students is very vital for both the teacher and the learners. 5. Learning objectives should be formulated keeping in mind the specific needs of a particular group of learners. Another set of learning objectives may be formulated for other disabled pupils. 6. Teaching strategies should be flexible in nature. 7. Various types of effective teaching aids to be selected very wisely and be used to make the class interesting. 8. Ample opportunities should be there so that the pupils can take part actively in the teaching-learning process. 9. Teacher should deliver the lesson part by part, but not too much content, in a very simple way.

51 2.8 Check Your Progress 1. Discuss the principles for framing history curriculum at the secondary stage at school education.

..... 2. What are the major components of geography at school level?

..... 3. The content of history at different stages should contain a fair mixture of world, history, national history, local history, social economic and cultural history, contemporary history or current affairs why?

..... 4. Mention two practical work in geography curriculum at secondary school.

..... 5. What is instructional planning?

..... 6. Why is it necessary for a teacher to make instructional planning?

52 7. How would you define the term unit plan?

..... 8. Why should every teacher prepare a lesson plan before entering into a classroom?

..... 9. Which principle should be followed by a teacher while preparing a lesson plan?

..... 10. State any two considerations that be taken into consideration while adapting lesson plan for disabled children.

..... 2.9 Let us sum up These principles can help in selecting Social Science curriculum; It should help in achievement of aims of teaching Social Science. It should be appropriate to the age and ability of that group of pupils to whom it is to be taught. The content of study should have functional relationships between them. The curriculum selected should lay emphasis on national and world unity.

53 The curriculum must be wide and comprehensive. For the selection of subject matter for different stages Culture Epoch Theory of Stanley Hall, Biographical Theory and Psychological Theory can be helpful. For the organisation of subject matter Chronological, Concentric, Topical, Regressive, Lines of Development, Patch Method can be used. The unit planning and lesson planning are the two most important things in teaching. While having unit planning a teacher first tries to divide the prescribed syllabus of the subject into some well-defined and meaningful units. These units are then properly sequenced and subjected to planning taken one at a time. Unit planning paves the way for daily lesson planning i.e. the planning for the instructional work on a day to day basis. Careful lesson planning is the foundation of all good teaching from the first day of student teaching to the last day of the month of the retirement years. Proper advance planning will keep the teacher on the track, prevent waste, ensure that the teacher does not forget a pivotal point. Thus the task of daily lesson planning may prove helpful to a subject teacher in a varieties of way. 2.10: References: 1. Basha, S.A.S. and Rao, D.B. (2004): Methods of Teaching Geography, New Delhi, India, Discovery Publishing House. 2. Basha, S.A.S. and Rao, D.B. (2004): Methods of Teaching Geography, New Delhi, India, Discovery Publishing House. 3. Kochar, S.K. (1996): Teaching of History, New Delhi, Sterling Publishers Private Limited. 4. Mangal, S. K. and Mangal, U.(2009): Essentials of Educational Technology, New Delhi, PHI Learning Private Limited. 5.

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55 Unit - 3 Approaches to Teaching of Social Science Structure 3.1 Introduction 3.2 Objectives 3.3 Curricular Approaches 3.3.1 Coordination 3.3.2 Correlation 3.3.3 Spiral 3.3.4 Integrated 3.4 Methods of Teaching Social Science (i) Lecture Method (ii) Discussion Method (iii) Socialized Recitation (iv) Source Method (v) Project Method 3.4.1 Devices and Techniques of Teaching Social Science (i) Narration (ii) Description (iii) Illustration (iv) Questioning (v) Field Trip (vi) Role Play (vii) Inductive and Deductive thinking. (viii) Concept Mapping (ix) Problem Solving (x) Programmed Learning 56 3.5. Techniques and strategies

required in approaches for teaching children with disabilities. 3.6. Instructional Material for teaching of Social Science 3.6.1 Maps and globes 3.6.2 Different types of boards – smart boards, chalk-boards, brail-boards, 3.6.3 Tape Recorder 3.6.4 Overhead projector and power-point presentation. 3.6.5 Concept and adaptation of inclusive classroom for challenged children. 3.7 Adaptaion of materials for teaching challenged children. 3.8 Check Your Progress 3.9 Let Us Sum Up 3.10 References 3.1 Introduction

The best of the curriculum of social science subject remain ineffective until and unless implemented by the teacher using the right approaches and methods of teaching with the help of the right kind of devices, techniques and instructional materials. In this unit an effort has been made to present how a Social Science teacher can translate a better teaching with various devices, technique and instructional materials.

The Social science teacher's approaches and methods of curriculum transaction will be successful only if he/she can – foster among the pupils curiosity to learn. enable the pupils to develop their personality. Keep the pupils active. 3.2 Objectives After studying this unit the students will be able to :– Explain the different curricular approaches of social science.

57

Explain the different methods of teaching social science. Explain the devices and techniques of teaching social science Explain the concept and adaptations of various instructional materials for teaching social Science. 3.3

Curricular Approaches A curricular approach is the broad direction to show the manner in which a curriculum is to be framed. It can also be explained as the guiding principle on the basis of which the curriculum frame work is to be created. An approach goes hand in hand with methods of teaching as methods of classroom teaching follow the approach based on which a curriculum has been

created. A suitable curricular approach is one that caters to the needs of the learners as well as to those of the classroom teachers who are engaged in the act of facilitating the learning effectively. 3.3.1 Co-ordination : Coordination as a curricular approach means that the various parts of the curriculum of a subject are interrelated with each other. In the curriculum of the subject geography, all the branches

of physical geography, Economic geography, Regional geography, Human geography, etc. must intricately inter-related and coordinated with each other. Descriptions of matters under the different branches of geography should not be treated in water-tight compartments. For an example – while describing the lower reach of an ideal river in physical geography, examples can be cited from Indian rivers with deltas

on their mouth, the main occupations of people living on deltaic regions, their way of living, etc. A coordinated approach of curriculum also means that all the learning objectives like knowledge, Skills and values should get equal weightage while framing the curriculum. A properly coordinated curriculum of geography must put suitable emphasis on aquisition of theoretical knowledge or information, development of desired values or affective qualities of learners as well as practical work, drawing maps, diagrams, graphs etc. for development of the learners practical skill.

58 3.3.2 Correlation : Correlation as a curricular approach is synonymous to the fact the major aim of education is

the unification of knowledge existing in different branches of learning. To achieve such a unification a conscious effort must be made, while framing curriculum, to establish interrelation and curriculum, to establish interrelation and interdependence between various subjects taught in the same class. This is an age of correlation and no subject can be taught in isolation. It is only for convenience of study that we have divided knowledge into different subject areas but actually no subject

is completely independent. Modern educationists have no doubt about the fact that the teaching of a particular subject should be carried out in correlation with other subjects, especially with those subjects that have a common learning. Geography is basically an interdisciplinary subject and is interdependent with such subjects like History, Political Science, Economics, Language and Literature, Fine Arts, Mathematics, Natural Sciences,

etc. Geography is intimately correlated to History and in earlier times, the two subjects were taught together. History emphasizes time while geography emphasizes space. History studies man's life at different times while geography deals with man's life at different places. It is rightly said that geography describes the stage on which human life is enacted while history describes the drama of human life. No history can be complete without reference to space. Similarly no geographical account can be intelligible without reference to development

over time. It is through the study of geography that we come to know

how physical features and phenomena of a region have influenced the course of history of that region.

The teacher of History like a geography teacher must use maps, diagrams etc to show extents of empires, political boundaries, routes of invaders, etc.

Political Science studies the foundations of the state and the principles of government. Difference of political administration from country to country, different traditions, political principles etc are guided by geographical factors.

Rousseau tried to establish relationship between the climatic conditions and the forms of government when he said that warm climates are conducive to despotism, cold climates to barbarism and moderate climates to good polity.

59

In the present age of science and technology, economic forces influence and control human activities more than natural forces. More importance is now paid to economic conditions which modify the influence of natural environment. For this purpose, Economic geography is an important branch of geography. Agriculture, Mining, Industry; Trade, are all influenced by geographical factors. So, Economics, which is called the science of wealth, cannot be properly studied without the knowledge of geography. Language and Literature is much influenced by the geographical factors prevailing in a region.

Description of natural phenomena and cultural conditions of any region can be easily found in the existing literature of the area i.e. prose, poem, drama, etc. Reading, writing and speaking ability through languages is a very essential medium which allows us to express our geographical concepts vividly. Evaluation of students about their geographical knowledge also depends on language usage. Practical geography provides vast relationship with Art and craft. Drawing diagrams, graphs, charts, maps, etc. are important part of geography to make teaching of the subject simple, effective and interesting. This is possible only through art activities. Craft helps in preparing geographical models with clay, plaster of paris etc. On its part geography also provides art and craft with interesting subject matter like rivers, lakes, mountains, waterfalls, forests, etc. These establish the correlation between the two subjects. There are important calculations and problems in geography which cannot be solved without reference to Mathematics.

Geography involves surveys, measurements, calculations specially related to the concepts of time and longitude, latitude etc, distance, width and depth of rivers, oceans, lakes, etc. height and distance of stars, planets, etc. which can be dealt with taking help from Mathematics. Geography also lends its concepts as basis for exercising mathematical calculations. Thus the two subjects are inter-related. Geography is a link subject between social sciences and Natural Sciences. Many facts described in geography are included in the subject matter of Natural Sciences like Physics, Chemistry, Botany, Zoology, Geology, Astronomy, Agriculture etc. cause and effect relationship which is so emphasised in geography is a gift of Science.

Physical geography which studies climate, soil, air pressure and velocity of

wind, rocks, currents, weather, mineral wealth, rotation and revolution of the earth, earthquakes, vulcancity, flora and fauna is very closely

dependent for concepts on subjects of Natural Sciences.

60 3.3.3 Spiral Curriculum

In a spiral curriculum, learning is spread over time rather than being concentrated in shorter periods. In a spiral curriculum, material is revisited repeatedly over months and across grades. Different terms are used to describe such an approach, including a “distributed” and “spaced”. A spiral approach is often contrasted with “blocked” or “massed” approaches. In a massed approach learning is concentrated in continuous blocks. In the design of instructional materials, massing is more common than spacing. The spacing effect - the learning and practice - has been repeatedly found by most researchers to be most effective for more than a century. Findings about distributed learning are among the most robust in learning many sciences and social sciences including geography applying across a wide range of content and for all ages of students from infants to adults. Space learning over time is the first research based recommendation.

3.3.4 Integration We have already studied about how Social Science

subject like geography is correlated with other School subjects. Many concepts of Social Science subjects like History or geography also provide situations where learners can find related learnings of other subjects in a functional setting. Units of the subject geography can provide a natural setting or background for application and use of knowledge and basic skills in solving many problems related to experiences from different spheres of knowledge.

Thus we can rightly say that geographical situations are used as means of integrating various schools subjects and experiences and vice-versa. Integrating Natural Sciences and geography :

Many basic elements related with human needs like food, shelter, clothing, weather and climate, transport and communications are dealt with both Natural Sciences and Social Science like geography. Both geography and Natural Sciences deal with topics like conditions required for various plants, health and hygiene, sanitation, etc. Biology, Astronomy, Mathematics, Geology have many topics to study which are common with geographical topics. The teacher of Geography is required to trace the history of a region while lessons of history also explains the geographical reasons of a historical episode. Integrating with Languages : In any system of education, for teaching learning of any subject, language is of

61 prime importance. Reading, writing and communicating ideas of geography as well as adopting geographical concepts for language learning-teaching is a very common endeavour in everyday school education. Stories and poems about places and travels in language and literature learning in school education easily intergate both the spheres of knowledge. A Student of geography has to communicate his thoughts vividly through reading, writing and speaking using good language skills. Debating, discussing, narrating also enhances the verbal capability of the learner of geography, thus integrating his knowledge of both the subjects of geography and Literature and Language. Integrating with Mathematics : Mathematics, integrated with Social Science like geography, provides accuracy of ideas, and perfection and speed of calculation. Geography is the study of man and his environment and every human being is to be a producer as well as a consumer. Related to the real life situations of human beings, Mathematics integrates in its subject matter, opportunities for acquiring skills, involving income, expenditure, budgeting, calculations of funds, takes measurement of height, weight, time temperature, rainfall and many other

elements related to human life. Integrating Art : Art activities are integrated into social science concepts e.g. while collecting and preparing diagrams, maps, weather charts, graphs, pictures, specimen of rocks, minerals, dresses, cereals etc. pupils automatically apply their aesthetic, artistic aptitude. While learning and collecting a piece of art, students generally tend to explore about its source, geographical location, under what circumstances the artistic material was created or preserved etc., matters which come under the jurisdiction of geography. Thus geographical concepts are embedded in ‘Art’ curriculum while Art is a deeply integrated with geography curriculum. We can easily say that there is very fine integration among subjects and disciplines.

Science, Social Sciences, Languages, Mathematics and Fine Arts are all actually integrated into the world of wholesome knowledge and if learning-teaching of any one of these brings reference from others, the effort will reinforce and strengthen the knowledge of each

one

of these and it will

make knowledge more meaningful and realistic.

62 3.4 Methods of teaching geography as a social Science Subject :

A

method is a procedure which a teacher follows to make learning easy and effective. It is

composed of several important steps which are logically and systematically arranged by the teacher. Many of the steps followed in one particular method may also be used in other methods. It is the duty of the teacher to find out effective ways of guiding pupils to learn and develop properly. Actually,

a method

is the “

Process of planning, guiding, sharing and evaluating learning with a group of students”. It is,

therefore, that method is one of the most fundamental aspects of teaching-learning. After

deciding about the geography syllabus, i.e. ‘What to teach’, the geography teacher must decide about ‘how to teach’ or the method of teaching the particular piece of the geography syllabus for a specific level. Every teacher selects his own method of teaching. A method which is successful in the hands of one teacher may not be effective in the hands of another teacher. Actually, a method of teaching

should always be in accordance with the age and requirements of the students,

their levels of education and the available physical and cultural environment. A method should never be repetitive, it should rather be flexible and workable. The effectiveness of a method is judged by its results in terms of the students, growth and development. Learning that is interesting, easily acquired, functional and long-term is the result of applying good methods of teaching-

learning. A good method, therefore is one which leads to :- Inculcation of the love of work and efficiency. Establishment of organic relationship between the teacher and the taught Development of clear thinking. Expansion of the range of pupils’ interest. Acquisition of knowledge through independent work. Catering to individual differences of needs.

By its very nature, the interdisciplinary subject geography draws its subject matter from various fields of knowledge–

Science and humanities. Therefore, both scientific methods which provide organised and systematic learning situations and activities as well as methods suitable for learning of humanities are applied for teaching of geography. Really

speaking, there is not a single road to success. There are endless varieties of methods. No single method is suitable for successful teaching-learning of all geographical concepts. In fact a successful geography teacher is one who can select the best suitable method at a particular time and place for bringing in the most desired goal

63 depending on

the nature of the subject matter to be taught, the

age and stage of the pupils and the facilities available. (i) Lecture Method Lecture method

is the most commonly used method of teaching geography and history in classroom situations. In lecture method, the teacher in the classroom is the sole speaker and the students are passive listeners. Science students do not actively participate in classroom proceedings, this method can be called a teacher - controlled and information centred method. A lecture is taken as a technique of description, explanation and clarification. In this method, students are provided with readymade knowledge by the teacher and as a result of such spoon-feeding, students gradually lose interest and power of reasoning and observation. This method allows the teacher to go ahead with the subject matter at his own speed. This teacher oriented method in its extreme form does not expect any

questions or response from the students. Advantages of this method : 1. This method

is economical. It is possible to handle a large number of students at a time and no laboratory, equipments, aids, materials are required. 2. By this method, knowledge can

be imported to the students quickly and the prescribed syllabus can be covered in a short time. 3. It is easy to impart factual information. 4. Spoken words are more effective than printed notes. 5. A lecture can be immediately repeated & modified 6. It saves time and energy. 7. It gives pupil good training and experience of learning by hearing. 8.

In this method teacher can easily maintain the logical sequence of the subject by planning his

lecture in advance. It minimises the chances of any gaps or overlapping. When to use this method? 1. At the time of clarifying concepts. 2. Supplementing

the knowledge of pupils. 3. Summing up the findings of pupils. 4. Preparing the students to undertake an assignment, project or an activity.

64 Disadvantages of Lecture Method : 1.

In this method, student participation is negligible and students become passive recipients of information. 2. In this method the teacher can never be

sure whether the students are concentrating and understanding the subject matter being taught to them

by the teacher. 3. It is not a natural way of learning. 4. It cannot be used effectively by all types of teachers. 5. It creates heavy teaching load on teachers. 6. It may become monotonous and uninteresting. 7. It does not cater to individual needs. 8. There is no place of learning by doing. 9. It is an undemocratic and authoritarian method. 10. Its extensive use may lead to harmful effects. (ii) Discussion Method : The present age is an age of discussion. Discussion has presently come to challenge the authoritarian methods through which teaching used to be imparted in older days. Teacher's authority was accepted in these days in all matters in the classroom. But now the scenario has completely changed. Presently, all academic and non-academic activities to be carried on in and outside the classroom are first discussed in a social atmosphere by the teacher and the students and then only these are given practical shapes. Discussion may assume the form of a conference, a symposium or a seminar. Ideas are initiated and exchange of opinion takes place along with a search of its factual basis. All participants are allowed to share their opinions on a fair basis. In a discussion, there is competitive cooperation among the participants and the aim should be towards a collective decision. Essential elements of a discussion are : a) a leader, b) a group, c) a topic, d) a content and e) a session for evaluation and conclusion

Advantages of Discussion Method

- 1) Discussions give scope to participants to come out of the monotony of classroom lectures and think reasonably on a topic, listening to other's deliberations and justifying their own.
- 2) In a discussion session, a lot of information and knowledge along with logical explanation are offered in front of the students.
3. This method helps to inculcate toleration among the students. Discussion may give rise to difference of ideas through arguments and counter-arguments and the participants have scope of practising the exercise of patient listening, justifying their own ideas and accept the conclusive ideas that come out as a result of discussion.
4. It is an intelligent teamwork resting on the principle that pooled knowledge carries greater merit than single individual.
5. It develops team-spirit.
6. It provides training in democratic values.
7. It helps to develop the students' communicative skill, confidence and power of reasoning.
8. It helps the teacher to discover each individual student's talents and potentials.

Disadvantages of Discussion Method :

- 1) It is not suitable for all topics.
- 2) This method demands wide background of knowledge of the teacher about the subject matter.
3. Discussion sessions are likely to be dominated by a few students.
4. Such discussions may sometimes, if not frequently to out of the track resulting in wastage of time.
5. Discussions, if not well-guided, may lead to unpleasant feeling and emotional tensions.

(iii) Socialized Recitation Socialized Recitation is not an invention of modern education. It has existed wherever true education has been given, because the basic principle underlying its use, namely, pupil activity, is the very foundation stone of all education. The true teacher will not attempt to fit the child to a course of study, instead, he will try to help the child to learn by himself. Dewey, in his 'schools of Tomorrow', gives many proofs of the universality of this practice.

66 By Socialized Recitation in Social Science, we mean students discussing and repeating matters learnt in the geography or history class anywhere outside the classroom. A debate may go on among the students in the common room or on playfields, or in the Debate club of the School about geographical phenomena. Quiz sessions may take place, a drama may be enacted by the students on some historical event or idea during cultural programmes. Even at home with the parents and relatives, in the community gathering, the student of geography or history may be proudly expressing his ideas, give a talk or recite some portions of the matters has learnt in the school geography or history class from the teachers. (iv) Source Method Skillful teachers of geography have always realized the educational importance of first hand experience because first-hand experiences are always more profitable than experiences narrated or discussed by others. The study and use of original material from actual sources will provide to the students a much better understanding methods, collecting samples of rocks, minerals, cereals, fibres, flora and fauna, industrial products etc. from different regions, showing these samples to students in a geography class followed by discussion on the regions concerned and natural and man-made products available in those regions will provide a situation where students will learn about the matter in a more effective manner. This is called the source method of teaching-learning of geography. Types of sources are

Natural sources ? examples : rocks, minerals, plant samples, soil, sand, cereals etc. Man-made sources ??examples : dresses, packaged food, metal products, leather products, etc. Printed sources ??examples : books, reference books, journals, periodicals, pictures, maps, etc. e – sources ??examples : matter collected through electronic media like e-mail, internet, etc. Many of these sources are available around or near each school. If properly approached and utilized these can be made to yield the geographical information related with them.

Advantages of Source Method :

1. Sources reveal reliable evidence because using source materials facilitate the realization of the students about the difference between a guess and an assertion.

67 2. It provides a sense of reality. The use of source materials during learning gives the students a sense of reality which a secondary writer cannot. 3. It affords training in reasoning and judgement. It teaches a student to examine carefully before arriving at a decision. 4. It provides functional knowledge. Even the slow and backward children feel interested when they have the opportunity of handling original source materials. Their learning becomes functional because it is gained in the proper context. 5. It arouses the students curiosity, stimulates their creative expression and develops their skill. (v)

Project Method The project Method is a modern contribution to educational theory and practice. It is a result at John Dewey's Philosophy of education

and is a natural extension of the problem solving method. But the credit for initiating this method goes to prof. William H.Kilpatrick who has defined it as

a whole-hearted

purposeful activity, proceeding in a social environment".

Dr. J.A. Stevenson who perfected it as a method of teaching says, "

A project

is

a problematic act carried to completion in its natural setting."

Ballard gives another definition when he says, "

A project is

a

bit of real life that has been important into the school".

Accordingings

to C.V.Good. "A project is a significant unit activity, having educational value and aimed at one or more definite goals of under standing. It involves investigation and solution of problems. It is planned and carried to completion by the pupils and the teacher in a natural life-like manner."

If we analyse the above definitions, we shall find that project method lays great emphasis on actual activity of the students. In this method, the curriculum, content and techniques of teaching are considered from the student's point of view. Basic principles or features of project Method : 1) The principle of purpose. No aimless activity can be taken up in Project method. Activity should be purposeful and interesting. 2) The principle of activity. A child is active by nature. The Project Method provides ample apportunities to people to think and plan things independently and then carry out the project in co- operation with others,

68 3. The principle of experience. The project method enables the child to work in groups. He thus learns to co- operate with others and to share his interest and purposes, 4) The principle of reality In this method, students are provided with opportunities to exercise their power in real life situation. 5) The principle of freedom. In project method, the choice of activity should be spontaneous and no forced imposition is desired, it should be left to the students in an atmosphere on freedom. Students choose their activity according to his own capacity and a felt purpose. 6. The pirnciple of utility.

The knowledge gained through activity must be useful and practical. Experiences gained through projects ensure utility because they are carried out under natural

settings. Students can feel that their effort does not go waste and the activity must end in something concrete from the educational point of view. Steps involved in the projec Method : 1.

Providing a situation. A project is never to be forced upon pupils.

The teacher's job

is to provide a situation according to the interest and aptitude of the pupils which may give them a spontaneous urge to carry it out. 2.

Selecting

a project. After a

situation has been provided, the next step is the selection of a good project.

Only such a project should be selected as may satisfy some real need of the pupils.

The project must be chosen according to the capacities of the pupils. 3. Planning. Once a suitable project has been selected, the next step is to

prepare a plan for its execution. Entire planning is to be done by the pupils under the guidance of the teacher, after a good deal of discussion. Each student should be encouraged to participate in the discussion, and offer his

suggestion. 4. Execution.

When the plan is ready, the teacher should encourage the pupils to go ahead and put the plan

into practice. He should ask the pupils to assign duties and distribute work among themselves according to their

individual capacity and

interest. Pupils should

work in co-operation with one another till the project is complete. 5. Judging and

evaluating. After the project is executed, students should be asked to review their work, they should identify their mistakes if any, and

find out whether they proceeded in the right direction according to plan. 6. Recording. Students should be asked to maintain a project book in which they should put down a complete record of all the activities related with the project.

This record will include the selection of the project, its planning, discussions held, duties assigned, references and books consulted, information gathered,

difficulties felt, experiences gained, guidance sought

etc. Important points for future reference and guidance are also to be noted down.

Advantages of the Project Method : 1) It is based on the laws of learning. It is in accordance with the psychological laws of learning i.e., the law of readiness, the law of exercise and the law of

effect. The law of readiness requires the pupil's mind ready for acquiring knowledge. The planning and selection of the project, prepares the child's mind for the work. The law of exercise requires the child to practise whatever he has learnt.

This method is not only meant for learning by doing but for learning by living. The actual execution of the project gives effective experience. The law of effect requires that learning should be accompanied by satisfaction and purpose. By

actually being involved in the project execution, the student gets pleasure and satisfaction. 2) This method is economical : The students select their own project according to their interest and capacity. So it gives the best results in the shortest

possible time and least wastage of money and energy. 3. It provides training for democratic way of life. Pupils work with each other under this method for a common purpose. Thus they acquire foresight, power of judgement, independence of thought and action, initiative, responsibility, resourcefulness, tolerance, self-respect, etc. All these are useful social habits leading to good training in citizenship and democratic way of life.

70 4. Dignity of labour Since the pupils are required to do all types of work by themselves, it upholds dignity of labour. 5.

Correlation Knowledge is gained through this method in a correlated manner in a natural setting and not in water-tight compartments. 6) No cramming or rote memory. Children learn by doing themselves. No finished product is supplied to them. A problem solving attitude develops within the students and they don't have to memorise matters forcefully in an

abstract form. 7) It imparts education in real life situation. Projects are related to everyday needs and experiences of the child and so knowledge is gained in real, practical situations. 8) Individual skill and interests are aroused. Students having

wide varieties of skills and interests can select projects of their own choice. Very rarely is there any student who finds no challenge in any project whatsoever. 9) Incidental learning. In order to attain fair accuracy and success in the project,

pupils seek answers and solutions to many questions and problems and thus come across a lot of incidental learning.

Limitations of their Method : 1) Knowledge comes in a haphazard way In project Method. systematic arrangement of subject matter is not possible because students proceed initially with a problem related to the subject matter and in the course of solving the problem, knowledge results in a natural, practical setting. 2. It sometimes creates heavy load on the teacher. The teacher has to act as a guide of the project and take leadership in conducting all stages of actions involved in the project like selecting a project, planning, guiding execution, evaluating, recording etc.

71 3) It may result in disorganisation of School schedule. It is not possible to follow any fixed schedule while implementing the project work. Students some times may have to work outside school campus. Thus frequent deviation from normal school time-table takes place. 4) It may involve a lot of expenditure. For successful completion of a project, a lot of materials and fund is required which may not be affordable by all schools. 5) Balanced learning for all students may not be possible. A few bright students may be inclined to take all the responsibility upon themselves as they are more capable than others while weaker students may remain comparatively inactive in a mixed group. Even after having a few limitations, the project method gives ample opportunity to all students to come out of the monotonous classroom lectures, become active and work in a team to solve academic problems in a natural atmosphere.

3.4.1 Devices and Techniques of teaching Social Science

As we have already noted, Social Science is a pivotal subject between Sciences and Humanities and is rightly termed as a Social Science. Its teaching involves a primary analysis of cause and effect relationships, a critical interpretation based on observation and a correlated description of basic information and understanding from almost all sphere of human life and its environment, physical and cultural. This subject requires a broad and rich background of perceptual experiences, as an important basis for good teaching. Hence to enliven the teaching learning of geography, a variety of devices and techniques are to be adopted by the teacher of geography.

(i) **Narration** Narration or story-telling is a technique that can be very effectively utilized in the teaching-learning of Social Science in schools. Such narrator of stories with geographical and history elements in them arouse curiosity and interest among children for acquiring his/her geographical information of different regions, countries, continents, mountainous or riverine areas, islands, travels and excursions, nature and human activities, etc. e.g. the narration about the life of the eskimoes, life of pigmies or life of bedawins against different kinds of environments.

72 Some educationists are of the opinion that narration of stories connected with the life of unknown countries and regions will not create an impact on young minds as they will not be able to visualize them properly and cannot connect such narrations to their real-life situation. However, this technique has proved useful in primary and lower secondary school level, on imaginative minds of story-loving youngsters.

(ii) **Description** The subjects social Science contains many such elements whose pictures have to be visualized by the students as it is not possible for them to go and visit those places personally. Such visualization is possible through vivid description of those matters by the Social Science teacher in a very skillful manner. To make verbal description more interesting and attractive, an attempt should be made to utilize charts, models, pictures, etc. Description may be given of travels to different regions of the world, Physical and cultural characteristics on many regions such as the ice-covered continent of Antarctica, the equatorial rainforest areas of congo or Amazon valley, the extreme climate of the Sahara Desert, etc. Descriptions should be in full detail and they must awaken the imagination of the students. Finally attempt should be made to draw substance so that the students have a thorough knowledge. Teacher should also encourage his students to actively participate in such descriptions and give them enough opportunity to give vent to their feeling. Description must follow simple but attractive language expression. Description can be given about mountains, plateaus, plains, Water-bodies, rivers, glaciers, deserts, forests, islands, agricultural activities, industrial activities, mining operations, ports, cities, life of man in different natural region and their cultural adaptations. etc.

(iii) **Illustration** Narration of geographical and historical stories and description of different elements and past events in different regions of the world should be accompanied with presentation of illustrations to show students examples of various matters included in the description. Illustration may be presented in the form of maps, pictures, photographs, globes, charts, calenders, graphs, drawings, sample pieces, etc. Illustrations will make the narration or description more vivid, meaningful and attractive.

73 iv) Questioning During classroom teaching-learning of Social Science an effort is to be made by the teacher to systematize the previous knowledge of the students and connect the previous knowledge to present lesson. While presenting the current knowledge also the teacher should try to arouse the motivation of the students for actively participating in the lesson development. A Social Science teacher with an orientation of very good art of questioning knows how to engage his students through question answer sessions. Questions can be of different types. Questions asked by the teacher to test the previous knowledge of the students are known as preparatory questions. Through this type of questions the teacher can easily make out the level of entry knowledge of each of the classroom students. Such questions keep the teacher to determine the point from where the day's lesson must start. The teacher of Social Science should take help of very small developing questions on fragmented parts of the content to draw out from the students, their ideas of the matter which is going to be discussed during the class session. These questions arouse interest and motivation in the students and make them actively participate in the development of the day's lesson. After the presentation stage is over, the teacher can make use of recapitulative questions so that by answering such questions, students can consolidate the concepts which they have grasped immediately before that. Evaluative questions are such questions that the teacher uses while testing the students' development of knowledge, affective and skill domains to receive feedback from the students about their achievement of the subject matter. The technique of questioning and its effectiveness depends entirely on the teacher's questioning skill. while using questions as a device, utmost care must be taken by the teacher to keep up the interest of the students. (v) Field Trip or Excursion Social Science teaching should not be confined to the four walls of the classroom. Along with classroom teaching, students should be given good opportunities to go out on short and long field trips or excursions to study geographical facts and historical events in their natural settings and surroundings. Thus excursions must form an essential part of Social Science teaching programme from the very beginning. According to

E.A. Mcnee, "It is essential that the foundations of geographical knowledge shall be laid down in the field. No amount of reading from books can make up for a practical

74 knowledge gained by looking at the earth which the child is studying. It follow that from the very early stages, expeditions should form part of the geography

course." Field trips can be of 3 types e.g. 1) Local trips – Local trips are very short trips to convenient places in the village or city near the school for one or

a few lesson periods. on these occasions the students will study their surroundings and collect first-hand knowledge and information about various geographical phenomena and historical places. Like local agricultural or industrial products, local market, transport system, etc. On the leasis of such knowledge, the geography teacher can give an instructive lesson on local geographical features. The purpose of such trips is neither recreation nor teaching about the locality of the school. The main aim is to give reality to teaching of geography and to make difficult ideas simple by referring to concreat, known ideas, and focus. 2) Communication

or neighbourhood trips – Such trips occupy half or full day's duration and therefore may be arranged either on saturday afternoon or on Sundays or on some other holiday. Such excursions may include a visit to a hilly area or to a riverside, or a factory or mine or port etc. on such trips, students are encouraged to observe, study and investigate the geographical items and Historical places by

themselves and ask as many questions as they may desire to remove their doubts. They will get first-hand knoledge about things like, nature of soil, climate, irrigation facilities, transport, production imports and exports etc. Besides providing useful knowledge such trips also provide recreation. 3) Tours or Excursions – For secondary and higher secondary students, geographical and historical

excursions lasting for several days, may be arranged profitably. Adequate preparation must be taken both by the teacher and the students for excursion. These require careful planning, organization and execution. It is advisable that the teacher himself pays a visit to the place of excursion

before-hand and makes a list of objects to be observed by the students. He should also make necessary arrangements for lodging, boarding and conveyance

to the place to be visited. While on excursion, students should be divided into a few

groups. Each group may be asked to describe a particular aspect of geographical phenomenon. This will enable students to acquire knowledge independently as well as in a group.

75 Advantages 1) It provides direct learning experiences. 2) It satisfies the natural urge of the students. 3) It provides practical social training. 4) It broadens the outlook of the students. 5) It helps to create interest in the subject

Limitations 1) It is time and money consuming. 2) There is a general lack of parents cooperation. 3) Lack of initiative and resourcefulness among many teachers. 4) Lack of proper organisation and guidance. 5) It is not a complete method and

is not applicable for all contents in the syllabus. (vi) Roll Play. Role play is an important teaching method which can be intelligently applied by a geography teacher, but is often under used or only used on special occasions. Role play is especially valuable because it gets students actively involved in their learning and it compels them to engage with the subject matter in a focused way. Some issues to bear in mind about role play are as follows :- 1) Role play should be seamlessly integrated into the lesson and should not be considered as a special treat. 2) Role play can be used when students are arranged in pairs, small groups or working as a whole class. 3) Role play is an ideal way for students to be made aware of the differing views of people on contentious issues. This helps students to come across points of views that they may not usually share and sometimes enables them to change their view when presented with enough reasoning. 4) Role play needs careful setting up and monitoring by the teacher to ensure that students are benefiting from it. Without teacher intervention, it can easily become a chaotic exercise.

76 5) It can be fun, sometimes, to allow students to dress up in appropriate costumes and dramatize the whole matter. 6)

While using the technique of Role play, links can be established with other areas of the curriculum such as language subjects for developing oracy skills or Drama for developing the performance aspect of role play. This technique can be applied through collaborative lessons with teachers of other subjects. 7) Extensive support and preparation should be employed for application of such innovative practices in teaching-learning of Social Science. (vii) Inductive and

Deductive thinking. Inductive thinking Applying the inductive thinking technique We guide the students towards establishing a universal law or definition by showing small examples in case of which the law or formula is true. Through a number of illustrations, an attempt is made to elicit the new theory of knowledge from the students. This technique is psychological as well as logical. Following precautions are to be taken while implementing this technique :- 1) The teacher should make all possible efforts to lead the students towards establishing the general rule, theory or definition. 2) The teacher should encourage the students so as to develop their power of researching. Merits of the technique 1) It helps deep understanding. 2) It is a scientific method & helps to develop scientific attitude. 3) It is a logical technique and develops critical thinking and habit of keen observation. 4) It is also a psychological technique and provides ample scope for students interaction. 5) It is based on actual observations, thinking and experimentation. 6) It keeps the students' interest intact as they move from known to unknown. 7) It reduces the tendency of rote learning. 8) It develops self-confidence. 9) It helps to develop the habit of intelligent hardwork.

77 Limitations 1) It has limited application in Social Science and cannot be used for solving and understanding all areas of Social Science. 2)

The generalization obtained from a few observations are not the complete study of the topic. To retain the matter in the learners' understanding level, a lot of supplementary work and practice is needed. 3)

Inductive reasoning is not absolutely conclusive. generalization is made from the study of a few cases which indicates a certain degree of probability. 4) The use of this technique is to be restricted to early and middle stages of secondary section. 5) Inductive thinking may be proved only when the generalization arrived at is verified through the deductive

process. Deductive thinking Deductive technique is opposite to inductive thinking process. In deductive process the learner proceeds from general to particular, from abstract to concrete. Facts are deduced or analyzed on the basis of already established and declared formula. In this case the learner accepts the formula as an established fact. In this technique the teacher announces the topic of the day and gives the relevant formula or principle with the help of a few examples. The students follow the use or application of the formula or principle by supplying more examples. They memorise the results for future application. Merits of Deductive thinking 1) It is time-saving and is usually liked by teachers or authors. 2) It is a suitable method for all level because is basically explanation-oriented. 3) It glorifies the faculty of memorising because students have to memorize the facts, principles, formula, law, etc. 4) It helps the students for revision work in a more efficient manner. Limitations 1) It is not a scientific or psychological technique. Because the facts or principles are not discovered or established by the students.

78 2) It sometimes causes heavy burden on the learners' brain. 3) Students have very little scope for being active learners. 4) It is not suitable for developing thinkings, reasoning or experimenting power of the students. (viii) Concept Mapping It happens very frequently that visual imagery descriptions help us to understand matters that are difficult to understand through narrative text alone. Visual system diagrams or concept maps are two means of adding value to messages students are sharing. A concept map is a type of diagram which shows various relationships between concepts. The identification, organization and graphic depiction of relationships among concepts in a knowledge domain, the technique employs a node-link formalism in which the main key concepts are circled, bracketed, etc., arranged hierarchically (general to specific), then interconnected by lines labeled with short explanations. Concept mapping have been developed by Joseph D. Novak, Concept map is a network representation of several concepts. Concept maps identify linkages between concepts, consolidate concepts, facilitate long-term memory and cultivate self-learning ability of students. (ix) Problem Solving Problem-solving is the ability to identify and solve problem by applying appropriate skills systematically. In the teaching-learning of Social Science, Problem-solving technique can be used as a learner-centred process or activity in which the student are guided to start with what they know and proceed towards the discovery of what they do not

know. It involves overcoming obstacles by generating hypotheses, examining those predications, and arriving a satisfactory solutions. Problem-solving technique for teaching - learning of geography involves few basic functions :-
1) Seeking and collecting information. 2) Identifying a problem 3) Framing a hypothesis

79 4) Experimenting with probable solutions. 5) Generating new observations and knowledge. 6) Coming to a conclusion. Problem-solving should be an integral part of the curriculum and methodology of teaching-learning of Social Science. It takes into consideration the fact

that students can take on some responsibility on their own learning and can take personal action to solve problems, resolve conflicts, discover alternatives and focus on thinking as a vital element of the curriculum. It provides students with opportunities to use their newly acquired knowledge in meaningful real-life activities and assists them in working at higher levels of thinking.

Some educationists provide the following five-stage formula for application of problem- solving technique for handling many areas of the curriculum as well as real every-day life problem of the students. 1)

Understand the problem. It is primarily important that students understand the nature of a problem and the related goals. Students must be encouraged to frame a problem in their own words. 2) Describe any barriers. Students need to be aware of barriers or constraints that may prevent them from achieving their goals. 3) Identify various probable solutions.

After

understanding

the nature and parameters of a problem, students need to select one or more possible strategies to resolve the problem. For this stage, a few sub-stages may be considered Create visual images – visual imaging or mental imaging of the problem will allow the problem – solver to map out many dimensions of a problem and see it clearly. Guessing – students should be allowed some time to engage in trial - error approach to problem-solving. This is an attempt to gather some preliminary data. Create a table – When students get engaged in creating a table of orderly arrangement of data or information, they become more confident about analysing, grouping and organizing relevant data relative to the problem and proceeding towards a solution becomes easier.

80

Use manipulatives – by moving objects around on a table or desk, students can develop patterns and organize elements of a problem into recognizable and visually satisfying components.

Work backward – The students should go back at the beginning of the problem frequently during his proceeding ahead with a probable line of solution. Look for pattern - A pattern is a regular, systematic repetition may be numerical, visual or behavioural.

Looking for patterns is an important problem-Solving strategy because many problems are similar and fall into predictable patterns. Create a systematic list – Recording data in

a

list form is a process used quite frequently to map out a plan of

attacking the problem and solving the problem. 4) Trying a solution – While working through a single strategy. The students should : Keep accurate and up-to-date records of their thoughts, proceedings etc. Try to work through a selected strategy or combination of more than one until it becomes evident that it is not working. Monitor with great care the steps undertaken as part of a solution. Feel ready and comfortable for putting a strategy aside for a period of time and tackling it at a later time. 5) Evaluate the results It is vitally important that students should have multiple opportunities to assess their own problem-solving skills and the solutions they generate from using those skills.

Frequently, students are dependent on teachers to evaluate their performance in the classroom. The process of self-assessment is not easy. However, it involves risk taking, self-assurance and a certain level of independence. (x)

Programmed Learning. Programmed Learning is the technique of learning by the students themselves on a computer or other types of teaching machines where instructions have been set or programmed by the teacher or instructor on a particular concept of geography before the students start their learning. Programmed Learning is the technique of learning by the students themselves on a

81 computer or other types of teaching machines where instructions have been set or programmed by the teacher or instructor on a particular concept of geography before the students start their learning. Programmed instruction is the method of presenting new subject matter to students in a graded sequence of controlled steps. Students work through the programmed material by themselves at their own speed and after each step test their comprehension of the matter by answering an examination question or filling a diagram, etc. They are then immediately shown the correct answer or given additional information. Computers and other teaching machines are used to present the material although books may also be used for this purpose. Computer-assisted instruction, which tests both students, abilities and evaluates their progress, may supplement classroom activity or helps students to develop ideas and skills independently. The first teaching machine was invented by Sydney. L. Pressey (1934) but it was not until 1950s that practical methods of programming were developed. Programmed instruction was reintroduced by B.F. Skinner of Harvard university and much of the system is based on his theory of the nature of learning. As programming technology developed, so did the range of teaching machines and other programmed instruction materials. Some programmes are linear in concept, allowing advancement only in a particular direction or order as the correct answer is given. Others are branching giving additional information at the appropriate level whether a correct or incorrect answer is given. Although programmed instruction cannot be considered as the sole method of teaching, many educators agree that it can contribute to a very efficient classroom procedure and supplement conventional teaching methods. Teaching machines enable students to work individually, calling for active participation of the learner. 3.5 Techniques and strategies required in approaches for teaching children with disabilities Within the mainstream inclusive classroom environment in a school, there are children with single or multiple disabilities. like children with specially health-care needs, children with sensory impairments like visual or hearing impairments, orthopaedic impairments, borderline or slight mental retardation.

82 Many research results have shown and many continue to show that we can teach students with learning disabilities to “learn how to learn.” We can put them into a position to complete and hold their own. Some intervention practices produce large outcomes like – direct instruction learning strategy instruction, and using a sequential simultaneous structured multi-sensory approach. Teachers who apply these kinds of intervention. a) break learning into small steps, b) administer probes, c) Use diagrams, graphics and pictures to depict what they explain in words, d) Provide ample independent well-designed intensive practice e) Model instructional practices that they want their students to follow. f) Provide prompts of strategies to use g) engage students in giving feedback about the success of the strategies.

Scaffolding is also something that seems to make a real difference. The teacher should start with using heavily mediated instruction or explicit instruction and gradually let the students acquire the skill, moving toward the goal of student-mediated' instruction. Success for the student with learning disability requires a focus on individual achievement, individual progress and individual learning. This requires specific, direct, individualized, intensive remedial instruction for students who are struggling. Whether the student with disability is in the general inclusive classroom or learning in a special classroom setting, the teacher should focus the activities on assessing individual students to monitor their progress through the curriculum. Concerns for the individual must take precedence over concerns for the group or the curriculum or for the organization and management of the general classroom content. As general strategies for teaching and presenting, a geography teacher should : Begin class with a review of the previous lecture.

83 Give an overview of the topics to be covered during the lesson period. At the conclusion of the day's lesson, summarize key points. Highlight major concepts and terminology both orally and visually. Be alert for opportunities to provide information in more than one sensory mode. Emphasize main ideas and key concepts during lecture and highlight them on the blackboard or overhead. Speak directly to the students, use gestures and natural expressions to convey further meaning. Diminish or eliminate auditory and visual distractions. Present new or technical vocabulary on the blackboard or overhead, or use a handout. Use visual aides such as diagrams, charts and graphs, use colour to enhance the message. Give assignments both orally and in written form, be available for clarification Provide adequate opportunities for participation, questions and discussion. Provide time-lines for long-range assignments. Use sequential steps for long-range assignments, e.g. for a lengthy paper– ? select a topic ? write an outline ? Submit a rough draft ? make necessary corrections with approach. ? turn in a final draft Give feedback on early drafts of papers so there is adequate time for clarification, rewrites and refinements. Provide study questions and review sessions to did in mastering material and preparing for exams. Distribute sample test questions, explain what constitutes a good answer and why. Test knowledge of material, phrase test items clearly. Be concise and avoid double negatives.

84 Facilitate the formation of study groups for students who wish to participate. Encourage students to seek assistance during his office hours and to use campus support services. Design collaboration educational services. Interact regularly with families. Manage the physical environment of the classroom & positioning of the disabled students favourably. 3.6. Instructional Material for teaching of Social Science Teaching-learning of Social Science involves a primary analysis of cause and effect relationships, a critical interpretation, based on observation and a correlated description of basic information and understanding. Therefore, good teaching-learning of this subject requires a broad and rich background of perceptual and conceptual experiences. To make geography teaching learning more meaningful, vivid and clear, a variety of instructional materials or learning materials are used to support geography teaching learning in the classroom situation. 3.6.1. Maps and globes A map may be defined as the representation of the earth's surface on a flat sheet of paper for the whole of the world or a part of it, drawn with the help of conventional signs and on a definite scale. Many points in this definition need clarification. We can represent the whole of the world or a part of it on a map. Thus we can represent a village or town, district or state, a country or a continent or the whole world on maps, various features of the earth's surface like hills, rivers, lakes, roads, railways, plains, plateaus etc. can be shown on a map with the help of certain symbols. These signs have been accepted universally by all countries with slight modification here and there. In India, the survey of India have prepared a long list of such conventional signs. A map is always drawn on a definite scale. Without a scale it cannot be called a map, it becomes only a sketch. The scale is always shown at the bottom of every map. Our earth is so vast and presents such a variety of features that it is impossible for any one person to visit the whole world and experience every feature of the earth directly. But if these features are presented on a map, everything will be clear to us even without going to that place and seeing everything with our own eyes. With the help of a map even the unknown and unseen lands may be unfolded before our eyes. Maps are prepared

85 on that sheets of paper and can be easily rolled and taken from one place to another. Separate maps can be prepared for different places and different features. A good map must show at least one of the three things correctly, shape, area and direction, unfortunately no map projection has, so far, been evolved which can show all these three things with great care. But if a map shows two of these things with great care, it may be considered as a good map. Boundary lines shown in the map should be clear. Different types of boundaries are to be shown in types of lines. Right type of colour should be used to show different items. Selection of suitable caption, use of latest names, selection of suitable size of the letters to be used is very important in map preparation. Every good map must show the lines or latitude and longitude correctly. There may be different types of maps like 1) Cadastral maps drawn on very large scales ranging from 10 cm : 1 km to 50 cm : 1 km. These maps show a large number of details and drawn by survey Department after careful survey. 2) Topographical maps : – These maps are also fairly large-scale maps. Scales may vary from 4 cm : 1 km to 1 cm : 1 km. These maps are also prepared by the survey of India and these show a large number of details like hills, valleys, rivers, towns, villages, roads, railways etc. with symbols called conventional signs with suitable colour. 3) Wall maps : – These maps are drawn on a small scale which may vary from 1 cm : 50 km. to 1 cm : 500 km. The world, a continent, a country, a state, district etc. are shown on such maps for use in a classroom. 4) Atlases : Atlases or maps in book form are drawn on very small scales i.e. 1 cm : 500 km to 1 cm : 5000 km. The world or any part of it can be shown on atlas maps. on a very very generalised basis. 1) geological maps, 2) Relief maps, 3) Drainage maps, 4) Soil maps, 5) Weather maps, 6) Climatic maps, 7) vegetation maps 8) Astronomical maps, 9) Population maps, 10) Linguistic maps, 11) Agricultural maps, 12) Mineral maps, 13) Industrial maps, 14) Historic maps, Transport maps, 15) Ethnic maps, 16) Distribution maps, 17) Irrigation maps etc.

86 Globe : The globe is the most accurate representation of the earth that is available in the classroom. It is a combination of a map and a model. It is really a map with a curved surface and is therefore a more accurate representation than a map on a flat surface. The globe provides a simplified small replica of the earth. It gives us a correct idea of many geographical concepts like latitudes, longitudes, the two poles, Arctic & Antarctic circles, equator, the two tropics, the axis of the earth, hemispheres, rotation & revolution of the earth, locational relationships of different lands and oceans of the earth. etc. Globes and maps used together will provide very valuable concepts for the students of geography. Students should be taught to interpret various concepts from the globe in a right manner. The globe should be used to develop fundamental concepts about classes the globe may be used to develop concept of the round shape of the earth, directions, stretches of lands and waters etc. In secondary classes the globe may be used to develop concepts of the formation of day and night, changes of seasons, rotation, revolution, latitude, longitude, etc. 3.6.2. Different types of boards Chalk boards – In place of only black boards, we now use chalk boards for geography teaching. Chalk-boards are not necessarily black but may be black, green, yellow, pink and even white. But chalks are not used on white boards. white board marker pens are used on white boards. All these boards are used for illustrating ideas in various directions, for outlining the topic, for summarising concepts, for drawing diagrams, for developing plans for recording students, achievement in the class etc.? A projector are connected wirelessly or via USB or serial cables. A projector connected to the computer displays the computer image on the interactive white board. The white board accepts touch input from an interactive pen. A smart Board system provides an intelligent white board surface for work and users move within information spaces, exist within information spaces rather than merely gaze at them, and information spaces must be shared with others rather than being private, lived within rather than simply visited. Students can be engaged in active collaboration. The functionality of the technology allows users to work with large amounts of information, 2) it offers an information space that invites active collaboration and 3) the work produced is often dynamic. It has brought a new era in education. Braille Board – This is a light and easy-to-use translator, designed for sign-making, compatible with graphic layout programs such as CASmate, Corel Draw, Flex Sign, Graphix Advantage, Page Maker, Sign Lab, etc. Language support is limited to English. It is a simple but indispensable tool for production of signs. Braille fonts, both regular braille and Sim Braille (with shadow dots) are included.

87 Braille is system of raised dots that can be read with the fingers by people who are blind or who have low vision. Teachers, parents and others who are not visually impaired ordinarily read braille with their own eyes. Braille is itself not a language. Rather it is a code by which many languages may be written and read. Braille is used by thousands of people all over the world on their native languages and provides a means of literacy for all. Blackboard is one of the oldest visual devices for instruction. We may not procure many other aids but a black board is a minimum form of aid in a classroom. If used properly, a chalk board can be of tremendous use. Beside all qualities, a geography teacher must possess illustrative talent in him. He must be in a position to use effectively this basic helpful device as frequently as possible. Drawing and writing freely and correctly on the Chalk-board should be considered as an indispensable requisite of every geography teacher. A lot of maps, charts, diagrams and other ready-made illustrative materials may be brought in the classroom and used but it cannot be denied that the most useful and valuable diagrams, maps and graphs are those drawn in the presence of pupils. It is advisable that the geography teacher should take great care to write legibly and in bold letters, make correct drawings using suitable colours, prevent glaring of the board by adjusting room lights, avoid over-crowding of materials on the boards, plan the use of chalk-board in advance and take care of the student, work simultaneously with boardwork to make the use of this instructional aid most effective. Smart Board – A Smart Board is an interactive white board that uses touch detection for user input in the same way as normal pc input devices. The Smart Board interactive whiteboard operates as part of a system that includes the interactive whiteboard, a computer, a projector and white board software. Braille symbols are formed within units of space known as braille cells. A full braille cell consists of six raised dots arranged in two parallel rows each having three dots. The dot positions are identified by numbers from one through six. Sixty-four combinations are possible using one or more of these six dots. A single cell can be used to represent an alphabet letter, number, punctuation mark, or even a full word.

3.6.3 Tape recorders

A tape-recorder is another useful device at the service of the teacher. It is an instrument which is used to record speeches, songs, music and uses may be played back at any time and any number of times. If some items are not needed after a particular

88 time, it may be erased and the tape can be used for recording some other speech or music. This device may prove especially effective in developing worthwhile standards of correct speech by providing opportunities to the pupils to their own speeches as compared to the speeches of respected and well-known personalities.

3.6.4 Overhead projector and power-point presentation

An overhead Projector is a device that can project a chart, a diagram, a map, a table or anything written on transparent plates, upon a screen or a white wall or white board to supplement discussion in the classroom. This makes teaching illuminative, illustrative and attractive. It also saves a great deal of the teaching time used in writing and drawing. These transparencies can also be preserved by the teacher for future display while taking up the same topic. Transparencies are transparent plates on which materials can be written or drawn with dark ink with a fibre-tipped pen. Matters can also be typed or photocopied on transparencies. Washable colours can also be used on transparencies if matters meant for washing after use.

Power Point Presentation

– Power Point is a slide show presentation programme developed by Microsoft. Power point was officially launched on May 22, 1990 as a part of the Microsoft office suite. Power Point is well known for helping develop the slide based presentation format and is currently one of the most commonly used presentation programmes available. Power Point presentations consist of a number of individual pages or slides. Slides may contain text, graphics, sound, movies and pictures, diagrams, etc, which may be arranged as per the user's wish. The presentation can be displayed live on a computer, printed as handouts or navigated through at the command of the presenter. For large audiences the computer display is often projected using a video projector. Power point presentation is a very strong audio-visual aid for topics of social science. Slides can be prepared for any concept of social science with proper pictures, diagrams, proper explanation in clear and suitable sized letters if required with animation. Special softwares can also produce sound along with pictures. Suitable explanation can be recorded and presented in an effective manner. Popularity of Power Point presentation among teachers depends on its following uses–

- 1) It creates proper atmosphere for teaching-learning of the subject.
- 2) It helps to understand the subject clearly.

89 3) It helps the teacher in repetitive classroom proceedings on the same topic. 4) The teacher can go on improving the power point presentation because it is very easy to add or delete matters and redesign the slides. 5) students can also get a copy of the same and use them whenever they feel to revisit them.

3.7. Adaptation of materials for teaching challenged children

Concept The concept of inclusive education means that students with special needs will be placed in the same classroom environment as other students of their age who do not have special needs. Within inclusive education there are two main branches of thoughts : mainstreaming and full inclusion. Mainstreaming is a process that allow children with special needs to enter certain standard classrooms after they show the ability to keep up with the rest of their peers. Full inclusion puts students with special needs in standard common classroom environments without testing or demonstration of skills. While acceptance of the idea of inclusive education is somewhat mixed, educationists in general at present are of the opinion that children with special needs thrive in standard classroom environments for a variety of different reasons. Inclusive classroom allows children to develop friendships with their peers and feel less that children who are placed in standard common classroom environments generally have higher special classrooms because they have special needs. Children with special needs actually learn more in a regular classroom environments provided they get help and support they need in and out of the classroom when it comes to academic subjects. Children actually need to feel included or belong to a group. Children who are groomed in special schools or special classes develop a kind of self-esteem that would remain with them throughout life and it would make them difficult to feel like they belong to adults. Moreover according to children with Disabilities Act, disabled children have the right to access to the same general curriculum taught to students without disabilities. As educators demand increasingly to include children with disabilities in the regular classrooms, the need for teachers with greater expertise in this field or support from special educators increases as well. Collaborative teaching is fast becoming one of the most popular service delivery in inclusive classroom settings. Co-teaching involves two or more certified professionals to share instructional responsibility

90 A child with disability means a child with :

1. Mental Retardation
2. Hearing Impairments (including Deafness)
3. Speech or Language Impairments.
4. Visual Impairments (including Blindness)
5. Serious Emotional Disturbance
6. Orthopedic Impairments
7. Autism
8. Traumatic Brain Injury
9. Other Health Impairments
10. Specific Learning Disabilities.

Materials that should be adapted for teaching challenged children in an inclusive classroom are :-

1. Thick hard-paper coloured text books with bold writings
- 2) Picture books depicting all geographical concepts.
- 3) Braille books., Braille Boards for visually impaired students.
- 4) Overhead projector, LCD projector for projected materials on a screen with use of coloured writings and diagrams wherever suitable.
- 5) Interactive smart Boards to make the children motivated in participation in the lesson.

91 6) Language Laboratory equipments for the children with speech or language impairments. 7) Hearing Aids (Personal), microphones, good sound system for helping hearing impaired students. 8) For orthopedic imparied children wheel chairs with attached small sized computers and Key-boards may be used for a single group of students in a single classroom for specific content and objectives with mutual ownership, pooled resources and joint accountability. One of the advantages of co-teaching is that more detailed observation of students engaged in the learning process is possible. With this approach, co-teachers can decide in advance about the type of observational information to gather during instruction. Afterwards, the teachers can analyse the informations together. Another approach of co-teaching may be that one teacher would have primary responsibility for teaching while the others provide support in classroom proceedings. 'Parallel teaching' can also be adapted where both teachers cover the same content but they divide the class into two groups and teach simultaneously. In 'Station teaching', both teachers divide the content and each take responsibility for planning and teaching part of it. In this case, the classroom is divided into various teaching centres. Alternative teaching may also be adapted wherin one teacher manages most of the classes while the other teacher works with a small group inside or outside the classroom. In 'Team teaching' both teachers are responsible for planning and sharing the instruction of all students.'

92 3.8 Check Your Progress 1. What is curricular approach ?

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..... 3. When do we usually use Lecture Method ?

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..... 4. What are the steps involved in project Method ?

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..... 5. Mention the advantages and disadvantage of discussion Method.

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..... 6. What do you mean by developing questions?

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93 7. Why the 'Field Trip' considered the most effective technique of teaching Geography?

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..... 8. What is the main difference between inductive and deductive thinking?

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..... 9. What do you mean by inclusive education ?

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..... 10. Mention two strategies of the teacher teaching in an inclusive classroom.

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..... 11. What does the term instructional material stands for?

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..... 12. Explain the use of maps in your own words.

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94 13. Why is chalk board considered the basic instructional material for a school classroom?

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..... 3.9 Let Us Sum Up The teaching of Social Science require a variety of instructional inputs. These instructional inputs are essential to achieve the desired learning outputs. Instructional inputs can broadly be classified into teacher directed and learner directed. In this unit apart from these instructional inputs we have also discussed devices and techniques of teaching Social Science. 3.10

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Unit 4

Evaluation of Learning in Social Science Structure 4.1 Introduction 4.2 Objectives 4.3 Purpose of evaluation in Social Science. 4.4

Techniques of evaluating learner achievement in Social science :

written and oral tests, observation tools, work samples, portfolio. 4.5

Assessment :

tools and techniques of continuous and comprehensive evaluation (CCE) for

curricular and co-curricular subjects. 4.6 Construction of teacher-made test. 4.7 Diagnostic testing and enrichment techniques for challenged children. 4.8 Check Your Progress 4.9 Let Us Sum Up 4.10

References 4.1 Introduction

In any education system, the teaching-learning process becomes successful if proper curriculum framing is followed by appropriate implementation of methodology and lastly, a scientific evaluation system. Actually the fundamental test of a sound education is its effect on the pupils. An education programme that is unable to bring about desirable changes in the educants, cannot be termed as successful. Keeping in mind, the definite aims of changes in pupil behaviour, teaching-learning experiences are designed and planned. During the course of teaching-learning, teachers have to ascertain very frequently the growth and change, taking place pupils as a result of teaching-learning experiences. This is called evaluation. A good evaluation process rests on

the three pillars of i) educational objectives, 2) learning and behavioural changes, and 3) tools and techniques of evaluation. Evaluation

is a process of determining

the extent to which previously established goals or objectives have been achieved,

the

96 effectiveness of teaching learning experiences provided in the

class-room and the manner in which the aims of

education have been accomplished.

The aims of education have been accomplished. The evaluation process can be represented diagrammatically by means of the following triangle :- Objectives Learning Experiences

Evaluation

Techniques

Objectives are central to both learning experiences and evaluation. Evaluation comes in right at the planning stage when objectives are determined. Similarly, learning experiences are also planned and organised in terms of objectives. At every stage in the learning process, evaluation is needed to discover the extent of the effectiveness of the experiences with a view to bring about the desired changes in pupils behaviour. Evaluation, therefore cannot be postponed till the end of the entire course of instruction. It has to be made at periodical intervals to ascertain effectiveness and change, with a view to improve learning. Thus, evaluation must remain as an integral part of teaching because it is a continuous process and relates to the total learning situation. It indicates an inter relationship among the school, the society, the knowledge body, instruction and social behaviour. Evaluation is a continuous and natural enterprise of all concerned. Evaluation is a holistic process by means of which changes in the behaviour of the students are studied. 'Evaluation' cannot be considered as a synonymous term as 'examination'. Examination measures academic achievement only and it depends for its data on achievement tests to know the level of knowledge acquired by

a student. So, the examination system in earlier days, used to measure only the students' level of achievement it is a 'one-way street' which deprived children of development of varied abilities. On the other hand, evaluation is an integral part of the teaching- learning

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Evaluation is a process of appraisal, which involves the acceptance of specific values and the use of a variety of instruments of observation, including measurement, as the basis of value Judgement. The basic steps involved in evaluation are :- 1) Formulating objectives, 2) Securing evidence on the achievement of the objectives in selected situations, 3) Summarizing and recording evidence, and 4) Interpreting evidence, and 5) Using interpretations to improve instruction and pupils progress report. 4.2

Objectives After studying this unit the students will be able to : 1) Explain about the meaning and concept of evaluation. 2) Explain the types of evaluation in Social Science. 3) Explain the tools and testing techniques of challenged children. 4.3

Purpose of evaluation in Social Science. Evaluation is more comprehensive than examination. It includes the testing of both tangible and intangible qualities. It is related with the total learning situation. It takes in to account the growth of the Evaluation is both objective and subjective. It is a continuous and developing process and forms an important part of the educational programme. The teacher, if he wishes to succeed in his aims, must ascertain the effectiveness of the text books, audio-visual aids, projects, mehods and devices of teaching and also his relationship with his pupils. Following are the major advantages of evaluation :- 1) Evaluation leads to improvement of instruction

As we have already noticed, there is inter-relatedness between objectives, learning experiences and evaluation. Evaluation is of great importance because it indicates the degree of the attainment of each objective. It also indicates the strength and weekness of different classroom procedure. It also suggests improvements and modifications of those procedures which have not succeed, Thus, evaluation helps in replanning of the work, use of new methods, devices, techniques and aids and the re-evaluation of the whole procedure with a view to improve instruction.

98 2) Evaluation helps in clarifying

objectives : It is evaluation that enables the teacher to judge as to what extent the desired objectives have been realized. Thus, evaluation is

of great help in clarifying objectives and reminding the teacher of his success or failure in the realization of those objectives. 3) Evaluation promotes better learning : The study habits of our pupils depend primarily on the examination methods. Previously class promotion depended only on success in the written examinations. So pupils used to memorize facts and reproduce them at the time of examination. But now evaluation signifies a wider, more comprehensive and continuous process of assessing the progress of the student with the help of different devices.

Therefore, beside

knowledge objective, students tend to develop proper attitudes, skills, habits, appreciations and understanding and better learning

results leading to development of better personality. 4) It provides the basis for guidance : Evaluation helps us in determining the extent and rate of pupil growth along the line of the aims and objectives of education. Diagnosis of the difficulties and weaknesses of individual pupils as well as their potentialities and achievements is possible only with the help of a good mechanism of evaluation.

This information can provide us the basis for guidance in preparing remedial instruction to remove individual weaknesses and difficulties. 5) It leads to curriculum changes : Evaluation is based on educational

objectives which are in turn based on the needs and interests of the children as well as those of the society and also on psychology of learning. Social needs are not static but undergo constant change in the rapidly changing world. So educational objectives are also changing from time to time according to the changing needs of the society. Evaluation which depends on educational objectives, demands similar changes in the curriculum from which some content areas are dropped or modified some other new contents are added

as per reflections of the evaluation to enable the curriculum

to keep pace with the demands of a rapidly changing and amazingly complex world.

The primary purpose of evaluation is to determine whether the desired objectives are being fulfilled in the learning process. So it is the duty of every schools to establish a regular evaluation programme for measuring the growth and development of pupils studying there. Every subject teacher should keep before him the main objectives of 99 evaluation as they relate to the particular subject.

The specific objectives of evaluation in Social Science may be enumerated as below : 1) To help in measuring factual knowledge : A teacher of Social Science evaluates in order to determine the extent and rate of the pupils development as per the aims and objectives of teaching Social Science. Definite knowledge, informations, concepts must be acquired by pupils in order to develop clear thinking and critical judgement. 2) To help in diagnosing weaknesses : Another purpose of evaluating Social Science knowledge is to discover specific weaknesses of individual pupils or the class as a whole so that a Social Science teacher can prepare remedial instruction for removing those weaknesses and deficiencies. 3) To help in predicting future achievements : Another important purpose of evaluation in Social Science is to determine the potentials of the students, discovering their special abilities and attitudes, thereby predicting their future success. 4) To stimulate instruction : Evaluation in Social Science is meant to stimulate both teacher and pupils to work harder with a view to reaching a higher level of attainment and proficiency in Social Science. 5) To meet criticism : A careful and comprehensive evaluation provides evidence that can be used to inform the community and the school authorities about the value of school programmes and its achievements. Thus criticism from parents and public bodies can be met and turned to constructive co-operation. 6) To test the development of skills and attitudes : Evaluation is also meant to test whether right attitudes towards groups and individual persons have been formulated as a result of Social Science instruction. Perfect attitudes will help pupils in their social adjustments, social behaviour, manners, etiquettes, etc. Right attitudes, habits and understanding are essential for producing democratic citizens. Thus, evaluation will help the geography teacher in directing the Social Science intellect and emotions of his pupils in such a manner that they will not possess narrow prejudices, selfish motives intolerance, injustice, jealousy, and other negative traits.

100 4.4 Techniques of evaluating learner achievement in Social Science : Written and oral tests, observation tools, work samples, portfolio. In order to attempt for a comprehensive objective of the present day school curriculum and to obtain an appraisal of the students, achievement several techniques are employed some of which are : written tests, oral tests, observation tools, work samples, portfolio etc. Written Test :– Written tests are those in which tests are taken through paper-pencil work within a specific duration of time and not by means of verbal interviews or online assessment process. Written tests may be of many types : Essay type : In Essay-type written test, examinees are required to write an answer, out of a few alternatives, within a definite duration of time and word limits, which help to test the students, abilities of coherent thinking, analysis of ideas, organization of thoughts in a logical manner, recollection of facts, use of appropriate language, citation of suitable examples, etc. Essay type tests may be descriptive type, comparative type, explanatory type, problematic type, critical analysis type, etc. Merits : It tests the students' capability of sustained thinking and arrangement of them in a systematic manner towards a logical conclusion. It is useful to evaluate the skill of writing on a specific topic requiring assemblage of different facts and may be with critical analysis of them. It can help the evaluator in identification of a student's personal attitude or conviction on certain issues related to a subject or topic. Demerits : Personal biased attitude of the evaluator may hamper the spirit of the test. It takes too much of time and mental stress on the examinee, although full marks are usually not awarded. Much time is spent in evaluating the scripts and thereby publication of results is usually delayed when the number of candidates is large. The students prefer to study only selectively leaving some of the topics unread and thus acquiring a comprehensive knowledge is impossible.

101 Examples and statistics used in the answer vary from candidate to candidate and it may be difficult for the examiner to verify them and compare among the examinees leading to erroneous evaluation process. Short Answer type : Short Answer type test items are meant to judge the students' understanding of a subject or topic within a relatively short time, as the answers are needed to be written within a few words these may be many types like descriptive type, comparative type, explanatory type, problematic type, brief analytical type, etc. Merits : Since answers have to be given very specifically within a few words, they do not vary, very limited personal bias exists among the examiners and time taken for evaluation is relatively less. Language does not play a dominant role as the length of the answer is short. These are useful to understand the students' ability of comprehension, analysis and expression within a short time. Since the weightage of each item is less, questions may be asked covering almost all areas of the syllabus. Demerits : These tests have some extent of subjectivity

and can create adverse effect both on examinee and the examiner. If there are too many items the students are not able to allocate necessary time for each, and in absence of suitable alternatives they are to leave some items resulting in low scoring. Objective type tests :

Test items of objective type demand only a single answer to be given in one word or to be selected from a given set of answers. Objective tests are of many types namely : a) Selectivity type, b) non-selective or retentive type. The non-selective type again may be or sub-types like i) very - short answer type and ii) Filling up or completion type. The selective type again may be classified as-i) Multiple Choice Questions type, ii) True-False or Yes-No type, iii) Matching Test type, iv) Classification or grouping test type,

etc. Merits : Objective type tests have been introduced to avoid the difficulties of essay-type tests. The name of the test suggest that it is suitable for eliminating the faulty assessment due to personal biasness, various types of answers for the same question, and wastage of time for answering as well as evaluation. In this type of test it is possible that questions are framed covering the whole syllabus so that students can learn every portion of the syllabus.

102 As right answers do not vary from candidate to candidate, exact objective measurement of the desired learning outcome is possible. Demerits : This type of test is not suitable for measuring the students' understanding of the cause effect relationship between objects or phenomena and appreciation of different aspects of a concept. More scope for copying from others is generally possible. There is little scope for interpretation of the facts and their correlation.

However limitations of objective tests can be overcome to some extent if proper steps are taken as below :- Time allotted for objective tests should be neither too long nor too short. The instructions should be clearly stated in brief so that time is not wasted in reading instructions. Questions should cover the entire syllabus and must be made compulsory. The scoring key should be prepared with care, beforehand. Oral Test :

Evaluation is also done on the basis of oral test. In this type of test the evaluator can ask a student or a group of students verbal questions in order to make out their level of understanding. Sometimes oral tests are taken as a part of the written test or practical test. For practical evaluation, oral tests are known as viva-voce and are meant to judge the theoretical concepts related with various

practical assignments. Oral tests are also used during teaching learning sessions to test the previous knowledge of the pupils related with present

lesson as well as during the presentation of a lesson for developing a particular concept in the

class, to formulate new generalization or to find out students, contribution to the lesson development, such questions not only keep

the

students alert and attentive but also stimulate their mental activity. The teacher

is also in a position to find out whether his students are learning seriously and at a regular pace. Oral tests serve their real purpose when they are made an integral and essential part of the evaluation programme. All students are not equally able to express their thoughts verbally in a desired manner. Many students are found to be in a better

103 position when they are required to express themselves through written tests. But, beside written tests, all students must be encouraged to express themselves orally as frequently as possible and practice of this ability is a very essential quality for all young citizens of a democratic country like India from the very beginning of their educational endeavour.

Some marks should be set aside for oral testing beside all written tests or whenever evaluation is to take place.

Observation tools :- Development of right attitudes, interests and values

is one of the major aims of teaching Social Science

in schools. Evaluation in this direction is also very essential to ascertain how far we have succeeded in realising our aims.

This is possible through certain techniques one of which is observation. Observation is seeing something with a purpose. It is one of the tools or techniques available to teachers for appraising pupils 'growth and sensing their interests and aptitudes. Observing each pupil, while he or she is engaged in actual classroom activities, is the best way of judging the pupil'

s attitudes, feelings and interests as well as changes in behaviour.

Thorough observation will reveal to the teacher how the pupil shows respect for the ideas and feelings of others, abstains from causing disturbance in the class, takes his proper share in classroom activities, observes rules established by the group, fulfils his responsibilities, tolerates others' comments and enjoys giving help and assistance to others, when needed. It is, however, essential that a properly written record of the data obtained through observation, in case of each pupil, should be maintained by the teacher. Such a record is very helpful in interpreting and reporting progress of pupils to their

parents. Although observation as a tool or technique is mostly subjective, its reliability and validity can be improved by making observation at frequent intervals and also by making observation independently by several observers at a time. Work Samples : –

In Social Science, work samples are usually written materials which include a report, a story, a class-room test or an assignment.

Work samples may also include map-work, illustrative material prepared by pupils, art-work or construction of project. Tape Recorder may also be used for obtaining a sample of the pupils spoken words. Such work samples can provide valuable information and evidence with regard to the desirable growth on the part of the pupils in sharing, cooperating, reviewing and applying his skills in individual and group experiences.

104 Portfolio : – There exist two main types of assessment, namely formative and summative. Formative provides feedback and information during the instruction process, while learning after the learning has been completed and provides feedback that sums up the learning and teaching process at the end of instruction. Portfolio is an evaluation tool used to document student learning through a series of student-developed artifacts. It is considered as an authentic assessment and it offers an alternative or an addition to traditional methods of assessment. Portfolio assessment gives both teachers and students a controlled space to document, review and analyze content learning. A student portfolio is a systematic collection of student work and related materials that depicts a student's activities, accomplishments and achievements in one or more school subjects.

The collection should include evidence of reflection and self-evaluation, guide lines for selecting the portfolio contents and criteria for judging the quality of work. The goal is to help students assemble portfolios that illustrate their talents, request their writing and organizing capabilities and show their status of school achievement. There are two major types of portfolios 'Process Portfolio'

which is more or less equivalent to formative evaluation system and 'Product portfolio' which is close to summative evaluation system. A process portfolio documents the stages of learning and provides a progressive record of student growth. A product portfolio demonstrates the ultimate form of achievement, the mastery of a learning task or a set of learning objectives and contains only the best work.

Teachers normally use process portfolios to help students identify learning goals, document progress over time, and demonstrate

learning mastery. In general, teachers prefer to use process portfolios because they are ideal for documenting the stages that

students go through as they learn and progress. Steps in portfolio Assessment process : 1) First, the teacher along with the students should identify the goals of achievements or learning objectives. 2) Secondly, teacher and students together should decide on selection of portfolio contents or samples of student work, reflections, teacher observations, and

105 conference records. 3) Next, the teacher should develop evaluation procedures for keeping track of the portfolio contents and for grading the portfolio. 4) After conferences, which needs a plan for holding portfolio conferences, which are formal and informal meetings in which students review their work and discuss their progress. Conferences are an essential part of the portfolio assessment because these encourage reflective teaching and learning. Advantages of portfolio assessment : – It promotes the students, self-evaluation, reflection, and critical thinking. It measures performance based on genuine samples of students' work. It provides flexibility in measuring the process adapted by students to accomplish their learning goals. It enables both teachers and students to share the responsibility of setting learning goals and for evaluating progress towards meeting those goals. It gives the students opportunity to have extensive input into the learning process. It facilitates cooperative learning activities, including peer evaluation and tutoring, cooperative learning groups, and peer conferencing It provides a process for structuring learning in stages. It provides opportunities for students and teachers to discuss learning goals and the progress towards those goals in structured and unstructured

conferences. It enables measurement of multiple dimensions of students' progress by including different types of data and materials. Disadvantages of portfolio Assessment :- It requires extra time to plan on assessment system and conduct the assessment. It leads to gathering of all necessary data and work samples which can make portfolio bulky and difficult to manage. Developing a systematic and deliberate management system is difficult and sometimes a portfolio may come out to be a random collection of student work. Scoring portfolios involve subjective evaluation procedure such as rating scales 106 and professional judgement and so it has limited reliability only. Scheduling individual portfolio conferences is difficult and the length of each conference may interfere with other instructional activities. 4.5

Assessment : tools and techniques of continuous and comprehensive evaluation (CCE) for Social Science. Continuous and comprehensive Evaluation (CCE) refers to a system of institutional evaluation of students that covers all aspects of students' development. It is a developmental process of assessment which emphasizes on two-fold objectives. These objectives are continuity in evaluation and assessment of broad-based learning and behavioural outcomes. In this scheme, the term 'continuous' is meant to emphasize that evaluation of identified aspects of students , growth and development' is a continuous process rather than an end event, built into the total teaching learning process and spread over the entire span of academic session. It involves regularity of assessment, frequency of unit testing, diagnosis of learning gaps, use of corrective measures, retesting and feedback of evidence to teachers and students for their self evaluation. The second term comprehensive means that the scheme attempts to cover both the scholastic and the co-scholastic aspects of students' growth and development. Since abilities, attitudes and aptitudes can manifest themselves in forms other than the written word, the term refers to application of variety of tools and techniques (both testing and non-testing) and aims at assessing a learner's development in different areas of learning. The CCE assessment includes both scholastic and co-scholastic assessment. The desirable behaviour related to the learner's knowledge, understanding, application, evaluation, analysis, and creating in various subjects including geography, history and the ability to apply these in new, unfamiliar, situations are some of the objectives in scholastic domain. The desirable behaviour related to learner's life skills, attitudes, interests, values, co-curricular activities, physical health are described as skills to be acquired in co-scholastic domain. Both scholastic or curricular and co-scholastic or co-curricular domains should be assessed in two ways, formative assessment and summative assessment. Formative assessment is carried out during a course of instruction for providing continuous feedback to both the teachers and the learners for taking decisions regarding appropriate 107 modifications in the transactional procedures and learning activities. Summative assessment is carried out at the end of a course of learning. It measures or 'sums-up' how much a student has learned from the course. It is usually a graded test, i.e. it is marked according to a scale or set of grades. The tools for formative assessment in scholastic domain are

oral questions, assignments, conversation skills, projects, quizzes and group work. The tools per summative assessment in scholastic domain are multiple choice questions, short answer type and long answer type descriptive questions at term end. Co-scholastic domain covers the following : values and attitudes towards teachers, students, peers, institutional programmes, environment, Co-curricular activities. Creative and literary activities Aesthetic activities. Clubs and Scientific activities Emotional Skills. Social Skills. Life skills. Thinking skills. Evaluation of Scholastic areas.

Area Technique Tool periodicity Reporting All the Oral Test Oral questions Every day Using direct School Written Test Class Work after completing or indirect Subjects Project work Question Paper a competency grades. Practical Unit Test or a group of Activities Assignment competencies Maintenance Diagnostic Monthly class Test Portfolios Test Unit Test Terminal Test.

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Evaluation of co-scholastic areas and personal and social qualities

Area Technique Tool periodicity Reporting Health Medical Norms of Once in a Health Status Check-up fitness used year for physical by doctors growth Physical Education Observation Rating scale As per Direct of activities Time Table grading Work Experience Observation Rating scale As per Direct and Art Education at work and Time Table grading activities Maintenance of portfolios Social and Observation, Rating scale, Day-to-day Direct Personal qualities Interview, observations grading Self-Reporting Check-list by the teachers (once in techniques like Anecdotal by determining every month) students' diary. Records criteria for each trait.

The major emphasis on CCE is on the continuous growth of students ensuring their intellectual, emotional, physical, cultural and social development and therefore will not be merely limited to assessment of learner's scholastic attainments. It uses assessment as a means of motivating learners in further programmes to provide information for arranging feedback and follow-up work to improve upon the learning in the classroom and to present a comprehensive picture of a learner's profile. Continuous and comprehensive evaluation helps a classroom teacher in the following ways :-

To identify learning difficulties in mastering certain competencies and the intensity of such learning difficulties. To improve students' learning through diagnosis of their performance.

109 To plan appropriate remedial measures to enable the students who have learning difficulties in mastering the competencies. To strengthen evaluation procedure itself. 4.6 Construction of Teacher-made Test The most frequently used method or technique for measuring and evaluating pupil progress by the classroom teacher is the Teacher-made test. The teachers, therefore, have an obligation to provide their students with best possible evaluation. This type of test may involve many types of objective tests, essay-type tests, etc. Yet it is quite common to find teachers who have had no specific training in the use and construction of these types of tests. Such teachers often design tests on a trial and error basis. Similarly many teachers design such tests with little thought of the relationship between what these tests

measure and the instructional objectives. Determining Instructional/Learning Objectives : The first and most important step in planning

a Teacher-made test

is to define the objectives of instruction. The teacher may have with him, curriculum guides, and knowledge about the taxonomies of instructional objectives developed by Benjamin S. Bloom (1956), Krathwohl (1964) and tests on the development of instructional objectives by Plowman (1971) and Kibler, Barker and Miles (1970), the ultimate responsibility for selecting objectives suitable

for the group of students that he is teaching and stating the objectives

in such a way that they can guide instruction and the evaluation of pupil progress rests with the teacher. Objectives should be stated in terms of student behaviour and not in terms of learning activities or purposes of the teacher.

Objectives should contain an action verb that indicates the behaviour that a student should show in dealing with the content. This format tends to guarantee a focus on the student and what he does.

Objectives should be stated in terms of observable changes in student behaviour. Writing the questions :

Once we have defined the important learning/instructional objectives and have, in the light of those objectives, determined which types of questions and what form of test to use, We can begin the second step in constructing an affective teacher-made achievement test. This step is writing the

questions.

110 General principles of framing questions : While the different types of questions like essay-type, short answer type, very- short-answer type and objective type questions like multiple-choice, fill-in-the-blank, true-false, matching test, etc.

are constructed differently, the following principles apply to constructing questions and tests in general.

Make the instructions for each type of question simple and brief. Use simple and clear language in the questions. If the language is

different, students who understand the material but who do not have strong language skills may find it difficult to demonstrate

their knowledge. If the language is ambiguous, even a student with strong language skills may answer incorrectly if his or her interpretation of the question differs from the instructor's intended meaning. Write items that require

specific understanding of ability developed in that course, not just general intelligence or test-wiseness. Do not suggest the

answer to one question in the body of another question. This makes the test less useful, as the test-wise student will have an advantage over the student who has an equal grasp of the material, but who has less skill at taking tests. Do not write questions in the

negative. If you must use negatives, highlight them, as they may mislead students into answering incorrectly. Specify the units and precision of answers. Principles of constructing Multiple Choice Questions : The most commonly used

type of question is the multiple-choice question multiple-choice questions are more easily and objectively graded than essay-type questions and are more difficult to answer correctly without the required knowledge than true-false, are probably the most difficult type of question to construct. The following are a few guidelines for multiple choice question construction.

State clearly

in the instruction whether you require the correct answer or the best answer to the question. Instead of repeating words in each alternative, include these words in the main body of the question. This will make the question easier to read and the options easier to compare. The structure of the main part of the question, however, must not contain clues to the correct response.

111 Make incorrect alternatives attractive to students who have not achieved the targeted learning objectives. The placement of correct responses

must vary randomly. Make all choices exactly parallel, Less experienced test constructors tend to make the correct answer longer and more carefully worded and

by doing so, may provide a clue to

the correct answer. Never Offer, "all of the above" or "none of the above"

as an alternative in a best-response multiple choice question.

Whether none of the above "is chosen as a better response than one of the other options

may depend on what evidence the student considers rather than how well he or she understands the material. Control the difficulty of a question by making the alternatives more or less similar or by making the main part of the question more or less specific. If the alternatives are more similar, the student will have to make finer distinctions among them. If the main part is more specific, the student will be required to draw on more detailed knowledge.

Four or more options must be provided to minimize guessing. Uniform number of options must be used.

Objective type questions other than Multiple-Choice Type may be :- Simple Recall type and Completion type—in the Recall type category while, Alternative Response type (true-false, plus-minus, right-wrong, yes-no, correct- incorrect, etc) Matching type (With two columns

in which right pairing is required) Rearrangement type (requiring chronological or logical ranking, ordering etc.) Analogy (consisting of a pair of words related to each other like

cause and effect, part-whole, action-object, synonyms, antonyms, degree, place, sequence, numerical, associations, etc). Advantages of objective tests : Easy to score

due to short responses involved. Eliminates subjectivity. Adequate sampling—more items are included where validity and reliability is

112 adequately maintained. High objectivity is possible due to short and a single correction answer in each item. Norms can be established. Time and energy-saving since options are provided. Limitations : Difficult to construct Encourages guessing Expensive because of wide sampling expensive for duplicating facilities. Encourages rote memorization, critical appreciations organization, reasoned expressions are not encourage. Time consuming on the part of the teacher in test construction. Essay type examination.

Essay examination consists of questions where students respond in one or more sentences to a specific question or problem. This type of test is aimed at evaluating knowledge of the subject matter or to measure skills in writing. It also tests the student's ability to express his ideas and think critically within a certain period of time.

According to Monrae and carter : – Essay examination may be of various types like :- Selective recall Evaluating recall Comparison of two ideas. Decision (for or against) Cause and effect Explanation type Summary Analysis Statement of relationship. Illustrations of or examples of principles. Classification of rules or principles in new situations.

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Discussion Statement of aim Criticism Outline Reorganization of facts Formulation of new questions, problems, etc. New method or procedure.

Advantages of Essay examination : – Easy to construct Economical in terms of producing a huge number of the question papers. It can be even written on the board. Trains the core of organizing, expressing and reasoning power of the students. Minimizes guessing. Develops Critical thinking. Minimizes memorizing. Develops study habits involving comprehension, interpretation, explanation

rather than only memorizing a few items. Limitations of Essay examination : Low

validity because of limited sampling. Low reliability due to its subjectivity in scoring. A given answer by a specific student may or may not be appealing to a specific teacher. Low usability because

it is time consuming both on the part of the student to answer and on the part of the teacher to evaluate. Encourages the students with low ability to go on writing incorrect, half-correct matters using camouflaged judging of words and sentences. Disadvantageous for students with poor penmanship. Some teachers may react unfavourably to responses of students having poor handwriting and unity papers.

114

METHOD SOCIAL SCIENCE WHAT IS PEDAGOGICAL ANALYSIS? Pedagogy is the study of being a teacher. The term generally refers to scientific strategies of instruction, or a style of instruction. Pedagogy is also occasionally referred to as the correct use of instructive strategies. It literally means "to lead the child". The Latin-derived word for pedagogy: child-instruction, is in modern use in English to refer to the whole context of instruction, learning, and the actual operation involved therein, although both words have roughly the same original meaning. In order to analyse a content pedagogically, first of all the content to be taught is to be divided and sub-divided into units and subunits. Then these subunits are to be analysed in accordance with the methodology of subject concern (language, social science, science, music etc.) in order to bring certain behavioural changes among the students. The particular objectives selected to bring about these changes are known as Instructional objectives. So we can say that, "the analysis of a given content material in any subject or any topic carried out well in the spirit of the science of teaching (Pedagogy) is known by the term pedagogical analysis of the contents". Content analysis of the unit into sub-units with time allocation Basic concepts to be imparted Objectives using Revised Bloom's taxonomy Taxonomic table for well balanced unit planning. Teaching strategies including Equipment, probing Questions. learner centred activities, Achievement test of 50 marks based on the taxonomic table.

115

116 Sl.No. SUB-UNITS PERIODS 1 BACKGROUND AND CIVIL RIGHTS 1 MOVEMENT IN SOUTH AFRICA 2 REGIONAL MOVEMENT IN INDIA 1 CHAMPARAN AND KHEDA 3 KHILAFAT MOVEMENT AND 1 ASSUMING FORMAL LEADERSHIP IN THE SUCCEEDING MOVEMENTS 4 REMEDIAL CLASS 1 TOTAL 4 BRIEF CONCEPT- SUB UNIT 1 Mahatma Gandhi's birth and background. Gandhi's field of study and formal degree has to be mentioned which set the background for his involvement in the politics. To plead a case on behalf of Dada Abdullah and Co. he had rushed to South Africa in late 1890s. He observed the exploitation and oppression towards the Negroes by the Whites; and therefore he formed the Natal Indian National Congress. He adopted the idea of Satyagraha from the Book. "kingdom of god" and "unto the last" by Leo Tolstoy and John Ruskin. He formulated his ideas of 'NON VIOLENCE and SATYAGRAHA' which later formed the backbone of Indian Politics and signified the era of 1915- 1947 as the 'Gandhian Era'.

117 BRIEF CONCEPT- SUB UNIT 2 1918- First regional movements in India developed by Gandhi, which brought him closer to the rural mass of India. Oppression and exploitation of the peasants at Champaran and Kheda by the British authorities. The agitation of Indigo planters in Champaran and impoverished peasants in Kheda were channelized by Gandhi in a Non-violent manner to achieve the goal of Satyagraha- search for truth. Gandhi applied his gained experience in South Africa to accommodate these regional causes into the wider realm of Anti Colonial Movement of India. Mention may be made of a similar workers agitation at Ahmedabad. BRIEF CONCEPT- SUB UNIT 3 Cause of the Khilafat Movement in India in 1919 The fall of Caliphate after the first World war provided Gandhi with a cause to unite the Muslim peasants of Malabar coast. Ali Brothers lead the movement with certain demands but Gandhiji, in Calcutta Session of Congress(1920) suggested Khilafat to be united with the National Movements Mahatma Gandhi could pave his way to enter the mainstream Indian politics. Thus, he emerged as a leader of the Hindu-Muslim as well as urban-rural masses with the help of his unique doctrines and slogans. OBJECTIVES 1. FACTUAL 1. REMEMBERING 1.1.1) Students can recall the time and place of Gandhi's birth.

118 1.1.2) Students can recall who were his parents. 1.1.3) Students can recall that he studied barristership from London. 1.1.4) Students can locate where and when did Champaran movement take place. 1.1.5) Students can locate where and when did Kheda movement take place. 1.1.6) Students can recall the time of Khilafat Movement. 1.1.7) Students can memorise the names of the main participants of Khilafat movement. 1.1.8) Students can recall the name of the book from where Gandhiji adopted the ideology of non-violence. 2. UNDERSTANDING 1.2.1) students can explain the cause of Negro agitation in South Africa against the White. 1.2.2) Students can understand the cause of the agitation of Indigo Planters in Champaran against the British Landlords. 1.2.3) Students can explain the issue of peasant agitation in favour of tax relief in post-famine situation of Kheda. 3. APPLY 1.3.1) Students can show some other leaders (political/religious) of the past who followed the path of non-violence to achieve a goal. 1.3.2) Students can point out Gandhi's early movements in the map of India. 4. ANALYSE 1.4.1) Students can compare the causes of uprisings in Champaran and Kheda. 6. CREATE 1.6.1) Students can propose an alternative name to the political organization that Gandhi formed in South Africa to protest against the oppression of the Negroes.

119 OBJECTIVES 2. CONCEPTUAL 1. REMEMBERING 2.1.1) Students can define the term 'Satyagraha'. 2. UNDERSTANDING 2.2.1) Students can relate the two regional movements with the greater pan-Indian movement against Imperialism. 2.2.2) Students can describe the context of Khilafat movement in India. 3. APPLY 2.3.1) student can classify their own activities/interests/likes and dislikes as to whether they are categorically pertaining to what is "national" or reinforcing a veiled colonialism. 4. ANALYSE 2.4.1) Student can analyse the demands of Khilafat Committee. 2.4.2) students can analyze Gandhi's role in merging a Muslim cause of the Khilafat with National schemes of INC. 5. EVALUATE 2.5.1) students can assess the significance of Khilafat as the first All-Indian Movement. 2.5.2) Students can evaluate the notions of non-violence and passive resistance as a tool to defy the colonial hegemony. 6. CREATE 2.6.1) Students can predict Gandhi as the Father of Nation in future.

120 OBJECTIVES 3. PROCEDURAL 1. UNDERSTANDING 3.2.1) Students can discuss the steps of transition of politics. 4. ANALYSE 3.4.1) Students can examine the process by which Gandhi became an All-Indian figure to ensure his role in non-cooperation and civil disobedience movements. 5. EVALUATE 3.5.1) Students can criticize Gandhi's process of protesting to be mild and slow in comparison to the unparalleled damages caused by British authorities in both Champaran and Kheda. OBJECTIVES 4. META COGNITION 5. EVALUATE 4.5.1) Students can critically assess Gandhi as the Father of Nation in their own opinions in the modern context. 6. CREATE 4.6.1) Students can predict Gandhi's role in the later part of the "Gandhian Era" of 20th century. 4.6.2) Students can imagine themselves as Gandhi and suggest a parallel principle which would lead to India's independence.

121 KNOWLEDGE REMEMBERING UNDERSTANDING APPLYING ANALYSING EVALUATING CREATING DOMAIN FACTUAL 1.1.1; 1.1.2; 1.2.1 1.3.1 1.4.1 1.6.1. 1.1.3; 1.1.4; 1.2.2 1.3.2 1.1.5; 1.1.6; 1.1.7; 1.1.8 1.2.3 CONCEPTUAL 2.1.1 2.2.1 2.3.1 2.4.1 2.5.1 2.6.1 2.2.2 2.4.2 2.5.2 PRODUCTION 3.2.1 3.4.1 3.5.1 META- 4.5.1 4.6.1 COGNITION 4.6.2

122 Teaching Strategies/Planning and Aids (for all three subunits) Sl.no. Sub- Topics Teaching Teaching Aids unit strategies 1 1 Gandhi's lecture Use of birth/background and method Blackboard movement in south and pictures Africa 2 1 Idea of Satyagraha Interaction Use of through blackboard Question- answer method 3 2 1918- first regional Demonstratio Mapping the movement in India: n method location of kheda and champaran champaran and kheda 4 2 Oppression of the Lecture Charts Indian ryots by the Method and specifying the colonial authorities demonstration two movements 5 3 Outbreak of the Lecture Khilafat Movement method 6 3 Significance of Khilafat Interaction Use of Movement and Group Blackboard Discussion Method 7 3 Establishing Gandhiji Demonstratio Time Line as a future leader of n method Construction India about M.K. Gandhi

123 4.7

Diagnostic testing and enrichment techniques for challenged children A diagnostic test is designed to find out whether or not a pupil or a class is performing according to expectations. It furnishes a reliable data about the abilities, interests, difficulties and handicaps of pupils. If the quality of work is not up-to-the mark, the diagnostic test is supposed to disclose its reasons. The word 'diagnosis' has been taken from medical studies which means 'identification of disease by observing or measuring patients' symptoms'. The word diagnosis is used in education to determine the learning difficulties and defficiencies. So a diagnostic test, for educational purposes, is supposed to reveal an individual pupil's weaknesses and strength in the certain case of study. Thus, a diagnostic test is designed to analyse an individuals's performance and provide information about the causes of difficulty. Proper identification of difficulties that hinder the achievement of a learner can provide proper direction to good teaching i.e., effective teaching that will help to overcome such learning difficulties. There is not much difference between a diagnostic test and an achievement test. The only distinction may be that the diagnostic test emphasises individual items meant to measure individual pupil's difficult areas or individual pupil's areas of strength rather than total scores collected from test application. The teacher, moreover, uses the diagnostic test not for purposes of measurement but primarily for discovering faults, weaknesses, difficulties or specific elements of strength. Importance of Diagnostic tests: A diagnostic test can help the teacher to find out the areas of and source of difficulties on the part of the pupils on the basis of which constructive remedial action can be taken and re-teaching is possible to help the pupils overcome their difficulties. It can help to analyze the individual's performance and provide information about causes of difficulties. Diagnostic tests can point out deficiencies in teaching. Dificiencies in learning are also identified, Diagnostic tests help the teacher to monitor the progress of the pupils.

Such tests help to get feedback about the effectiveness of teaching. Diagnostic tests provide feedback to the students about their strength and weakness.

124 Diagnostic test results can lead to positive direction towards the specific type of remedial/

instruction that should be rendered by the teacher to assist the students' understanding of their specific difficulties, more effective learning and attempting to overcome their difficulties. Diagnostic tests may be standardized or teacher-made. Preparation of diagnostic tests require the stages of planning, writing test items, assembling the test items, providing dicertions and preparing the scoring key, making scheme and reviewing the test. The unit on which a diagnostic test is based should be divided into learning points without omitting any of them. A diagnostic test should be prepared by including all types of test items by assembling them in a proper sequence. It should also have proper instructions. After administering a diagnostic test, proper analysis and interpretation of the results on basic concepts, facts and specific skills have to be made. Students' responses (especially wrong ones) have to be analyzed both quantitatively and qualitatively. The frequency of the pattern and level of errors have to be analyzed. Remedial Measures: Remedial measures must be taken after getting feedback from the diagnostic tests about pupils' difficulties, Remedial measures cannot follow a set pattern or path. In some cases it may be a simple matter of review and re-teaching while in other cases it may be an extensive effort to improve metiration, correct emotional difficulties and overcome other learning difficulties. Two students with same learning difficulties may have different causes. So their remedial teaching-learning styles should also differ. Each subject area

also has its own specific remedial programs. Planning of remedial differ from subject to subject as well as from learner to learner. Remediation should be accompanied by strong motivational programs. The purpose of the measures should be related to the needs of the students who should feel convinced about their utility. These measures should be modified to meet

the demands of the situation. Some points to be kept in mind while preparing remedial measures are as follows:

Remedial measures must be based on sound diagnosis. Remedial measures must contain group work as well as individual work. Remedial measures must include procedures with a view to overcome faulty attitudes such as dislikes, rejection, indifference etc. towards the areas of difficulty. Remedial teaching-learning exercises as well as materials must be carefully selected.

125 Sound teaching-tearning procedures must be an integral part of remedial measures. Learning disabilities which can be the source of errors identified by a diagnostic test may be like: Hearing loss and deafness Vision loss and blindness Orthopaedic handicap/ physical disability, Autism Chronic illness. Intellectual disability Memory loss Mental illness. Speech and language disorders, etc.

Also there are gifted children who are not benefited by the educational programs that are extended to other students, gifted educaion programms and strategies are needed for them. Gifted and talented students and those with high abilities require gifted programs that will challenge them in regular classroom settings and enrichment and accelerated programs to enable them towards continuous progress in school, some of the strategies that work well for talented students are: Acceleration which involves the practice of providing optimal learning opportunities to match the abilities and specific talents of talented students. Curriculum compacting which is a strategy of that condenses, modifies or streamlines

regular curriculum to reduce repetition of previously mastered material. Grouping is the practice of placing students with similar abilities

together for instruction. This practice has often shoften shown positive impact on students learning achievements.

Identification is a critical component of effective gifted education program which ensures different strategies for different high potential students. Pull-out programs/specialized programs mean providing special programs or specialized classes to ensurte benefit of the gifted learning.

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Enrichment programmes are required for gifted students to learn at their level best as well as for students with difficulties to learn at their optimal best. Enrichment program consists of:-

Flexible groups (may change daily or weekly) Choices of students. Content connected. Increased depth, breadth or complexity. Sometimes idenpendent activities, sometimes direct instruction. Cross-curricular-instructions.

Different/differentiated work—not just more work. High-level thinking skills applied to content. Planned and purposeful. Responsive to students needs and achievements.

Enrichment needs to be purposeful, focused, and planned, Enrichment programmes can be successful both for gifted and learning difficult students

if founded on certain criteria like:- Use of

appropriate assessment data to identify students' skill levels. Select texts and materials that provide appropriate level of challenge (skill, maturity, interest). Differentiate small group instruction to offer extension experiences. Adjust pacing to allow for essential skill acceleration. Design units to offer cross-curricular applications. Incorporate problem-solving and enquiry based activities. Faciliate student-led questioning and discustions. Incorporate real-world problem solving activities. Meet diverse learning preferences by allowing students to make choices for how to demonstrate their skill mastery. Foster

critical thinking by weaving media, reading, writing, speaking and listening skills into multifaceted lessons.

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Stimulate creativity by incorporating graphic, visual, auditory, media and print resources and experiences. At the end we can formulate most of the enrichment strategies by utilizing the basic learning skills like 'think', 'ask', 'analyze', 'discuss', 'plan', 'strategize', 'reflect'. 4.8 Check Your Progress 1. Mention the purpose of evaluation in Social Science.

-
-
- 2. What are the merits and demerits of written test?
-
- 3. Write the importance of work samples.
-
- 4. Mention the steps in Portfolio assessment process.
-
- 5. What is comprehension evaluation?
-

128 6. Write any four Co-scholastic activities of students' growth and development.

-
- 7. Write four principles of framing questions.
-
- 8. Mention the advantages of objectives tests.
-
- 9. Mention the limitations of Essay examination.
-
- 10. What is pedagogical analysis of the contents?
-
- 11. Mention the stages of pedagogical analysis.
-

129 12. What is Diagnostic tests?

-
- 13. Write the importance of Diagnostic test?
-
- 4.9

Let Us Sum Up In this unit, we discussed evaluation in Social Science which is not only for certification but also for improving the instructional process itself. Evaluation is a continuous process which is carried out at the formation stage while developing the concepts and also at the final stage which is called Summative evaluation. Teachers evaluate both cognitive and non cognitive learning outcomes in social science with the help of various evaluation tools construction of achievement tests and diagnostic test when discussed along with the precautions one should take in preparing them. 4.10

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Unit 5

Social Science Teacher as a Reflective Practitioner Structure 5.1 Introduction 5.2 Objectives 5.3 Being

a reflective practitioner- use of action research 5.4 Developing an Action Research Plan for solving a problem in teaching- learning of social Science 5.5 Case study- need and importance for a school teacher 5.6 Development of a Professional Portfolio Teaching Journal 5.7 Competencies for teaching social science to children with disabilities 5.8 Check Your Progress 5.9 Let us sum up 5.10 References 5.1 Introduction

A teacher has an important place in the school.

The most powerful, durable and effective agents of educational change are not the policy makers, the curriculum developers or even the education authorities themselves; they are the teachers.

Social science helps the

pupils to understand this complex world in which we live

and prepare them for an intelligent and constructive citizenship. Competencies in social science teacher in the areas of content, performance are also needed.

The quality of the educational changes that teachers have the skills and opportunities to effect will only be as reliable and proficient as the teachers' individual capacities for reflective practice and the development of self knowledge. 5.2

Objectives:

After going through this unit you will be able to Define the concept of

reflective practitioner and need of

using action research

131 Develop an action research plan to solve a problem in teaching-learning of history in the classroom Explain the term case study, its need and importance for a school teacher Develop a Professional Portfolio Teaching Journal Analyse the competencies for teaching social science to children with disabilities 5.3

Being

a reflective practitioner–use of action research Donald Schon in his book 'The Reflective Practitioner' introduced the concept of reflective practice which means the capacity to reflect on action so as to engage in a process of learning. The rationale is that not only experience but deliberate reflection on experience is necessary for learning. Reflective practice is a term strongly associated with learning in professional contexts such as teaching, nursing or social work and can be thought of in a number of ways. It can be described as a learning tool which helps a teacher to synthesize, explain, make sense and learn from our experiences. Action research can help a teacher to perform his/her role as a reflective practitioner to solve any teaching-learning problem inside the classroom.

Action Research Educational research can be classified into three broad categories namely (i) Pure research or Fundamental research (ii) Applied research (iii) Action research Concept of Action research : Action research is

undertaken with a view to find solution for the various practical problems of the educational institutions. Kurt Lewin (1944) first coined the term in his paper "Action Research and Minority Problem".

Stephen M. Corey defines action research

as "the process by which the

practitioners attempt to study their problems scientifically in order to guide, correct and evaluate their decisions and actions is what a number of people called action research." Action research:

According to Picciano, "Action research studies problems at the local level. It usually focuses on

development, implementation and testing of a new product, programme, plan or procedure in a school building".

It is also known as teacher research, practitioner research where teachers or administrators study their own problems or concerns in their own classrooms or schools. Action research is applied in nature and associated with small-scale research projects. It is also known as decision-oriented research since it requires that the researcher is the same person as the practitioner

132 who will make and implement the decision based on the findings of the action research. It is concerned with those practical issues, problems, concerns and needs of teachers or principals, which arise as a routine part of activity in real life situation. It applies the scientific method to the solution of day-to-day school problems.

Objectives of action research The objectives of action research are as follows: To improve the quality of educational or managerial practices and working conditions. To help a teacher or a group of teachers to change or improve a practice or to help them understand issues or problems for themselves. To enable teachers and principals to cope with the challenges and problems posed by the internal and / or external factors and bring about innovations. To enable teachers and principals to develop a more comprehensive view of their situation, to develop action strategies to bring about improvements and to evaluate the outcomes of their efforts. Characteristics of Action Research : 1. It is about action and research : It is action that is intentionally researched, and research that is designed to inform subsequent actions. 2. It is cyclical and evolves The classic action research is cyclical. Each cycle can be short – may be just a few hours, days or weeks. There can be cycles within cycles. Over time, a particular piece of action research may evolve into something quite different from its start.

133 3. Each stage of the cycle is rigorous The cycle doesn't just happen. Accepted and appropriate methods of acting, observing, reflecting and planning are used in each cycle. 4. It is critical Successful action research is based around shared curiosity not individual certainty. Action research works less well if people seek to prove the correctness of their own ideas, people are expected to put their practices, ideas, and assumptions to the test by gathering evidence that could convince them that those practices, ideas and assumptions may be wrong. 5. It tends to be collaborative There is no distinction made between those involved in the "action" and those involved in the "research". Everyone can be involved in both. The aim is to establish self-critical groups or communities participating in all stages of the cycle. 6. It often starts with an engaging question Since action research is both action and research oriented, the inquiry starts best with an initial question that is action oriented. Those involved in a particular piece of action research will have many different perspectives and expectations. In order to engage them, this starting question needs to reflect some common ground between all

those

perspectives and expectations. Other features are: ? It focuses on the immediate problem on a local setting ? Clear vision of goal-solution of the problem ? It is a part of applied research ? Lack of generalization and universal validity ? Small scale intervention ? Contextual in nature ? Enhances teacher pupil interaction ? Both quantitative and qualitative in nature ? Flexible and cyclic in nature

134 Steps of Action Research: Generally the action research involves the following steps like any other researches. Identification of

the problem Defining the problem Listing of probable causes Formation of hypotheses Design for testing hypotheses and data collection Evaluation of result Drawing conclusion

Advantages of Action Research: It ensures quality teaching It helps teachers, supervisors and administrators in making better decisions It gives a professional enrichment It gives a good insight and develops the power of imagination in teachers, supervisors and administrators It leads to innovative teaching strategies Research tools are easily available It is not expensive, it has shorter duration

135 Research Design is flexible based on local need Researcher gets highly motivated Easy to implement the results Any teacher with little insight can undertake action research Limitations of Action Research: The limitations are:

It is hardly noticed by others working in the same field

Lack of time, resource and technical background It requires a lot of imagination and scientific attitude of mind Lack of universal applicability. It is localized in nature. Thus no generalization can be drawn from one action research findings. 5.4

Developing action research plan for solving a problem in teaching, learning of Social Science :

One particular problem in Social Science history may be solved by adopting proper action research plan.

Identification and defining the problem: Poor performance of some students in the first history unit test of class vii.
Formulation of hypotheses: following hypotheses may be drawn Lack of interest in the subject Not properly motivated
Faulty method of instruction Facing some problems at home Neglected the subject over all
Collection of data: Data collection techniques may be the following Questionnaire Interview Observation
136 Data analysis and interpretation of data: After analysing and interpreting the data following conclusions can be reached The students do not get interest in the subject Remain inactive in the class Remedial Steps: Following remedial measures were taken to solve the problem: Teaching strategies were changed. They were inspired to read historical stories. Arrangement of excursion to historical places. They were involved to take part in the teaching-learning process more actively. Extra classes for them twice in a week.

Developing an Action Research Plan for solving a problem in teaching geography: Let us now

take up one particular problem in teaching geography in a particular class of a school and see how the problem can be solved by applying action research.

Identification and defining the Problem: students in class VI have achieved lowest score in map pointing Construction of Hypotheses:

After identification and defining the problems, several probable causes were listed, Based on which the following hypotheses have been postulated.

Anachronistic time table Insufficient use of maps, globe and other TLM Ineffective instruction Lack of clarity in the question Students paid least attention to subject Data collection: Based on the

above hypotheses primary data has been collected and generated by the researcher or the teacher through questionnaire survey.

137 Position of Geography period in different classes were checked Better TLMs were used Teacher selected 10 students at random basis and interviewed them to identify their difficulty in map pointing Teacher identified errors of students to select the common error Analysis and interpretation of data: The already generated data was analyzed using some simple statistical techniques. The following conclusions were drawn on the basis of interpretation. Social Science periods are set at the end of school hour with shorter duration ?

Maps and globes were not visible ? Insufficient interaction with the students ? Ineffective demonstration ? Students did not follow the instruction properly Remedial Measures: Finally, the problem was

resolved by bringing about required changes in Social Science teaching in class VI of the school.

Time table was rescheduled New maps, globes and other TLMs were supplied sufficiently to the students Students were divided into groups for demonstration Students were involved in the demonstration programme Extra classes were arranged for remedial teaching 5.5 Case Study: needs and importance for a School Teacher

Case study

research is descriptive research that involves describing and interpreting events, conditions, circumstances or situations that are occurring in the present. According to Odum, "The case study method is a technique by which individual factor whether it be an institution or just an episode in the life of an individual or a group is analyzed in its relationship to any other in the group". Its distinguishing characteristic is that each respondent is taken as a unit and the unitary nature of individual case is the focus of analysis.

138 Most case studies are usually qualitative in nature. It involves a detailed contextual analysis of a limited number of events or conditions and their relationships. Social scientists have made a wide use of this qualitative research method to examine contemporary real-life situations. However, some case studies can also be quantitative in nature, especially if they deal with

cost-benefit analysis or institutional effectiveness .Many case studies have been done by combining the qualitative

as well as the quantitative approaches in which initially the qualitative approach has been used and data have been collected using interviews and observations followed by the quantitative approach. A case study can precisely focus on a topic or can include a broad view of life and society. A case study can be conducted to explore, to describe, or to explain a phenomenon. Inherently, it is very flexible in nature. covers a wide range of problems posed for analysis, but most types include several key elements, Most cases are either based on real events, or are a construction of events which could reasonably take place. They tell a story, one involving issues or conflicts which need to be resolved- though most case studies do not have one obvious or clear solution. The information contained in a case study might be complex (including charts, graphs, and relevant historical background materials) or simple-a human story that illustrates a difficult situation requiring a decision. Traditional case studies in fields such as economics, public policy, or international affairs can contain detailed historical information/ including statistical data, relevant legal or governmental policy, and the arguments by various agencies for actions to be taken. But case studies are increasingly being written from a more personal perspective, involving real characters in actual situations. Case studies are long being used in business schools, law schools, medical schools and the social sciences, but they can be used in any discipline when instructors want students to explore howl what they have learned applies to real world situations. Cases come in many formats, from a simple "What would you do in this situation?" question to/ a detailed description of a situation with accompanying data to analyze. Whether to use a simple scenario-type case or a complex detailed one depends on your course objectives. Case studies data are strong in reality. Data can be collected over a period of time contextual. It enables the researcher to assess and document not just the empirical data but also how the subject or institution under study interacts with the larger social system.

139 Case study reports are often written in non-technical language and are, therefore, easily understood by lay person. They help in interpreting similar other cases. Most "full-blown" cases have thes common elements: A decision-maker who is grappling with some question or problem that needs to be solved. A description of the problem's context. Supporting data, this can range from data tables to links to URLs, quoted statements or testimony, supporting documents, images,

video, or audio. Need and importance : ? Satisfies varied needs of students: Many students are more inductive than deductive reasoners, which mean that they learn better from examples than from logical development starting with basic principles. The use of case studies can therefore be a very effective classroom technique. ? Reduces the work load: Case assignments can be done individually or in teams so that the students can brainstorm solutions and share the work load. ? Induces self learning: A major advantage of teaching with case studies is that the students are actively engaged in figuring out the principles by abstracting from the examples.

This develops their skills in: ? Problem solving ? Analytical tools, quantitative and/or qualitative, depending on the case ? Decision making in complex situations and ? Coping with ambiguities ? Accompanying Readings:

Case studies can be especially effective if they are paired with a reading assignment that introduces or explains a concept or analytical method that applies to the case. The amount of emphasis placed on the use of the reading during the case discussion depends on the complexity of the concept or method. If it is straightforward, the focus of the discussion can be placed on the use of the analytical results. If the method is more complex, the instructor may need to instruct students through its application and the interpretation of the results.

140 ? Strengthen the value of group activity: In general terms, cases can

assess the application of concepts to complex real world situations, including building analytic skills that distinguish high priority from low priority elements. Working in groups on cases also helps students develop interpersonal skills and the capacity to work in a team-goals that some instructors rate highly and evaluate. ?

Helps to develop principle of correlation: Cases also help students make connections between what they might otherwise consider to be separate disciplines-for example, they see the need to draw upon principles in economics, environmental studies, geography and ethics to solve a problem in urban planning, or the need to use historical, philosophical, and sociological materials to make a decision about carrying out an anthropological project. 5.6

Development of a professional portfolio or teaching journal: A professional portfolio is a collection of carefully selected materials put together in a meaningful way to demonstrate the practice and learning of an educational practitioner

that document the competencies and illustrate the expertise of a teacher as a professional. It is a record of goals, growth, achievement and professional attributes developed over time and provides a way of monitoring professional development of the teacher. A professional portfolio provides a space in which a teacher can plan and reflect in depth on his/her practice, helps to identify strengths and find ways of building on these. A professional portfolio is not a random collection of material and artefacts. The items relate to what the practitioner sees important in the development of his/her practice, may be in a classroom, in a seminar hall or wider educational setting. A professional portfolio documents growth over time. The design and presentation of the portfolio should make sense to the practitioner and other people who will go through it. A teaching portfolio is an essential part of

a teacher's professional development. Purposes of a professional portfolio: To record and display of professional goals, growth and achievement To illustrate achievement To demonstrate ongoing development of thinking and practice To collect evidence To provide a vehicle for reflection

141 Strengths of developing a portfolio: Create a sense of achievement Build self-confidence Provide an in-depth self-evaluation Develop one's own skill of reflection Create a sense of awareness about what did I learn and how can I improve Strengthen understanding of one's development as a practitioner Allows to become more critical and appreciate the success Organisation of a professional portfolio : First, concerning choice and quantity, remember "portfolios are representative not comprehensive". That is, each artefact chosen for inclusion should represent at least one significant aspect of you and/or your teaching. At the same time, bear in mind that teaching is so complex, it is not possible to represent all aspects. In general, the first focus should be on representing goals and growth toward those goals and later, achievements. Second, remember the purpose of the portfolio is self and collaborative assessment and evaluation. This implies a rather limited audience, at least during the initial stages of development. Artifacts chosen for inclusion should be meaningful first of all to the teacher, the primary audience, and second, to others who are involved. The final point to keep in mind is that portfolios are a form of dynamic assessment. In other words, what is put in at any given time may be added to or deleted as is fitting to the teachers' professional development. a portfolio for teacher should contain the following informations: Professional Goals and Attainments statement of beliefs about teaching statement of professional goals portfolio conference records Final practicum reports evidence of:

ability to self evaluates and reflects ability to collaborate with other teachers' ability to set and achieve goals (Example artefacts: Selected log entries, portfolio review records including goal statements, notes or letters from others)

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Teaching competencies ability to communicate knowledge of instructional strategies A knowledge of assessment and evaluation strategies classroom management abilities organizational and planning skills knowledge of prescribed curriculum (

Example artefacts: Lesson plans for a variety of types of lessons, overview of unit plans, evaluation plans, teacher associate/mentor/faculty comments*, peer observations of teaching, video of teaching, written report to parents, notes to or from students)

Knowledge of child development and learning processes (Example artefacts: Summaries of case studies, observations of students, log entries, lesson plans that employ specific learning processes, individualized learning plans) Content knowledge of one or more subject areas (Example artefacts: Essay, lab report, teaching materials developed that reflect content)

Personal and Professional attributes and experiences that contribute to teaching leadership skills organizational skills fine arts performance co-curricular participation related work experience community involvement Hobbies or sport participation (Example artefacts: Certificates of achievement, letters from previous employers, membership in organizations or teams, concert program with name as performer, picture as team coach, letter acknowledging executive position in professional association, photograph(s) of art showing).

143 5.7 Competencies for teaching social science to children with disabilities: The Kothari Commission

in its report (1964-66) clearly mentioned that,"

Of all

the different factors which

influence the quality of education and its contribution to national development,

the quality of teachers are undoubtedly the most

significant."

Essential qualities that a social science teacher should have to teach the children with disabilities are as follows: Mastery of the subject: Teacher should have a thorough and up to date knowledge of the subject matter. The teacher should be academically well-equipped. Every social science teacher should widen his/her vision by acquiring some basic knowledge of different social Sciences. Mastery of techniques:

The social science teacher should be an expert in various

methods and techniques of teaching social science to the children with disabilities. The teacher should provide a friendly atmosphere in the classroom making learning quicker. A sense of humour is essential. (i)

Thorough knowledge of the subject Like the teacher of any other

subject a social science teacher should have a thorough knowledge of the subject.

For such knowledge the teacher should read various reference books in addition to the prescribed text books.

Such a study would help the teacher to

grasp the spirit of the subject and study it in a proper perspective. A

teacher should always remain a student and his reading should not cease after obtaining his degree. The continuity in

study is also essential to keep the knowledge of the subject up-to-date. It is not essential that a secondary school

teacher be a specialist of his subject but it is essential that he should be able to present the facts of social science in a

psychological manner. For such a presentation the teacher should be aware of the fact

that social sciences are a developing subject. (

ii) Knowledge of Child Psychology For being a successful teacher in any subject knowledge of child psychology is essential and so is the case with a social science teacher. The psychological requirements of child differs from age to age and a teacher must have a thorough knowledge of child psychology if he wants to impart the knowledge of the subject in a proper manner.

The knowledge of child psychology is even more important for teaching the

144 challenged children. The teacher should know about the details of impairment of the students, assess their special

needs to meet their challenges. From the knowledge of child psychology teacher can choose a suitable method for

teaching the students of a particular age and disability group. Thus the knowledge of child psychology and its proper use

can contribute a lot in the teaching of social science. (iii) Special training for challenged children: the teacher

should have the technical training of teaching the challenged children. For example

the teacher

should be able to use and apply Braille and other tactile

equipments for visually impaired students. (iv)

Knowledge of different Methods of Teaching: The knowledge of various teaching methods is essential along with the

knowledge of psychology, it is only then possible to choose a suitable method according to

the requirements of a particular class e.g. a student at the age of 14 is fond of excursions and travels and a good teacher

knowing it can coordinate the two in his teaching method to make the

teaching

successful. (v) Keen Power of Observation A geography teacher should

himself be an observer. Travels and excursion form an integral part of the teaching of geography and only a keen

observer can help his students to make collections etc. during such tours and excursions.

In addition to being a keen observer a teacher of social science must also possess a good power of imagination. A combination of two, observation and imagination, makes a more successful teacher. Life of man is influenced to a large extent by the natural environment and to study it properly the power of observation and imagination are required. We can observe the influence at one place and on the basis of imagination can visualize its effect in other places. Unless the social science teacher possesses a keen power of observation and strong imagination he will not be able to acquaint his students fully with the effects of various factors and will not be able to present the social science of foreign countries before his students in a vivid and attractive way. A teacher having these two qualities can present the subject matter in a better way. Thus these two qualities if present in teacher make him a good and successful teacher.

145 (vi)

A good organiser

and leader: This quality of leadership is essential for a social science teacher like any other good teacher. In the absence of leadership qualities teacher cannot handle his students successfully. In social science

this quality is emphasized in the teacher because he has to exercise a control on his students during tours and excursions which form a part of social science curriculum these days.

For a better control the qualities of leadership and direction are desirable in a social science teacher. A social science teacher is also needed to possess leadership and organisation quality specially to teach the challenged children. For practical and field based activity the teacher should organise activities outside the school. The teacher should be able to manage the permission from school authority as well as parents. He /she should make all the arrangement for successful execution of the activity. (vii)

Knowledge of the syllabus and Curriculum of other subjects and their development A good social science teacher must have knowledge of the curriculum and, syllabus of other subjects and should know about their development and teaching requirement. (

viii)

Knowledge of using and handling of Maps, diagrams, Sketches etc.

for challenged children:

Social Science

puts more emphasis on the study of

cause and effect relationship. Such a relationship is explained with the help of maps, charts, diagrams

Time-line

etc. So these things (charts, models, maps etc.) occupy an important place in teaching of social science.

Maps and charts play a vital role

in secondary classes. (

ix)

Arrangement of curriculum and syllabus according to season

If possible an effort is made to arrange the curricula

on the basis of season and weather to make teaching realistic and interesting. Teaching about rainfall can be taken up by the teacher during rainy season.

It would help to make knowledge more stable and permanent. In the same way the teaching about a particular crop can be taken up during that season in which the crop is actually grown up in the are~

The teaching of Frost, Fog etc. be taken up during winter. Such an arrangement

146 if made properly will make the teaching of geography very interesting.

It would help the teaching of geography and would also help in making full and proper utilization of time available to the teacher for

teaching of geography. (x) Scientific Method of Thinking: It is essential that a teacher of social science

has a scientific way of thinking. Such an attitude on the part of social science teacher is desirable for him to be able to explain the cause and effect relationship which forms the backbone of teaching of

social science. In teachin of social science Heuristic attitude is desirable. Teacher should always impress upon his students not to take anything for granted and to verify facts before accepting them. (

xi) Love for Excursions and Travels: Excursions and Travels form an integral part of the social science curriculum these days. It is therefore obligatory on the part of geography teacher to arrange such tours and excursions for his students. The successful organization of such tours and excursions is possible only if the geography teacher himself is interested in tours and excursions. Such tours and excursions enable the child to acquire the knowledge directly by observing various things and geographical phenomenon themselves.

This direct observation provides the students an easy method of acquiring knowledge and is considered very effective and successful. Direct knowledge is considered better than any other type of knowledge. Such knowledge is ever lasting. Only a teacher who himself is interested in tours and excursions will be able to guide his students in the observation of geographical phenomenon and other things and do justice to his job. (

xii) Interest in collection of things of social science Importance Social Science museum occupies the most important places in the teaching geography and History.

For a good museum we need a good collection of things of geographical and Historical importance. It is only with the help of such collections and exhibits that one can make teaching of social science more interesting and lively. Such a collection is possible only if the social science

teacher has an interest in the collection of things of geographical and

147 Historical importance. In addition to having an interest in collection of things he should also be interested in organizing the museum. It is only by properly arranging the things and presenting them in their real form before the students that a geography teacher can make his, teaching interesting and lively for his students. To provide an insight into the knowledge about soil, rocks etc. they can be arranged in some interesting way in the social science museum and presented to the students in most acceptable way. Similarly maps, charts, sketches etc. be properly arranged. The charts showing the inhabitants of different countries, sea-routes, lands etc. are depicted at some suitable places in the geography room (museum). (

xiii) A Good Story Teller Story telling is an art and it is the most desirable thing to be possessed by a social science teacher. A good social science teacher should be capable of framing stories connected with different social science

aspects and present such stories to his students in an interesting way. (xiv) An Idealistic and Philosophical Out-look Such an outlook is essential for a good social science

teacher like any other subject teacher. The attitude of a teacher should be based on sound philosophical foundations, so as to develop the feeling of world brotherhood and world fraternity in his students. (xv) International Understanding: As it is known that one of the aims of teaching social science is to produce international understanding in the children, It is the purpose of social science teaching to tell the students about various countries, various communities etc. (

xvi) Capacity to Inculcate Interest and Respect for the Subject

To understand a subject the pupil must be interested in that subject and a good teacher is one who can infuse regard for the subject and interest in it. This can be achieved by handling the subject matter in a psychological way. 'Even the personality, behaviour, mode of teaching etc. of a teacher may incite the students to get interested in social science.

Adopt teaching learning materials for challenged children: Some children with measured disabilities will require focused instruction in one-

148 on-one or small- group settings. But other children who need help to keep up with their peers -- especially those with more severe disabilities -- can benefit from machines designed to help them learn! Such "assistive devices" aid

their learning, understanding, and participation in the regular classroom environment. Assistive devices include any device that disabled children (or adults) might use to help them learn and function more effectively. By current estimates, more than 4,000 assistive technologies have been designed for students and

teachers. Those devices include everything from wheelchairs to a wide assortment of high-tech tools, including. Hearing aids and amplification devices that enable hearing-impaired students to hear what's going on in the classroom; Glare-reduction screens, screen magnifiers, and Braille note-taking devices that enable visually impaired students to participate more fully; Voice-recognition software that turns the spoken word into type on a computer screen so students unable to move their limbs can take part; and Technologies that enable severely disabled students to control their computers simply by following letters and commands on the computer screen with their eyes. Visuals (or pictures) are a great tool for seeing and understanding. Visual aids allow children the time they need to process what they are being asked to do. They do not disappear into thin air to be forgotten as spoken words or hand gestures do. Visuals can also be sequenced to breakdown and learn a skill bit by bit. Visuals remain the same and allow for identical rehearsal and consistent memory pathways to be created. With this rehearsal and memory of sequenced activities comes learning and understanding and ultimately increased confidence and self esteem. Visual aids should be used in conjunction with other forms of communication such as speech, signing and tactile experiences. All Children can benefit from using visual aids and especially those who fit into the following categories: Down Syndrome Autism Spectrum Disorder Attention Deficit Hyperactivity Disorder

149 Language Disorders and Delays Hearing Impairment Developmental Delay Oppositional Defiant Disorder English as a Second Language Learning Difficulties Visuals will help children who have difficulties with: listening and attending understanding and responding processing sequenced information motivation and play following instructions and routines anxiety and resistance to change social isolation and shyness challenging behaviour Teaching learning materials for teaching social science to challenged children: Each social science topic presents a challenge for the teacher. There is a question how to present, describe to challenge children specially the blind pupils a certain conception, diagram, picture, graph or table. For partially sighted pupils a magnifying glass or electronic magnifier is used. For the blind no graphical picture means any value. Educational material has to be adapted to the visual perception of an individual pupil. Sometimes this is ordinary material or educational material which pupils use with a magnifying glass or an electronic magnifier. For pupils with severe visual impairment who cannot use ordinary material it has to be adapted to enlarged print, be generalized, be coloured intensively or somehow adapted so that it is suitable to individual perception of a partially sighted pupil. Adaptation of textbooks, teaching sheets and visual material should be made carefully. The solution is to make a tactile picture which means a model or a diagram accessible to tactile perception. Tactile maps, plans and sketches are the most characteristic elements at social science lessons for the blind. ? Didactic tactile devices are the basis for successful lessons. Solution may be

150 simple but it demands some inventiveness. ? Elements of each display have to be clear and adapted to diminished visual perception. ? Display must be made in correct proportion with the thing it presents. Material of composition should resemble the actual object or idea. ? It is right that single parts of display work. Some graphic concepts, pictures, processes or models cannot be simply translated to Braille or adapted into tactile pictures. These have to be made in such a way that they are acceptable to tactile perception or diminished visual perception. ? More exacting conceptions have to be presented as a model. Models can be the starting point for understanding processes and the basis for a wider proceeding of contents. For example, using a model of polder (artificial depression) pupils understand and know the entire image/ concept of the Netherlands as a country of polders. Using this model some words like tide, channel with gates, depression, dyke, windmill, drying ... can be explained easily. ? Tactile threshold, size of note in Braille, adequate graphic perception and elimination of unimportant elements has to be born in mind. Diagrams and graphic sketches can be presented using simple techniques, such as a positive, tyflograph (positive pointed drawing), or exacting thermo-vacuum technique. ? Colourful, attractive, bold charts, diagrams, talking calculators, cassettes, CDs and other audio visual aids,

Braille, typewriter, tape recorder or computer, magnifying glass, electronic magnifier, individual light, or programs for enlargement (computer) should be available. Use of pencil, which makes strong lines and paper which does not reflect the light are very important for visually impaired children. Practical experience confirms these displays adapted to tactile and diminished visual perception are most suitable for gathering new knowledge and understanding different social and geographic factors in the environment.

Organisation of co-curricular activities in school for the challenged children: Mock parliament: Purpose:

To bring provincial parliamentary processes to life To enhance the understanding of how bills become laws

151 To enhance the understanding of the scope and role of provincial ministries To help students understand the term "responsible government". Organisation:

Using the discussion of "characteristics of an effective" leader, students vote for students whom they feel have the qualities that exhibit the best class leader. The student who gets the most votes is the Premier and the second most votes will be

the Leader of the Official Opposition. The class is then divided into Government and

Opposition based on their score on an "ISM" political spectrum

test. The class is

now in their two groups and work to form political parties. The students are to decide a name for their party and what their party platforms will be once they understand where they are on the political spectrum. Drafting Bills: working within their political party, students choose a Ministry and draft a Bill. If in government, their Bill will be introduced in the Mock Parliament. If in Opposition, they will draft a Bill, but it will not be introduced in the Mock Legislative Assembly. (These Opposition Bills will be seen during the Debriefing) Researching Bills: the students should be given time to research their proposed Bills. For example, if they wish to have government pass an Education Bill on class size language, they will first need to research where their party stands on this issue and convince government to pass the bill. Run a mock parliament in the classroom to pass/defeat new Bills over three 55-minute classes. Organisation of quiz: Have the subject area coordinator conduct a meeting for all teachers concerned. Plan about the upcoming school quiz bee. The most important thing for them to do is to make a program outlining the date, venue, time and the different working committees who will be in charge of the said activities. Require the designated subject coordinator give an instruction to the coaches on how to make a

questions which will be used during the quiz bee. Choose a quiz master who will read the guidelines and criteria for quiz bee. Also select tabulators, proctors, a timer, and judges.

152 Organize registration. Registration of participants should be done before the opening program, followed by the reading of the guidelines and criteria for judging and the most important is the presentation of participants, working committees, judges and coaches. Explain the quiz. The quiz master gives the final instruction to all participants and then conducts the quiz bee right away. After conducting it she will announce the winners and giving of certificates and prizes follow. All the winners should then represent the school during

the District Quiz Bee. Organisation of Field trip: 1. Build up your knowledge

Build up your own knowledge and resources relating to the site including: key sites, species, significant features, importance, National parks, agriculture, industry connections and tourism. 2. Approval process Teachers need to gain approval for excursions by following their school policy. In seeking approval from their Principal, teachers should have firsthand knowledge of the field trip sites. Teachers need to be convinced of the educational benefit for the excursion, stating the reason to visit as being pivotal to key learning areas, the field trip as a key motivator for students in active learning, engaging and appropriate to key stage and development requirements. 3. Health and Safety Issues An excursion is a highly valuable firsthand experience for students. However to ensure the safety and well being of students and staff important considerations must be made. Teachers must accept full responsibility for taking their students on excursions and we recommend that each teacher do a site visit and risk assessment for excursion sites before taking students into the field. When endeavouring on an excursion follow your school guidelines. 4. Visit the site It is essential that you visit and investigate your excursion site prior to your excursion. This will enable you to plan your excursion effectively complete a risk assessment and ensure you have a good knowledge of site. No sites should be visited unseen.

153 5. Timing When planning your excursion consider the timing of your excursion. October to March is key time for excursion with more reliable weather that also avoids extreme heat and cold in India. 6. Students needs Individual student considerations will need to be taken into account by the class teacher including dietary, mobility and behavioural factors. If additional support is required this

must be organized well in advance of the excursion day. 7. Parents and permission Provide parents with information along with their permission forms. Information should include excursion location, times, travel, costs, support staff, curriculum links, appropriate clothing and whether food and water is necessary. 8. Costs Consideration must be given to the cost of the excursion. Of primary concern are transport costs. This could include depending upon the site, bus hire, boat, charter or paddle steamer hire. Undertake research as to whether your excursion could be fully or partly subsidized to assist your principal and school families. Funds could be targeted from key learning areas budget such as humanities or science. It may be worthwhile talking with local organizations, the P&C, local industries, and through drought assistance funding provided by the commonwealth government. 9. Student Preparation Ideally before your excursion it is important to build students prior knowledge around the excursion site as well as to explore current issues surrounding that place. 10.

Equipment When planning fieldwork the following materials and equipment should be taken. Binoculars Clip boards Pencils

154 Art materials- crayons, coloured pencils or charcoal Digital cameras for records Tissues First aid kits

Students

medication. Monitoring equipment Charged Mobile Phone Emergency contact list Spare paper for incident recording Class roll with list of students needs

Excursion Risk Assessment Witches hats for laying our boundaries and defining areas Whistle Hats and sunscreen Rain jackets Enclosed shoes

Organisation

of Exhibition Steps to Coordinate and Conduct a School Exhibition /Fair: Choose a chairperson(s) that will oversee the entire Exhibition Solicit volunteers for the committee. At the first planning meeting, set dates and deadlines for the exhibition, including the

date of the exhibition, set up and take down of projects, deadline for student topic / project submission. Decide if you will provide the project board or if the students will need to

use their own. Also, work with the school principal and / or teachers to determine if grades will be involved with the projects, if the projects should be mandatory or voluntary, the format the projects should follow, and the rules. Be sure to consider the venue for the contest

paying careful attention to the amount of display space and the number of 155 tables available.

Allow a table for each project as well as tables for clerical/ administrative needs. Draw a layout plan, and determine the number of volunteers needed to manage each area. Once the layout and rules have been established, create an information sheet to distribute to students and parents about the exhibition stating general information and the project guidelines. Be sure to stipulate any safety related restrictions. Begin to recruit judges at least three months prior to the exhibition. Be sure to keep them updated with

reminders at the beginning of each month, the week before, and week of the judging. It is better to accept

what you feel will be almost too many judges ... schedules do change at the last second and it is always nice to have a back up

judge! It is also considerate to give the judge projects in his / her area of specialty. Ask the judge for any preferences in advance, and then have a list prepared to email beforehand to him / her for review. (This is where a database becomes very helpful!) Establish guidelines for how the students are to submit, set up and represent their projects. Distribute the guidelines as well as a floor plan to the students and their teachers in advance. Order any prizes and establish a method for printing certificates. It may take a couple of weeks for the prizes or certificate paper to arrive. Be sure to generate certificates or letters of appreciation to present to your volunteers. 5.8

Check Your Progress 1. What is reflective practice?

156 2. Give two advantages of action search.

..... 3. State the steps for developing an action research plan.

..... 4. Define case study approach.

..... 5. Mention any two needs of case study method.

..... 6. Mention two necessities of a professional portfolio.

..... 7. What are the components of a professional portfolio for teachers?

157 8. Name two important professional competencies of a social science teacher for challenged children.

..... 9. Discuss the competencies that a history teacher should possess to teach the children with disabilities.

..... 5.9 Let us sum up: Action research stands for relatively a new approach and attitude towards conducting research in the area of the educational researches. In the school situations it concerns itself with the immediate problem faced by the teacher and administrators. In its nature, operation and applicability, action research differs significantly from the traditional researches. It was Stephen M. Corey who tried to provide action research a solid foundation in 1953 through his book "Action Research to Improve School Practices". The main objective for carrying action research is to make the practitioner more conscious about their problems and to seek their immediate solution with their own efforts by engaging in the necessary task of action research.

Case study research is descriptive research that involves describing and interpreting events, conditions, circumstances or situations that are occurring in the present.

It derives much of its philosophical underpinnings and methodology from ethnography and phenomenology. It follows the 'social constructivism' perspective of social sciences.

A case study can be conducted to explore, to describe or to explain a phenomenon.

A professional portfolio is a record of goals, growth, achievement and professional attributes developed over time and in collaboration with others. For teachers, a professional portfolio is a thoughtfully organised collection of artefacts that illustrates

158 professional status, pedagogical expertise, subject matter knowledge, knowledge of learning processes, and professional and personal attributes that contribute to teaching. A professional portfolio has value both as a process of assessment and evaluation and as a product of that process. Artefacts chosen for inclusion in the portfolio should represent at least one vital aspect of teaching. It should be meaningful to those who will go through it. 5.10

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/glossary.php www.lawandjustice.gov.pg/www/default.asp http://www.sciencedirect.com/science/article
/pii/S1877042812039870 http://www.developmenteeducationreview.com/issue11-focus2?page=show

159 Notes

160 Notes

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3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

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17 (standard) ????????

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22 (Project activities) (Observation)

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29 ???? (LSRW) ?

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33 (Unit Planning)

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35 (Blue Print) (according to revised Bloom's Texonomy), (standard) ??????????

36 ?????? 'Curriculum' 'Currere' 'Currere' Curriculum ; Curriculum ???? (Objective) (Content) (Teaching Method) (Ecaluation),

37 (Level of Maturity)

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55 (graded) 'Framing of New syllabus – guidelines.Stage–I Bifurcantion Principle' "I. The bifurcated principle should be based on the fundamental concept of graded Secondary Syllabus. Only limited essential topics from IX may be included in class X as revision topics." ?

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62 (Unit Planning) (Skilled Work) (Planning of teaching) (Curruculum Planning), (Unit Planning), (Lesson Planning) Curriculum Planning (Unit Planning) "Unit of work is always planned for a longer period of time than its single class session–

63 Rivlin". A unit of work includes the subject matter and the experiences pupil have during a given segment of a school year, provided all of these have a common core on onceness about them– Rivlin (Theme) (Subject Centred Unit Planning), (Learner Centred Unit Planning)

64 (Theme Type Unit Planning), (Co-related Type Unit Planning), (Problem Type Unit Planning) (Project) (Group Project Unit) (Life Situation Unit Planning (N.C.E.R.T) ??????????

65

- 66 (Lesson Plan) "Lesson Plan is the title given to a statement of the achievements to be realised and the specific means by which these are to be attained as a result of the activities engaged in, during the period the class spends with the teacher" – "Progressive methods of Teaching in Secondary Schools". N.L. Bossing Rayburn 'Lessons must be prepared for there is nothing so fatal to a teachers' progress as unpreparedness.' Lesson
- 67 Evaluation Taxonomy of educational objective (1856) (Cognitive Domain) Karathwhole (affective domain 1964) Harrow (Psychomotro Domain 1972) (According to revised Bloom's Taxonomy). Creation Evaluation Evaluation Synthesis Analyzing Analysis Applying Application Understanding Comprehension Remembering Knowledge ? Lonin Anderson Taxonomy Level Noun Verb (New Version) (Old Version)
- 68 ? Lesson ? ? ? ? ? ? ? (Open ended question)
- 69
- 70 (Cumulative Record Card)
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- 72
- 73
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- 80 ?
- 81 (Theme) Unit Planning ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ?
- 82 Taxonomic Table ?
- 83
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- 85
- 86
- 87 (Learning to Know) (Learning to do) (Learning to live together) (Learning to be) (Being to transform one self & Society) (language environment)
- 88 'A clear distinction must be made between listening and hearing. When we listen, we pay conscious attention to what is being said. A good listener learns a language quickly and efficiently. So it is very important to think of techniques which will enable learners to listen better and more efficiently.' – Geeta Nagraj (2008)
- 89 [] [] [] [] []
- 90 (Top Down Strategy) (Bottom Up Strategy)
- 91 Given the importance of listening in language learning and teaching, it is essential for language teachers to help their students become effective listeners. [The NCLRC, Washington, DC, 2004]
- 92
- 93 [] []
- 94 (Audibility) (Clarity) (Effectiveness) (Ease) (Elocution) (Fluency) (Elegance)
- 95 Areas of Speaking Skill Mechanics Functions Social and Cultural rules and norms [] [] [] []
- 96 (Subject Oriented) (Form Oriented) "Speaking activities are probably the most demanding for students and teachers in terms of the affective factors involved. Trying to produce language in front of other students can generate high level of anxiety. Students may feel that they are presenting themselves at a much lower level of cognitive ability than they really possess...." [Tricia Hedge / 2008] [] (Task)
- 97
- 98 Goodman (1967) 'Psycholinguistic Guessing Game' "From this Perspective, reading can be seen as a kind of dialogue between the reader and the text or even between the reader and the author." (Widdowson/1979)
- 99

- 100 Top Down Strategy Bottom Up Strategy) (Gathering Skills) (Storing Skills) (Retrieval Skills)
- 101 (Task)
- 102
- 103 "Writing is the result of employing strategies to manage the composing process, which is one of gradually developing a text. It involves a number of activities : setting goals, generating ideas, organizing information, selecting appropriate language, making a draft, reading and renewing it., them revising and editing. It is a complex process which is neither easy nor spontaneous...." [Tricia Hedge / 2008]
- 104 Contents Syntax The Writing Process Audience Word Choice Organisation Mechanics Grammar
- 105
- 106 (Legibility) (Rapidity) (Uniformity, Spacing) (Transcription) (Task)
- 107
- 108
- 109 Brown Wragg (1993) "what makes questioning such a useful but complex skill is that it can be used in a number of different ways, ranging from a simple and quick check that a particular pupil has been paying attention, to an intergral part of developing a dialogue and genuine discussion with a pupil about the topic in hand." ? ? ? ? ?
- 110 Brown Edmondson (closed) (Higher Order) (Lower Order) –"Another useful distinction can be made between 'higher order' questions and 'lower order' questions. Higher order questions involve reasoning, analysis and evaluation, whereas lower order questions are concerned with simple recall or comprehension." –Choris Kyriakon
- 111 (Types of Questions) (Open) (Closed) (Factual) (Alternative) (Broadening) (Justifying) (Hypothetical)
- 112
- 113 By a conscious process of good questioning, an intelligent teacher can lead his educational traveller through unfamiliar regions to a desired destination. The right question is the Psychological basic of all learning. It is certainly the best means of stimulating thought. A teacher's skill can be measured by the way he handles the most important pedagogical instrument. [instruction of Indian Secondary Schools–Ed. E.A. MACNEE] In looking at the skills underlying effective questioning, four key aspects stand out: 1. Quality 2. Targetting 3. Interacting 4. Feedback 1. Quality : Quality of the question itself in terms of clarity and appropriate for meeting its intended function, is clearly of importance.
- 114 2. Targetting : The targetting question refers to the way in which teacher select pupils to answer. 3. Interesting : It refers to the technique used by teachers to ask questions and to respond to pupils. 4. Feedback : The role of feedback concerns the effect on pupils of the teacher's use of questions. [Effective Teaching in Schools :CHIRS KYRIACOW] (Quality) (Targetting) (Interactions) (Feed back)
- 115 ? ?
- 116 ? ? ? ?
- 117 SMART SMART Specific, Measurable, Attainable, Result Oriented and Relevant,
- 118 Time Bound. Specific Measurable Attainable Result Oriented and Relevant Time Bound ? ? ? ? ?
- 119 'Think-Pair-Share' ? ? ? ? 'Worksheet Education' ?
- 120 ? ? ? ? ? ? ? ?
- 121
- 122
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- 126
- 127 Edger Dale- "Chart is a visual symbol, summarizing, comparing, contrasting or performing other helpful services in explaining subject matter." (Table Chart) : (Branching Chart) : (Flow Chart) : (Pictorial Chart) : (Symbolic) (Pie Chart) :
- 128 (Three dimensional) (Scaled Model) :
- 129 (Simplified Model) : (Working Model) : (Cross-sectional Model) : (Mock-ups) :
- 130
- 131
- 132 (LAN) (WLAN)
- 133 ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ? ?
- 134 CALL ? ? ? (WALL)

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136

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138 (Learning without burden)

139 (Shift) ? Understanding the learner needs to be given priority. The Learner is seen as an active participant rather than a passive listener in the process of learning and his/her capabilities and potentials are seen not as fixed but as dynamic and capable of being development through direct self experiences. ? View knowledge not as an external reality embedded in textbooks, but as constructed in the shared context of teaching learning and personal experiences. ? View learning as a search for meaning out of personal experience and knowledge generation as a continuously evolving process of reflecting learning.

140 ? ? ? ? ? ? ? ? ? ? (correlation) ? ? ? ? ?

141 ? ? ? ? ? There is a vast range of resources and materials available for use in the classroom, including video tapes, slides, overhead projector transparencies, worksheets and work cards, computer packages and simulation materials. Perhaps the golden rule concerning their use is always to check their quality and appropriateness for the lesson. ? ? ? ? ? ? ? ? ? ? ? ?

142 ? ?

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146

147 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 147 28.07.2007

148 Wordsworth "Poetry is the Spontaneous overflow of powerful feeling"

149 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 149 28.07.2007

150 teaching aids

151 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 151 28.07.2007

152 ? ? ? ? ?

153 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 153 28.07.2007 ? ? ? ? Lesson Plan ? ? ? ? ? ? ? ? ? ?

154 ? Collection Book ? ?

155 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 155 28.07.2007 style ? ? ? Study Habit Study Skill ? ? ? ? ? ?

156 ? ? ? ? ? ? ?

157 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 157 28.07.2007 ? teaching aids

158 Text Book Non-detailed Study Non-detailed Study

159 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 159 28.07.2007

160 ? Lesson plan ? ? ? ? ? ? ? ? ? ?

161 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 161 28.07.2007 ? ? ? ? ?

162

163 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 163 28.07.2007 Style ? ? ? ? ? ?

? Points

164 Points Point Point

165 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 165 28.07.2007 Points + + + H. Sweet 'Grammar is the Practical analysis of a language, its anatomy'.

166 Style

167 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 167 28.07.2007 (Anatomy) (functional) (functional) (theoretical) ?

168 ? ? ? ? ? ? ? ? ? ?

169 I5/D/ Netaji_2017/B.Ed. ODL Methodology Bengal/B.Ed. Bengali Unit 3 Ist Proof SPW 169 28.07.2007 ? ? ? ? ? ? ? ? ? ? (Time-Table) (Curriculum) (Curriculum) O. Jespersen "No-body should study the grammar until he knows the language."

170 (Text book) (Lesson plan)

211 ????????

212 ????????

213 ???????

214 ??? (Achievement tests are those which measure the effect of some controlled training programme on an individual for an specific span of time)

215 (Standardised achievement test) (Achievement Test) Standardised Test Teacher Made Test General Achievement test Diagonostic Test Test Battery Specialised Essay type Short answer objective type Very short answer type (General Achieve- ment tests are those which express the achievement of pupil in any area by a single scone)

216 (Promotion) (Classification) (Vocational Guidance) (Remedial Teaching)

217 ??? ? WISCIII, WAIS-R, WPPSI-R ? ? Varbal scales ? FE-Verbal Comprehension Factor ? DAS-Verbal Ability ?

Performance Skills ? FE, Non Verbal Reasoning\Visualization Factor ? DAS-Non-verbal Ability ? (KABC) Non-verbal scale ? Verbal Scales ? (TOLD-2) Listening Composite ? Peabody Picture Vo- cabulary Test-Raised ? Verbal Scales ? TOLD-2– Spealing Composite ? Revised-

218 Rests of Cognitive ability (WJR-COG). Oral Language Cluster ? Picture Comple- tion, Picture Arrangement, Object Assembly ? FE Absurdities ? Drawing Test ? Kinetic Family Drawing ? Individual Achievement Test: Reading Composite ? Revised- Tests of Achievements ? Test ofEducational Achievement Reading subtests ? WIAT : Spelling ? K-TEA: Spelling ? Dictated Spelling Tasks ? WIAT : Written Expresswion ? Test of Written Language–2 (TOWL 2) ? Classroom Writing Samples ? WIAT – Writing Composite ? Test of Early Written Language (TEWL) ? WJ-R, Achievement: Written Language Subtests.

219 ?

220 ??? ?

221 ??????? ?

222 ? ? ? ? WISC III, WAIS-R, WPPSI-R, verbal scales, performance skills, Picture completion, Picture Arrangement, object Assembly, Individual Achievement Test-Reading Composite. FE. Verbal Comprehension Factor, FE. Non- verbal Reasoning/Visualization Factor Non-verbal Scale, Test of Educa- tional Achievement-Reading subtests. ?

223

224

Hit and source - focused comparison, Side by Side

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Matching text	As the text appears in the source.

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1 B. Ed. Spl. Ed. (M. R. / H. I. / V. I)- ODL Programme AREA - A A-5 (PART V) PEDAGOGY OF TEACHING ENGLISH A COLLABORATIVE PROGRAMME OF NETAJI SUBHAS OPEN UNIVERSITY AND REHABILITATION COUNCIL OF INDIA Chairman Prof. Subha Sankar Sarkar, Vice Chancellor, Netaji Subhas Open University, Kolkata-64 Convenor Prof. Atindranath Dey, Director, School of Education, Netaji Subhas Open University, Kolkata-64 Course Writers Unit - 1 Mr. Samir Mahato Unit - 2 Dr. Rajiba Lochon Mahapatra Unit - 3 Dr. Debjani Majumder Unit - 4 Dr. Rajiba Lochon Mahapatra Unit - 5 Dr. Rajiba Lochon Mahapatra Editor Dr. Piku Choudhury Processing General and Format Editing Dr. Papiya Upadhyay & Ms. Swapna Deb In-house Processing In-charge Ms. Swapna Deb The Self Instructional Material (SIM) is prepared keeping conformity with the B.Ed.Spl. Edn.(MR/HI/VI) Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session. AREA - A COURSE CODE - A - 5 (PART V) PEDAGOGY OF TEACHING ENGLISH All rights reserved. No part of this work can be reproduced in any form without the written permission from the NSOU authorities. Mohan Kumar Chattopadhyay Registrar

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA - A A - 5 (PART - V) PEDAGOGY OF TEACHING ENGLISH
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7 Netaji Subhas Open University A - 5 (PART-V) PEDAGOGY OF TEACHING ENGLISH A - 5 (PART -V)
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INSTRUCTIONAL PLANNING 39-60 UNIT - 3 : APPROACHES & METHODS OF TEACHING ENGLISH 61-131 UNIT - 4 :
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9 Unit-1 Nature of English
Language and Literature Structure : 1.1 Introduction 1.2 Objectives 1.3
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Let Us Sum Up 1.9

Unit-End Exercises 1.10 References 1.1 Introduction Language is the most essential medium of communication and education. Therefore, promotion and development of Hindi and other 21 languages listed in the eighth schedule of the Constitution of India including Sanskrit and Urdu has been emphasized. Since time immemorial, language has been one of the major issues in India. History intimates that some states have come into existence only based on language. The regional language attains the utmost importance in a region. Along with that, the national language, English and some other foreign languages are also relevant nowadays because of their utility. Teaching and learning of English language has become multifaceted in India. This is in accordance with the issues and debates surrounding the position of English in India. It is accepted at the outer level, but attains undue resistance at the inner levels i.e., the cultural and the psychological levels. Hindrances like the regional language based

10 medium of instruction, staunch ideological opposition from the people all around have made English Language Teaching a difficult job. However, one should understand that, English is a globally accepted common language, a language for higher education and the prerequisite in the modern world. Hence, teaching of English is a necessity nowadays. 1.2 Objectives After going through this unit, you will be able to- Explain the principles of language teaching Describe the

Basic Interpersonal Communication Skills (BICS) and the Cognitive Academic Language Proficiency (CALP)

Illustrate the evolution of English language in the school context Elaborate the recent trends in Modern English literature in the Indian context Justify the position of English as Second Language in Indian Context 1.3 Principles of Language Teaching

English dominated the curriculum in the British Raj. It was the medium of instruction from the lowest to the highest segments of education. This status of English remained even after independence. Still it enjoys a prestigious position in the society. Even if English is a foreign language, it attains an important position in India. Many Indians feel that English is not a foreign language, a language of the British. They have made it very much of their own. Yet a segment of people has been voicing against English as the colonial language and the judicious use of it may restrict us from the hangover of the colonization period. Apart from this ideological stand, English invariably captures all the functional domains such as education, technology, business, international affairs etc. One should have a basic knowledge in English to participate in all these activities. This certainly has a great impact on the agencies of education. Learning a second language is more than learning a mere description of it. It is to develop the ability to use the language fluently and appropriately. This is true of not only second language learning but also of first language learning. Essentially, all language learning involves the processes of listening, speaking, reading and writing. These processes involve both linguistic and psychological aspects. This leads us to the fact that all language learning is based on certain well-defined principles derived from linguistic science as well as

11 psychological science. Principles of Language learning and teaching is a matter of practice. The language teacher can teach the language by choosing any method. But the knowledge and application of certain principles help him to teach the same language effectively. While teaching, the teacher must keep in mind the learner, his capability and capacity to learn and above all his environment of learning. Some teachers knowingly use difficult words of English while teaching. They forget the mental ability-and the grasping capacity of the learners. That type of teaching is not good. Some of the basic principles of Language Learning and Teaching are explained blow: 1.3.1. Linguistic

Principles of Teaching English The modern approach to all language learning and teaching is scientific and is based on sound linguistic principles. The principles discussed below in no way claim finality: they are subject to change in the light of new findings revealed by linguists and language users. These principles are general principles and are applicable to English language. Principle 1. Give Priority to Sounds: The sounds of English should receive priority. Sound should be given its due place in the scheme of teaching. Sounds should not be presented in isolation. They should appear in proper expressions and sentences spoken with the intonation and rhythm that would be used by a native speaker. Principle 2. Present Language in Basic Sentence Patterns: Present, and have the students memorise, basic sentence patterns used in day-to-day conversation. From small utterances, the students can easily pass on to longer sentences. In case of learning mother tongue, the student's memory span can retain much longer sentences than those of a foreign language. Principle 3. Language Patterns as Habits. Real language ability is at the habit level. It does not just mean knowing about the language. Make language patterns as habit through intensive pattern practice in variety of situations. The students must be taught to use language patterns and sentence constructions with

appropriate vocabulary at normal speed for communication. In fact the habitual use of the most frequently used patterns and items of language, should take precedence over the mere accumulation of words. Principle 4. Imitation. Imitation is an important principle of language learning. No learner can ever invent language. Good speech is the result of imitating good models. Imitation followed by intensive practice helps in the mastery of the language system. Principle 5.

Controlled Vocabulary. Vocabulary should be kept under control.

12 Vocabulary should be taught and practised only in the context of real situations. This way, meaning will be clarified and reinforced. Principle 6. Graded Patterns: To teach a language is to impart a new system of complex habits and the

habits are acquired slowly. So, language patterns should be taught gradually, in cumulative graded steps. This means, the teacher should go on adding each new element or pattern to

the

previous ones. New patterns of language should be introduced and practised with vocabulary that students already know. Principle 7. Selection and Gradation: Selection of the language material to be taught is the first requisite of good teaching. Selection should be done in respect of grammatical items, vocabulary, and structures. Selection of language items should involve ? Frequency (how often a certain item or word is used) ? Range (in what different contexts a word or an item can be used) ? Coverage (how many different meanings a word or an item can convey) ? Availability (how far an item is convenient to teach) ? Learnability (how far an item is easy to learn) ? Teachability (how far and item is easy to teach - in the social context) Gradation of the language material means placing the language items in an order. Grading involves grouping and sequence. Grouping concerns (i) the system of language, and (ii) its structures. Grouping the system of language signifies what sounds, words, phrases and meanings are to be taught. Thus, we have: (

i)

Phonetic grouping, i.e. grouping according to sounds. For example, words having the same sound are placed in the one group as, cat, bat, mat, pat, fat, sat; it, bit, fit, hit, kit, it, etc. (ii) Lexical grouping, i.e., grouping according to lexical situations. Example: school, teacher, headmaster, peon, classroom, library. All these words are grouped around "school." (iii) Grammatical grouping, i.e., grouping according to similar patterns as, my book/ his book, (pattern grouping): in the room, in the corner/ in the class/in the garden, etc. (phrase grouping)

13 (iv) Semantic grouping, i.e., grouping according to meaning. Example: school, college, university; bicycle, rickshaw, car, tonga, train, aeroplane, etc.. (v) Structure grouping, i.e., grouping in the structures means how the selected items fit one into the other-the sounds into the words, the words into phrases, the phrases into the clauses and sentences, and the sentences into the context.

Sequence means what comes after what. Sequence should be there in the arrangement of sounds (phonetic sequence), phrases (grammatical sequence) words (lexical sequence) and in meaning (semantic sequence). Sequence of structures implies direction, expansion, variation and length of

the structures. Principle 8. The Oral Way. Many Experts believe that the oral way is the best way to language learning.

Prof. Kittson rightly observes, "

Learning to speak a language is always the shortest road to learning to read and write it."

Prof Palmer also writes, "We should refrain from reading and writing any given material until we have learnt to use its spoken form." Principle 9. Priorities of Language Skills: Listening comprehension, speaking, reading and writing are the four fundamental skills. Listening and speaking are primary skills, while reading and writing are secondary skills. Reading and writing are reinforcement skills. They reinforce what has been learnt through listening comprehension and speaking. In fact, listening comprehension and speaking speed up the reading process. Writing should be introduced after reading.

Principle 10. Multiple Line of Approach: "The term multiple line implies that one is to proceed simultaneously from many different points towards the one and

the same end. We should reject nothing except the useless material and should select judiciously and without prejudice all that is likely to help in our work". In teaching a language, it implies addressing the problem from all fronts. Say, for example, there is a lesson on 'Holidays' in the text book. The teacher can have a number of language activities connected with the topic such as oral drill, reading, sentence writing, composition, grammar, translation, language exercises etc. Principle 11. Language Habit through Language Using: A language is best learnt through use in different contexts and situations. Prof. Eugene A. Nida rightly observes, "Language learning means plunging headlong into a series of completely different experiences. It means exposing oneself to situations where the use of language is required." Another expert expresses a similar opinion by saying: "Learning a language means forming new habits through intensive practice in ?

Since it is a quotation, I could not correct it Author must check with the original and speaking. The emphasis should

14 always be on language in actual use". Principle 12 Spiral Approach. The "spiral" approach to language learning should be followed. Previously taught vocabulary and structures should be reintroduced in subsequent units whenever logical or possible. This is called the "

spiral approach." Principle 13. Use Mother-tongue sparingly. The mother tongue should be sparingly and judiciously used during teaching English. Of course, at the early stage, some explanations will have to be given in pupil's mother tongue. It is important that students do not use their mother tongue in the classroom. 1.3.2.

Psychological Principles of Teaching English It will not be out of place to list down certain principles that have been derived from the science of psychology.

Principle 1. Motivation.

Motivation is an important factor in language learning, particularly in learning a second language. It creates interest as well as the need to learn the target language. If the need for the language we use is felt, it is learnt easily. Pupils' interest can be aroused in a number of ways, and language learning can be made increasingly interesting and attractive. It can be done with the help of pictures, charts, models, flash cards, black board sketches and similar other visual devices. The use of tape-recorder on modern recording devices

can be most effective in the teaching of pronunciation. The aim is to have the students maximally exposed to the target language in variety of contexts and situations, not in isolation. The teacher should prompt connections, feedback and correct errors, if any. The rule is teach, test, re-teach, retest. The teacher should make continual and significant use of language material in class-room situations. Palmer suggests the following six factors which motivate and create interest among the learners : (i) The limitation of bewilderment, that is, minimizing confusion; (ii) The sense of progress achieved; (iii) Competitions; (iv) Game-like exercises; (v) The right relation between teacher and student; and (vi) Variety. Principle 2. Immediate Correction. Corrections make all the difference. They help in improving pupils' responses. But remember, when corrections are made, they should

15 be made immediately. Moreover, the corrections should be made in such a way that will bring about learning and not frustration or demotivation.

Principle 3. Reinforcement Immediate reinforcement is an important principle. It has been experimentally proved that reinforcement of correct responses helps in better learning.

Prompt feedback is also very important.

The student should be told his response is correct immediately after it is given by him. Principle 4. Frequent Review. An important psychological principle is the principle of frequent review. Frequent review and re-entry of the same material is necessary for retention. During the process of reviewing, variations in material should be essentially be introduced and practised. Principle 5. Correct Responses. It is an important psychological principle that classroom activities should strengthen the language skills. The techniques used by the teacher of English should encourage the maximum rate of correct responses. This will give children the feeling of success, achievement and assured progress. Principle 6. Practice in Everyday Situations. A language is best learnt when its need is felt in everyday situations. So, English should be practised in

every day situations with which children can easily identify.

In short, the children, their environment and their experiences, should be the starting point. Let them recall (and, they should be helped, if they fail) something familiar which is related to or contrasts with a new language item to be learnt. These are, then, some of the basic principles of language learning and teaching. Principle 7. Imitation: Learning of any language is based on the principle of imitation. We can see from childhood that language is naturally learnt through imitation. It is especially true in the case of small children. Whatever they see all around them, they imitate those things in the same way. The small children carry on sometimes even the wrong habits of the teacher. If a teacher has poor pronunciation, his students at the early stages of learning the language will pick up the poor pronunciation from him. The bad handwriting of the teacher may also have adverse effect on the learners. So the teacher who is entrusted with the charge of teaching the competent children must be with a model type of pronunciation. His handwriting should be very good. He must possess good linguistic habits. All this will have very good impact on the growing personalities of the small children. It is therefore, very strongly recommended that competent teachers should be recruited for teaching the small children in the schools.

16 Things to Remember, (i) Teach the language, not about the language. (ii) Teach the language, not its written system (at the start). (iii) Teach the language, as it is, not as anyone thinks it to be. (iv) Teach the language, not its literature. (v) Teach the language as it is now, not in term of its history. (vi) Teach the language as a skill, not as an intellectual task. (vii) Teach the language in varied, interesting situations. (viii) Give maximum exposure. (ix) Give vocabulary its due place. (x) Use mother tongue as a tool, not a medium. (xi) Immediately reinforce correct response. (xii) Give prompt feedback
Language is taught so that the learners are able to make use of it in their day-to-day life situations. Different language items, say vocabulary structures etc. should be dealt with in the context or some appropriate situations so that the learner may find them close to life. 1.4.

Language

Proficiency:

Basic Interpersonal Communication Skills (BICS) and Cognitive Academic language Proficiency (CALP)

Basic

Interpersonal Communication Skills (BICS)

are language skills needed in social interactions. It is the day-to-day language needed to interact socially with other people. English language learners (ELLs) employ BIC skills when they are on the playground, in the lunchroom, on the school bus,

at parties, playing sports and talking on the telephone. Social interactions are usually context embedded. They occur in a meaningful social context. They are not very demanding cognitively. The language required is not specialized.

Problems arise when teachers and administrators think that a child is proficient in a language when they demonstrate good social English.

CALP refers to formal academic learning. This includes listening, speaking, reading,

17 and writing about subject area content material. This level of language learning is essential for students to succeed in school. Students need time and support to become proficient in academic areas. This usually takes from five to seven years.

Recent research (Thomas & Collier, 1995) has shown that if a child has no prior schooling or has no support in native language development, it may take seven to ten years for ELLs to catch up to their peers.

Academic language acquisition is not just the understanding of content area vocabulary. It includes skills such as comparing, classifying, synthesizing, evaluating, and inferring. Academic language tasks are context based. Information is read from a textbook or presented by the teacher. As a student gets older, the language becomes cognitively more demanding. New ideas, concepts and language are presented to the students at the same time.

Jim Cummins differentiates between social and academic language acquisition. He also advances the theory that there is a common underlying proficiency (CUP) between two languages. Skills, ideas and concepts students learn in their first language will be transferred to the second languages. These terms are commonly used in discussion of bilingual education and arise from the early work of Cummins (Bilingual Education and Special Education: Issues in Assessment and Pedagogy, 1984) in which he demonstrated his ideas about the two principal lines/directions of second language development in a simple matrix. BICS describes the development of conversational fluency (Basic Interpersonal Communicative Skills) in the second language, whereas CALP describes the use of language in decontextualized academic situations (Cognitive Academic Language Proficiency). According to Baker (2006), "BICS is said to occur when there are contextual supports and props for language delivery. Basic Interpersonal Communication System BICS Cognitive Academic Language CALP Proficiency Cognitively Undemanding BICS Example Face-to-face conversation Example Telephone conversation Context Embedded Context Reduced Example Demonstrations of experiments Example writing a standardized test CALP Cognitively Demanding

18 Face-to-face 'context embedded' situations offer non-verbal support to secure understanding. Actions with eyes and hands, instant feedback, cues and clues support verbal language. CALP, on the other hand, is said to occur in 'context reduced' academic situations. Where higher order thinking skills (e.g. analysis, synthesis, evaluation) are required in the curriculum, language is 'disembedded' from a meaningful, supportive context. Where language is 'disembedded' the situation is often referred to as 'context reduced' (Baker, 2006, p. 174) The horizontal axis of the BICS/CALP matrix represents a continuum from 'context- embedded' to 'context-reduced', ranging from the situation in which the learner uses external clues and information, such as facial gestures, real objects and pictorial representation to enable understanding, to the other extreme where the learner must rely on linguistic cues, and knowledge about language and text to understand meanings. The vertical axis relates to the degree of active cognitive involvement in a task, moving from tasks that are not very demanding to increasing cognitively challenging activities. So, an activity in the upper left corner (cognitively undemanding and context-embedded) such as face to face conversations might be appropriate for a beginner, but tasks in the lower right corner (more cognitively demanding and context-reduced) such as writing a standardized test, would be a task for advanced learners. Cummins' model has proved helpful in identifying and developing appropriate tasks for bilingual pupils. For example, in preparing tasks for a newly arrived second language learner, teachers might start with contextualized tasks and practical activities that are of low cognitive demand, such as naming items or a simple matching exercise. Learners, who are more proficient would require contextual support, but would need more cognitively demanding tasks. This approach to planning and assessing ELL learners was developed and reported by Cline and Frederickson (1996). In conceptualizing bilingual proficiency this way, Cummins and other researchers suggest that it takes learners, on average, approximately two years to achieve a functional, social use of a second language but that it may take five to seven years or longer, for some bilingual learners to achieve a level of academic linguistic proficiency comparable to monolingual English speaking peers. The commonly used acronym BICS describes social, conversational language used for oral communication. Also described as social language, this type of communication offers many cues to the listener and is context-embedded language. Usually it takes about two years for students from different linguistic backgrounds to comprehend context-embedded social language readily. English language learners can comprehend

19 social language by: observing speakers' non-verbal behaviour (gestures, facial expressions and eye actions); observing others' reactions; using voice cues such as phrasing, intonations, and stress; observing pictures, concrete objects, and other contextual cues which are present; and Asking for statements to be repeated, and/ or clarified. CALP is the context-reduced language of the academic classroom. It takes five to seven years for English language learners to become proficient in the language of the classroom because: non-verbal clues are absent; there is less face-to-face interaction; academic language is often abstract; literacy demands are high (narrative and expository text and textbooks are written beyond the language proficiency of the students); and Cultural/linguistic knowledge is often needed for complete comprehension. By using, a matrix with two axes (Context-Embedded language and Context-reduced language), we can see how certain task may be more or less demanding. Context-Embedded Language: Language that is supported by contextual clues in the environment such as objects, props, manipulatives, pictures, graphs, charts and so forth helps the second language learner make meaning from the spoken or written world. Context-embedded language is also a result of students interacting with each other to get interpersonal clues to construct meaning. A "here and now" context is a necessary ingredient if the input is going to be comprehensible. Context-Reduced Language: In decontextualized language there are few if any clues Cognitively Undemanding BICS Example Face-to-face conversation Example Telephone conversation Context Embedded Context Reduced Example Demonstrations of experiments Example writing a standardized test CALP Cognitively Demanding

20 present to support the spoken or written words to help make the language comprehensible. Context-reduced language is abstract and only the author usually knows the context. i.e., textbooks, a novel, a lecture, a CTBS test. Quadrant C and Quadrant D are context- reduced according to Jim Cummin's construct of proficiency. 1.5. English Language in the School Context: An Evolutionary Perspective English dominated the curriculum in the British Raj. It was the medium of instruction from the lowest to the highest segments of education. This esteem status of English remained even after independence. Still it enjoys a prestigious position in the society. Even if English is a foreign language, it attains quite an impressive position in India. Many Indians feel that English is not so far a foreign language, a language of the British- they have made it very much of their own. Yet a segment of people has been voicing against English as the colonial language and the judicious use of it may restrict us from the hangover of the colonization period. Apart from this ideological stand, English invariably captures all Jhe functional domains such as education, technology, business, international affairs etc. and to attend these entire activities one should have a basic knowledge in English. This has certainly a great impact on the agencies of education for an effective teaching learning of English. English reached India with the British. The establishment of East India Company and spreading business across the country sowed the seeds of English in India. There was an urgent need of the Indian people with knowledge in English in their business. Hence, there was a demand for the introduction of English in India. The first initiatives were taken by the Christian missionaries to introduce English. They had the policy to convert Indians to Christianity and in doing so, knowledge in English was regarded as a must. The English Christian missionaries came to India from 1813 and they built schools at primary level for Indians in which the language of instruction was local language. Later on, the missionaries built high schools with English as the language of instruction that obliged the Indians who wanted to study to have a good knowledge of English. The British rulers began building their universities in India from 1857. English became the first language in Indian education. The 'modern' leaders of that era in India also supported English language and claimed it to be the main key towards success. Indians who knew good English were seen as the new elite of India. Many new schools were established in which the language of instruction was English. According to the British laws the language of instruction at university level was English and therefore schools that emphasized

21 English were preferred by ambitious Indians. The East India Company launched English as the language to be used in the administrative purposes. By the 1830s, the Indian middle classes were becoming very demanding. They realized that English was the language required for a secure future in a government job, so why was English not taught in the secondary school? Private schools offering this service were already doing good business, particularly in Calcutta. The state was set for the first 'big moment' in the imperial history of English language teaching. Meanwhile some movements were started by Raja Ram Mohan Roy to introduce western scientific education through English. He wanted to replace traditional Sanskrit and Persian teaching. To take a decision on the issue, a committee was formed. Lord Macaulay was the chairperson of this committee. He advocated English as the medium of instruction in the place of Sanskrit and Persian. Macaulay's "Minutes" (1835) was an epoch making document in the introduction of English language in India. He pleaded for a class of people who could serve as- "... interpreters between us and the millions we govern;

a class of persons,
Indian in blood and colour, but English in taste, in opinions, in morals, and
in intellect" (

cited in Krishnaswamy & Brude, 1998, p. 14). Lord Bentinck, the Governor General of India, accepted his proposal for the establishment of English medium schools. These schools were set up only to meet the emerging administrative needs of the British Raj at that time. In those schools none other than the Englishmen used to teach English from the very first day of schooling and the textbooks of different subjects-science, geography et al. were printed and taught only in English. Because of that and as Macaulay argued, the printing of all Sanskrit and Arabic books was stopped and the prestigious Sanskrit college was closed. Wood's Despatch that has been treated as the Magna Carta of English education in India recommended the number of schools and colleges to be increased in India where English should hold the predominant place. Medium of Instruction should be English for higher branches and Vernacular for lower level. When India attained liberty, its position underwent a massive change. The whole administration of the language policy came into the hands of Indian authorities. The very question regarding the place of English in India became controversial. Some leaders argued that English should be uprooted from the country where as some others favoured the retention of English. In fact, for the first two or three years of independence, so much was said but nothing concrete could be decided in 1950, when the Indian constitution was framed. Hindi, the language spoken in four northern states in India, was made the National language. Article 343(2) of the Indian Constitution specifically stated that English was to be employed for official purposes, both intra and internationally, until 26 th January 1965. After that, Hindi was to replace it and become the sole official language. In a speech delivered on the 7 th day of August 1959, India's first Prime Minister, Pt. Jawaharlal Nehru

declared: "...for an indefinite period- I do not know how long- I would have English as an associate, additional language which can be used, not because of facilities and all that, but because I do not wish people of non-Hindi areas to feel that certain doors of advance are closed to them...

So, I would have it as an alternative language as long as people require it" (

cited in Krishnaswamy & Sriraman, 1994, p. 58). However, when a strong Hindi sentiment occurred in the form of riots in different parts of the country in 1963, Parliament passed the Official Language Act to conciliate the non-Hindi states. The act specified that the use of English language remained continued from the appointed day in addition to Hindi for all the official purposes. As a result, English happens to be the Associate Official Language even today. Three states in the North-East- Meghalaya, Nagaland and Mizoram- have given English the status of the sole official State language. Today, there are more teachers, students and Indian English writers than when British left the country. India ranks third in the world after the USA and UK

in proportion to numbers of English speakers. Since achieving Independence, schools that provide free education to all children have been running by the State Governments where the medium of instruction is the local state language and English holds the status of a second or third language. The Indian Government has taken initiatives repeatedly for the betterment of English language education. The Central Advisory Board of Education (CABE) made the first proposal in 1956. The board recommended the study of English as a compulsory language both at the secondary and university stages. It also suggested that English should be introduced in class V and the standard of English be determined by the states individually. Thereafter, the Kothari Commission or the Indian Education Commission (1964-66) advocated the three-language formula in the following way: I. The regional language or the mother tongue of the individual child II.

The official language of the Union or the associate official language so long as it exists and III. A modern Indian or European language not covered under (i) and (ii) and other than that used as the medium of instruction.

23 According to the commission, a working knowledge of English will be treated as an asset even though mother tongue or regional language is the medium of instruction. The National Curriculum Framework followed the track of the Indian Education Commission in successive recommendations i.e., 1975, 1986, 2000 and 2005. The entire educationists even today boast for the retention of the three-language formula as the most effective language policy for India. NCFTE (2009) also asserts the context specific use of language in teaching and learning activity. The Kothari Commission recommended particular units for teaching English language skills instead of focusing more on literature. Here, the shift occurs from grammar translation method to Direct Method. Various English Language Teaching Institutes (ELTIs) and Regional Institute of English (RIEs) were built in different locations of India for providing guidance, models and training to English language teachers. In the 1950s and 60s authorities wanted the help of professionals from London, including British Council, for preparing structural syllabus. Madras English Language Teaching (MELT) invited experts from London School. In addition, an English Language Teaching Institute (ELTI) was established in Allahabad in 1954 with the assistance of British Council. All India Seminar on the Teaching of English in Nagpur in (1957) recommended a revision of the syllabus at schools on a national level and established structural approach as the basis for the new syllabus. Central Institute of English and Foreign Languages (CIEFL) was set up in Hyderabad in 1958. Study groups selected by the Ministry of Education submitted reports in 1967 and 1971 on the 'Study of English in India'. A large number of English medium schools were set up with the prior initiation of the private sector. The Acharya Rammurti commission in 1986 suggested that more emphasis should be given to the hours of study and the level of attainment of the language than the years of study in a school or college. It also suggested that various government educational institutes should jointly design methods for making uniformity in the acquisition of language competency at school level. Curriculum Development Centre (CDC), set up by the University Grants Commission (UGC) in 1989 focussed on the proposed curriculum and suggested shifting of its emphasis from teaching to learning and it should be designed according to the needs and aspirations of the learners. CDC suggested postgraduate courses in British Literature, American Literature, Comparative Literature, Creative Writing in English, Modern English language, English Language Teaching, etc. Several Indian universities have started many of these courses with greater effectiveness to be at par with the large-scale demand for English knowing society. However, English language remained confined on the upward curve in the country. It has only begun the backbone of higher education. Though English entered to the

24 landscape centuries before, it cannot enter into the mindscape of average Indians even today. The continued status of English as the guarantee of upward mobility within a still rigidly stratified society, there has grown to be a segment of the English- knowing middle class which holds the view that English has been 'naturalized' in this country, and hence ought properly to be seen as one of the Indian languages. On the face of it, this must seem too obviously true; about two to three percent of Indians do know some English – the problem resides in the refusal or the unwillingness of such opinion to recognize the collusion between English and various system of dominance, both in relation to the Indian political economy and to culture. Now the aim of English studies in India does not remain merely to develop aesthetic sense and the creative and critical faculty of the students. In this globalized world English has no longer remained a colonial language but a language that various countries and people are using for communicative and commercial purposes. It is now no longer a colonial language of oppression meant to subjugate people but has become a medium of transporting knowledge between countries and people. Therefore, need to review the impact of power on English as second language in India has been felt with immediacy. States, like India and Bihar, which banished English from Primary Education, have reintroduced it. English had been with us for more than two centuries and will dominate once again in the recent future. Today the relevance of English is much more than the colonial India. Circumstances lead to say that English has certainly a great future in India. People use English not due to linguistic barrier only but prefer to express themselves in English. The youngsters favour English most due to their career advancement. Sometimes, it has been treated as a symbol of status due to its predominating role in the world.

1.6. Current Trends in Modern English Literature in Indian Context

Indian English literature commenced as a necessary outcome of the introduction of English education in India under the British colonial rule. In the recent years, it has fascinated widespread interest, both in India and abroad. It is now documented that Indian English literature is not only part of the Commonwealth Literature but has also acquired great significance in the World Literature. Literature is a powerful medium in the hands of creative writers to modulate and modify or change the societal framework. It cannot be created in a vacuum, and has invariably the basis of socio-cultural, political conditions. It might be seen as an individual's perspective on the social, historical, political, economic and cultural patterns of the times. Creative writers have always

25 used literature as a medium to fight against the well established, conventional social norms and traditions, hypocritical reactions, outmoded customs, and so on. Now days a number of Indian writers in English have contributed substantially to the Modern English Literature. Credit goes to Raja Ram Mohan Roy who heralded the Indian Renaissance and Lord Macaulay who initiated English language education in India. Today, it has won for itself international acclaim and distinction. It was sustained to open up fresh avenues of thought and culture, art and literature, science and technology. The introduction of English education and the knowledge of English literature and science through the medium of English language offered a fresh avenue for the growth and expansion of English in India. The expansion of English created a conducive environment for the growth and development of the Indian narrative not only in English, but also in the various Indian languages as well. It directly marks an enriched heritage of different genres of literature-drama, poetry and fiction. The growth of English writing since Independence has taken a new direction.

The Indian English writers perceived India at a post-colonial view. The new ideas nourished but most of the focus was shifted towards the problems like- social, economic, religious, political and familial as bases; which were also enveloped with the feel of National Movement that drew attention of the creative writers.

The partition, the communal riots after partition, the problems of casteism, subjugation of women and the poverty of illiterate masses became the flavour of the day. The outcry is enormous and many up- surging writers have enhanced the view of the Literature with passage of time. This paper will help analyze and understand the development of English writing over the decades beginning from the Post- Independence period till date. It also compares the veterans of writing who posed the realism of fifties in their writing, with the upcoming writers of present who elaborate on the ideas of the past with their modern perspective. It also diverts the readers' attention towards the changing patterns of using language. India had turned Independent in the wake of the middle of a struggling 1947 and this very sudden and gushing change of governmental and administrative policies was sure to create its ill impacts upon the newly renamed 'Indian citizens'. The Partition of India, the consequent 'frozen period' of Indian economy made itself very much perceivable in Indian literatures - a country which was almost thrust into native- native and almost- alien systems after solid 200 years of colonial ruling. This called for reasons enough for genres in Indian literature to become apparent by themselves, a nation plunged into the era of post-colonialism sickness to end, with only sporadic writers and authors taking upon their shoulders the task to be conscious of social norms. Postcolonial Indian literature also gave birth to the Indian diaspora, with clusters failing to identify themselves

26 with the native mode of administration, migrating to the land of once 'white' masters, looking down upon Indians as 'slaves'. Genres of unnaturalness and unimaginable wonders began to crop up every other day in literature from India, with the now emerging tribal literary communities voicing their outcry of protests of helplessness and angst. The postcolonial generation always has perhaps suffered in a void of dichotomy, with two of the most extremities pulling at each other hard for want of importance and lack of it. And this perhaps is most visible in the rather dark genres in Indian literature, with English predominating above every other regional language. Indian English literature has best brought out the pathos and ethos of quintessential Indian literature that was begun during the once-gone Vedic Period. And this very genre of post-colonial genre in Indian English or regional literature, had also given birth to a overwhelming reaction of modernism in Indian literature. Modernism however is not confined to a constricted sense of being omnipresent in the 20th or 21 st centuries only. It also does not define that Indian literature with its touch of modernism is only narrowed down to English authors only. Indian literature of ancient times was also very much adhered and akin to being modernistic in their approach, with Tagore being referred to a man 'much ahead of his times'. The colonial period, which was at first dealt with much subtlety and humour in the literal sense, did take on many momentous and grave proportions due to the British Raj and its cruel domination. In fact, European arrival on Indian soil was one such aspect, which had begun already during the times of Mughal Emperor Jehangir. Yet, British domination, beginning with the East India Company perhaps had surpassed every other literary influence on Indian literature. with 200 years of ruthless reigning. Be it the Company or the later British Empire under the Crown annexation, Indian literature never did remain the same again. Indian regions were turned into provinces and the leading port cities, into Presidency administration. Each of the administrative system was overhauled, which began to gradually make a profound impact upon the mass and the class alike. The cultural ethos, the cultural distinctiveness that India owned, was completely shattered owing to English power and ascendancy. This no doubt was to make its shielding as well as protesting a mark in regional Indian literature, which again was a societal duty for any author. Cultural influence on Indian literature was mostly viewed in the limelight, with writers attempting to at times make headway for nationalists, or, the others, supporting the beneficial cause of the rare to- find kind- hearted Englishman. Whatever was the case, Indian literature was tremendously influenced from its every single angle of advancement. Yet another path breaking aspect was the arrival and permeation of English language was a major means of communication for the class first, and later, the mass. Those kind-hearted Englishmen, who had taken

27 the task upon them to bring natives to justice, had planned to create special position in native heart, by spreading English language and literature into every Indian soul. As such, one of the main influencing factors on Indian literature was the English language. English language thoroughly had influenced the Indian literature. Colonial influence in Indian literature was so much an aspect of everyday basis, that after some time, neither the ruler nor the ruled were very much taken in by it. If India was made a colony under British Empire, it was very much obvious that colonialism would make its everlasting influence upon any kind of literary work from Indian nationals, be it in English, or be it in the regional languages. However, a distinct thin line still remained between these 'ruler-ruled' relationship, in terms of communication, with the latter forever trying effectively to root out the former. And this very element very much became a reality in 1947, with India gaining Independence after 200 years of merciless suppression! The sudden darkness and lack of light that was felt with the Partition of India, intensely had impacted upon any quintessential Indian, mirrored very much in the then- framed 'Indian Diaspora' and its cluster of writers and authors. Post-colonial influence on Indian literature is that very sphere, which can still be viewed in the Indian English literature, not forgetting the sporadic regional literatures or 21st century. The abstract anxiety or helplessness, the angry young man restlessness, or the masked features of any Independent Indian human mind is still perfectly intact in the core of Indian literature, which however has taken towards fresh directions under the gradually arriving globalisation and its influence onto Indian literature. Contemporary Indian Literature that is only one and a half centuries old is marked by amazing variables in both the litterateurs and the regions through which it was produced. Before delving deeply into the exceedingly diversified genre of contemporary Indian literature, it is of tremendous importance to comprehend the fraternal terms of 'modern', 'modernity' and 'modernisation' in the Indian context. These three terms in the modern context are quite significant and highly condensed terms for historical experiences. Keeping in mind the chronological pattern, the twentieth century is considered to be more modern than the nineteenth century, but that does not exclude the 19th century from contemporary literature in India genre. The criterion involved here is not qualitative, but rather simplistic. Furthermore, anything which is fashionable today is considered modern whether it is desirable or not. However, the more significant aspect of modernity is a value-based approach. Particular attitudes and ideas are conceived more progressive and hence it is natural to condition them as modern as opposed to what existed before. The chronological sense is in a way implicit in this concept. The Indian context of contemporary literature bears an essential relation with the social and political history of the country during the mid-19th century, which indeed had marked a breakthrough.

28 English education had gradually disseminated in India during the first half of the 19th century, but its effect is seen manifestly in Indian literary creation only in the second half of the century. A new approach towards literature had emerged in the major languages. There indeed had existed an unambiguous novelty in form and content, mostly in both literatures, as form and content are always cohesively bound together. The distinct Indian flavour was back in the English language and thus the works of the modern Indian writers reflected the Indianised English. Be it Salman Rushdie, Shahshi Tharoor or Amitav Ghosh the deconstruction of the British of English was quite evident. The regional languages were freely used in the prose forms; thus once again breaking, restructuring and adding a new twist and dimension to the traditional narrative patterns .. Hindi, Gujarati, Bengali, Telugu, Tamil, Kannada, Marathi writers adhered to the 'modern' and 'post modern' idiom of writing. For instance, Mulk Raj Anand's work is replete with Hindi and Punjabi words like 'haanaai', 'saalamhuzoorii', 'shabashshabash' (Coolie). Most path breaking is Arundhati Roy's use of untranslated Malayalam words in day to day conversations in her *The God of Small Things* like 'chacko sir vannu', 'she is very beautiful sundarikutty', 'oower, orkunniley, kushambi. As far as poetry was concerned, it did not necessarily rhyme. Rather rhyme was done away with consciously to bring forth the discordance in the life of modern man. Both Indian English and regional poems deliberately distanced themselves from rhythm. Post independence, India was faced with a number of crises including social, political and economic. The society was in a continuous state of flux. This time the writers were no more eulogising their nation. Rather they were bringing to the forefront the reality through their works. Both verse and prose were time and again emphasising on the dominant crises. In order to establish a new narrative, to break away from the colonial mind set, contemporary Indian writers adapted new narrative patterns to put through their notions. Making a move from the 18th or 19th century, that had indeed sowed the budding phase of then referred contemporary Indian literature, writers belonging to contemporary India are additionally very conscious about their own culture and traditions. Hence can be witnessed a massive body of vernacular language and literature flourishing in it. While some of the authors pen in English, most of them continue to write in their colloquial languages. The philosophy and thought behind their works exhibit influences of western thoughts and principles. It is quite laudable that these authors have been successful enough to maintain the unique flavour of their region in their works and tinge it further with a modern dimension. The literary genre of the contemporary Indian literature are

29 manifold. Present Indian readers have novels, plays, short stories, literary criticism, science fiction and poetry to choose from. Besides the Indian English Literature, the regional literature of the subcontinent reflected significant changes as well. For instance, in Marathi literature changes were creeping in after 1800 which was the period of intellectual fervour and reformist didacticism. Many English books were translated in Marathi. Ram Ganesh Gadkari and Prahlad Keshav are also shared the stage with stalwarts like, Mohan Agashe, Sriram Lagoo, Kashinath Ghanekar, Prabhakar Panshikar started playing many immortal characters written by geniuses like Vasant Kanetkar, Kusumagraj, Vijay Tendulkar. This movement in drama was suitably supported by Marathi films which did not become a roaring success. There were pioneers like V. Shantaram and Dadasaheb Phalke and Marathi cinema had a tremendous impact on contemporary film industry. Modern Marathi poetry commenced with the works of Jyotibha Phule but the later poets like Keshuta Lalakavi, Ravi Kiran Mandal wrote poetry inspired by romantic and Victorian English tradition. But the major paradigmatic shift occurred in the mid forties with the poetry of Mardhekar and in the nineties in the hands of Abhidhanantar and Shabadavedh. The Little Magazine movement which became powerful in the fifties because of radical and path breaking writings gained momentum in the nineties too in the hands of Manya Joshi, Hemant Divate and Sachin Ketkar. Similar developments were also witnessed in the South Indian literary circles. In the 19th century the south Indian literature was inspired by European genres but in the end of the century things started to change with the help of modern writers like VVS Aiyar and Subhramania Bharati who started developing new forms. Modern south Indian literature boasts of great stalwarts who have left their imprint on the mind of numerous readers the world around. Contemporary writers like Jhaver Chand Meghani, Dharamvir Bharati, Mulk Raj Anand, Arundhati Roy, Vikram Seth, Jhumpa Lahiri and Amitav Ghosh have won international awards and put India firmly on the world's literary map. The two most famous names are the Mumbai born Salman Rushdie who received a Booker prize for his *Midnight's Children* and the Kerala author Arundhati Roy who also bagged a Booker for her *God of Small Things*. Other important writers are Shashi Deshpande whose *A Matter of Time* revolves around the problems in the middle class household when the husband leaves; Rohinton Mistry's *Family Matters* and *Fine Balance* where he deals with Indian society keeping Mumbai as the background. R.K. Narayan is another renowned south Indian writer who scaled great heights with his works revolving around the south Indian small towns of Malgudi. His chief works are *Swami and his Friends*, *The Financial Expert*, *The Guide*, *Waiting for the Mahatma* and *Malgudi Days*. Kamala Markandaya's *Nector in a Sieve* describes the heart wrenching struggle of a south Indian woman against the ravages of time and the destructive forces of nature.

30 Kaka Saheb Kalelkar is another celebrated writer in pre-independent India. His philosophical writings demonstrate his vast erudition, his commentary on the *Bhagavad Gita*, his essays on culture, his travelogues, his translation of *Gitanjali* had won him applauding appreciation from all quarters. The other eminent personalities that contributed to the literature world redefining contemporary Indian literature during this period comprise: Vempalli Gangadhar, K.K. Munshi, Joy Somnath, Khushwant Singh and many others. Indian contemporary literature is colossal in its scope and encompasses literature of various genres and styles. Contemporary literature in India is influenced considerably in content by the western philosophy and thought. However it knows how exactly to maintain its unique Indian flavour and assorted richness. In the arena of international literature, contemporary Indian literature occupies a position of pride for its sumptuous affluence and originality. Literature of India still bears some of its ingrained colonial impact and present-day writers often base their works in the colonial backdrop. However, this is not something heavily peculiar for a nation under colonial rule for such an extensive period of time. Contemporary Indian writers have taken to writing in English but repeatedly their themes are based upon an Indian backdrop and household.

1.7. Teaching as Second Language in Indian Context:

First language (L1) generally refers to the mother tongue. A child automatically acquires the first language in the process of growing up. It is as natural as mother's breast. It is a habitual action. A child feels comfortable in using his/her mother tongue. A second language (L2) is a language that is different from the vernacular and is learnt for its practical use in different contexts. English enjoys the position of the second language in colonial countries such as India, Bangladesh, Pakistan etc. English is used as the medium of instruction in schools, colleges and universities. Apart from that, English is widely used in the administrative purposes of our country. A third language (L3) is any other language, obviously different from the mother tongue, which is learnt for a specific period of time in schooling but not used as the medium of instruction in schools, colleges or universities. The treatment of English as an associate official language of India for an indefinite period resulted in the three-language formula came into effect. The Central Advisory Board of Education (1956) first suggested it and was accepted by the assembly of the Chief Ministers of different states in 1961. Indian Education Commission (1964) recommended studying English either as a second language (L2) or as a third language (L3). The regional language or the first language (L1) is to be taught from class I to

31 class X. The second language and the third language are to be introduced in class V and class VIII respectively as suggested by the commission. In Hindi speaking areas, the third language should be a modern Indian language other than Hindi. The mother tongue or the regional language should be the medium of instruction at all levels of Education. All the states including West Bengal have accepted the three-language formula with necessary modification to meet local requirements. However, there is a feeling that the Hindi speaking states are not seriously implementing the recommendation relating to the third language in their regions and because of that, the formula seems to be applicable in non-Hindi speaking states only. At the same time, it is also realized that our student will have to learn all the three languages for different purposes to be served by each of them. The expected level of achievement in three languages will however depend on whether the language is learnt as L1, L2 or L3. Different states follow multifarious discretion of introducing English from either class I or class II or class V and whether to treat English as second language or third language. In India, Bengali is the regional language and hence it attains the status of first language where as English and Hindi hold the second and third positions accordingly. There had been a long debate on the position of introducing English, but finally the matter is resolved and it is now introduced from class I in all the govt. or govt. aided schools. If we analyze the history of English language education in West Bengal, we can visualise many experimentation since 1950: I. In the year 1950, English was eliminated from primary section. II. In the year 1964, English was reintroduced from class III and sustained to be taught as second language since 1983. III. In the year 1984, English was again eliminated from Primary section and introduced from class VI instead of class III. IV. In the year 1992, Ashok Mitra Commission recommended launching English from Primary level but our state government paid no heed to this proposal. V. After that, Pabitra Sarkar Committee also suggested to commence English from Primary stage. In the year 1999, this language was launched from class II in West Bengal. VI. Finally, in the year 2004, English was introduced from class I and there is no change henceforward. Though English is a foreign language, it occupies a unique position in our country. The study of English started long ago and dominated the curriculum in the British regime. It played the role in the national integration and in the field of knowledge. Before

32 Independence, English medium schools were set up according to Macaulay's suggestion and at the discretion of Lord William Bentinck. Then English was the- Queen of languages Medium of instruction at different levels After Independence English was- The associate official language One of the languages in the three-language formula Mahatma Gandhi and Pt. Jawaharlal Nehru were in favour of retaining English. the study of English should be introduced as soon as the child has acquired mastery over his mother tongue. It was agreed on all hands that the mother tongue is the best medium of instruction and the Indian Education Commission recommended that no student should be awarded a university degree unless he/she has achieved some proficiency in English. Therefore, English should not be the medium of instruction at school level. It should be the medium of instruction only at higher levels of study where the learners' progress is not hampered because of the medium of instruction. We should keep English as medium of instruction for the time being because it is not an easy task to find equivalents of English especially in the fields of science, technology, medicine etc. Education being the responsibility of states in India, educationists belonging to different states decides things in their own way. That is why English is introduced differently in different states of India. An impartial scrutiny of the result of the modern researches in the field of foreign language learning leads some to the conclusion that the teaching of both Hindi and English should begin from the early days of schooling because by that time a child has acquired proficiency in his mother tongue. In India, English is the medium of instruction at higher levels and a compulsory language in the secondary schools. The study of English is included in the curriculum to keep abreast with world knowledge in science and technology and to make our own contribution to literature. Hence, English should be taught more as a 'language of comprehension' than as 'literature language'. Stress is on developing the four skills at the primary stage; at the secondary stage the ability to handle basic sentences and phrase patterns in speech, reading and writing. Strong emphasis is on the mastery of essential grammatical and lexical items for communication function. There is the essence of a cohesive curricular policy based on the guiding principles for language teaching which allows for a variety of implementations suitable to local needs and resources and which provide illustrative models for use.

English does not stand-

33 alone. It needs to find its place along with other Indian languages and in relation to other subjects. There should be the provision for English across the curriculum. Facilitating English is not the sole responsibility of the English teacher. The entire activities of the school whether it is curricular or co-curricular, should have provision for fostering English. Analysis of the

objectives of teaching English at Secondary Level The objectives of teaching English at the Secondary level are to

developing in the pupils the following skills and knowledge: I. To comprehend English with ease when spoken at normal conversational speed. II. To speak English correctly and fluently III. To read English with comprehension and at reasonable speed so as to use it as library language IV. To write neatly and correctly at reasonable speed V. To acquire knowledge of the elements of English for practical command of the language VI. To enjoy literary pieces in English VII. To translate common English words, phrases and sentences into their mother tongue or vice-versa VIII. To develop interest in extensive reading. The other important aspects that have a bearing on defining the objectives of a language course are- the situations in life where the students will have to use their language skills and the course content, i.e., lexical items, sentence patterns etc. that the students will learn at different stages of the course. In other words, we must define the framework of life-situations and language content within which the language skills are to operate. Such a framework would tell us where exactly we expect our students to use English and what amount of language material should be supplied to them for the purpose. Aims and objectives of teaching English: Aims of Teaching English:

The aims of education are not achieved through the study of a subject or two. Education is a life-long process and it includes the entire spectrum of subjects taught in an educational institution. The study of all the subjects contributes to the achievement of

34 aims of education and therefore in any scheme of teaching a subject, its aims and objectives are of most important. The teacher must know the aims of teaching a particular subject and should strive to do full fairness to it. The teacher who does not know the aims of teaching his subject does not know what he is doing and cannot realize why he is doing the same. Hence, the knowledge of the aims of teaching a subject is of supreme importance for the teacher. He must know what he is trying to accomplish, decide whether the procedure that he follows in the classroom are proper or not. The aim should be decided at the time of beginning a lesson. We may divide the aims of teaching English into two: a. General aims b. Particular/Specific aims The general aims are long-term aims of English teaching. They are at par with the aims of education. Therefore, these are meant to be achieved during the schooling period of the pupils. On the other hand, particular or specific aims are the 'objectives', which the teacher aims to achieve in his day to day teaching. a. General aims: The study of a language has four aspects, viz., the Semantic aspect, the Phonetic aspect, the Graphic Aspect and the Phonetic-cum-graphic aspect. The Semantic aspect means the comprehension of the meaning, the meanings of the words and their relationship used in a sentence.

The Phonetic aspect is the sound aspect and indulges with the spelling and articulation of words. The third, the Graphic aspect, is the writing aspect and deals with the written form of a language. The Phonetic-cum- graphic aspect means the reading aspect.

To these four aspects, some add two more- the literary aspect that leads to the ornamentation of a language and the linguistic aspect that means the working knowledge of language. All these aspects of language work in co-ordination with each other and none of these can work in isolation. Hence, there are four general aims: I. To enable the pupils to hear and understand spoken English II. To help them acquire proficiency in speaking English III. To enable them to understand what they speak in English IV. To enable them to write English At the school or higher secondary stage where English is to be taught as a second

35 language, we should be contented with its linguistic aims. Our chief concern should not be about the technical hitches of pronunciation, expansion of vocabulary, grammar and structure, but with language abilities. b. Specific/Particular Aims: Along with the general aims of teaching English, the teacher should have define, clear- cut aims for each lesson. In other words, these are short-term aims. They are clear, precise pointed and expressive in terms of achievement. The specific aims will vary according to his teaching orientation. It is very necessary for a teacher to specify his objectives of teaching. This helps him to know exactly what he is to do during a particular lesson. The teacher should declare his specific aim to his pupils so that they may know in advance what they are going to learn in that period. This will fix their mind on that specific aim and their energies will not be scattered. With a clear-cut aim both the teacher and the pupils stand on a firm road along which they can walk hand in hand with confidence. Objectives of teaching English: Objectives mean the desired changes in the pupils' behaviour at the end of any particular activity. The objectives are the steps that gradually lead towards the general aims of teaching the subject. The objectives of teaching English as a whole are the followings: I. Motivating students for studying more literature in English language II. Encouraging students

for composing poems and writing essay III. Developing the ability for grasping the theme of a poem or a passage in English IV. Encouraging the students for writing the meaning or theme of a poem or a passage in their own words V. Developing the ability of appreciation of ideas VI. Developing the creativity of the students related to verbal ability and reasoning or fluency of English language VII. Encouraging the ability of understanding of other school subjects VIII. Developing the mastery of English language for expressing his ideas, feelings and experiences IX. Stimulating the ability of evaluation and analysis of language components
36 X. Incorporating the values, moral and character of the students

To attain all these objectives is not an easy task. Hindrances are many, but an efficient teacher should keep in mind that these cannot be achieved overnight but have to keep patience and need to provide constant efforts both manually and by the aid of modern technology. 1.8. Let Us Sum Up Principles of Language Teaching Learning a second language is more than learning a mere description of it. It is to develop the ability to use the language on habit level. This is true not only of second language learning but also of first language learning. Essentially, all language learning involves the processes of listening, speaking, reading and writing. These processes absorb both linguistic and psychological aspects. This leads us to the fact that all language learning is based on certain well-defined principles derived from linguistic science as well as psychological science. Language Proficiency Jim Cummins differentiated between social and academic language acquisition. He also advances the theory that there is a common underlying proficiency (CUP) between two languages. Skills, ideas and concepts students learn in their first language will be transferred to the second language. English Language in the School Context English dominated the curriculum in the British Raj. It was the medium of instruction from the lowest to the highest segments of education. This esteem status of English remained even after independence. Still it enjoys a prestigious position in the society. Even if English is a foreign language, it attains quite an impressive position in India. Many Indians feel that English is not so far a foreign language, a language of the British- they have made it very much of their own. Yet a segment of people has been voicing against English as the colonial language and the judicious use of it may restrict us from the hangover of the colonization period. Apart from this ideological stand, English invariably captures all the functional domains such as education, technology, business, international affairs et al. and to attend these entire activities one should have a basic knowledge in English. This has certainly a great impact on the agencies of education for an effective teaching learning of English.

37

Current Trends in Modern English Literature in Indian Context The growth of English

writing since Independence has taken a new direction.

The

Indian English writers perceived India at a post-colonial view. The new ideas flourished but most of the focus was shifted towards the problems like- social, economic, religious, political and familial as bases; which were also enveloped with the feel of National Movement that drew attention of the creative writers.

The partition, the communal riots after partition, the problems of casteism, subjugation of women and the poverty of illiterate masses became the flavour of the day. The outcry is enormous and many up- surging writers have enhanced the view of the Literature with passage of time. This paper will help analyze and understand the development of English writing over the decades beginning from the Post- Independence period till date. It also compares the veterans of writing who posed the realism of fifties in their writing, with the upcoming writers of present who elaborate on the ideas of the past with their modern perspective. It also diverts the readers' attention towards the changing patterns of using language. Teaching as Second Language in Indian Context The position and status of English in India, the global acceptance of English, modernization, liberalization all these imply that the teaching of English should be consolidated in India. There is an urgent need to compete with the development of the whole planet and not restricted to India only. Hence, the chief aim of teaching language should be to develop the language skills because English is no longer regarded as a knowledge subject but as a skill subject. There is the essence of a cohesive curricular policy based on the guiding principles for language teaching which allows for a variety of implementations suitable to local needs and resources and which provide illustrative models for use.

English does not stand-alone. It needs to find its place along with other Indian languages

and in relation to other subjects. There should be the provision for English across the curriculum. Facilitating English is not the sole responsibility of the English teacher. The entire activities of the school whether it is curricular or co-curricular, should have provision for fostering English. 1.9. Unit-End Exercises 1. What are the different principles of language teaching? 2. Do you find any difference between BICS and CALP? 3. Discuss the evolution of English language education in the school context.

38 4. Show your acquaintance with

the current trends in English literature in Indian context. 5. Explain the role of teaching English as Second language in India. 1.10. References Sanyal, S & Mukherjee. U (2015). Outline of Teaching English. Rita Book Agency: Kolkata. Mahato, S.K., (2016). Pedagogy of Language Teaching. Rita Book Agency: Kolkata. <http://www.thecenterlibrary.org/cwis/cwisdocs/intro-ells.pdf> <http://www.iteachilearn.com/cummins/bicscalp.html> <http://neoenglishsystem.blogspot.in/2010/05/general-principles-of-language-teaching.html> <http://notesgoogle.com/10-best-principles-of-language-learning-and-teaching/>

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39 Unit - 2

Instructional Planning Structure: 2.1 Introduction 2.2 Objectives 2.3 Aims and objectives of Teaching English at different stages of schooling 2.4 Instructional Planning: Need and Importance 2.5 Unit and lesson plan: Need and Importance 2.6 Procedure of Unit and Lesson Planning 2.7 Let Us Sum Up 2.8 Answer to 'Check Your Progress' 2.9

Unit End Exercises 2.10 References 2.1 Introduction In the arena of teaching, instruction is a new word. It is used to mean systematic delivery of lessons with maximum classroom interaction so as to yield maximum output. Precisely speaking, instruction is an endeavour to make teaching scientific. It is an improved version of teaching where the teaching learning process is controlled and regulated by the maxims of teaching. In instruction, every classroom activity is pre-planned, well- ordered and target specific. Therefore, the word 'instruction' is replacing the word 'teaching' in education.

Instructional planning is an attempt to plan the transaction that would take place in a given classroom in the most objective and specific way. Instructional

plans are formulated more concretely in order to achieve the aims stipulated in the curriculum. They show 'when' and 'what kind of activities' children

need to engage in with the aim of promoting their development. Instructional plans should be formulated so that children can have learning experiences appropriate for their age or stage of

development. Teachers formulate instruction plans by setting objectives so that the curriculum is put into practice, creating an environment that enables children to achieve the objectives and curriculum content and making sure that teachers' support leads the activities in a favourable direction.

40 2.2

Objectives After going through the unit: You will develop a comprehensive idea of the aims and objectives of the teaching unit You can understand the need and importance of instructional planning in English You can develop knowledge about the way unit planning and lesson planning is done You can comprehend the difference between planning of lessons and units for normal and

children with special needs. 2.3 Aims and Objectives of Teaching English at Different Stages of Schooling 2.3.1 Aims of Teaching English

The teacher must know the aims of teaching a particular subject. The teacher who does not know the aims of teaching his/her subject can never do justice to his/her profession.

Hence the knowledge of the aims of teaching a subject is of paramount importance. In teaching of English"

P. Gurrey writes, "It is highly desirable to know exactly what one is hoping to achieve. If this can be clearly seen, then the best way of getting to work usually becomes evident. We ought, therefore, to consider carefully what we are trying to do when we are teaching". English

is a foreign language for Indian students. In most of the states it is accepted as a second language because of its market value and its use as an official link language in a multilingual country like India. English helps the states in official communication with the centre. It was declared as the official Associate Language after Independence. It is a world language and a library language. The principle of three-language formula recommended by the Kothari Commission (1964-66) emphasized the practice of English in Indian schools and colleges. Now it has been adopted by the states and union territories of India. But the performance of our students in English is below satisfaction. There are many hurdles in our way. Many teachers teaching in schools do not know the objectives of teaching the subject. It is, therefore, essential to improve the awareness level of students and teachers about the objectives we are to achieve. The aims and objectives usually are decided upon at the beginning of preparing a lesson.

41

The goal of teaching English in India is to help students to acquire a working knowledge

of English. In other words, it means that students should be able to understand

and speak English, read and write English. The knowledge of the aims of teaching of English will help the teacher to teach effectively. Aims of teaching English can be perceived in two domains. Language development and Literary development.

1] Linguistic Aim : There are four skills of language—Listening, Speaking, Reading and Writing (L.S.R.W.) and four aspects of language—semantics, phonetics, graphics, phonic

cum graphic. The semantics is related to understanding of language (Listening), the phonetic skill deals with sound, spelling and pronunciation (Speaking), the graphic skill is about writing (Writing Skills) while the phonetic cum graphic deals reading of

printed materials (Reading Skill). Every language including English is to be taught based on these four criteria. One's command over a language is to be assessed by the mastery of these four skills. However, for better understanding, things are explained graphically below : Command over Language Passive Active [understanding and reading] [speaking and writing] Receptive Skills Productive/Creative Skills The linguistic mastery of a language (here, English) depends upon the following elements and the way they are used. These are: - grammar - sociolinguistics - tools for interpretation and analysis of language and text - knowledge of texts - text forms/ genres

42 - text linguistics - composition - media and communication with texts 2] Literary aim-

Literature in a language classroom provides enough space for the learners to comment, justify and mirror themselves.

Three main reasons for the teaching of literature have been consistently advanced. Each embraces a particular set of learning objectives for the student. These are: The cultural aspect The language aspect The personal growth aspect The Cultural Aspect Teachers working with a literary aim stress the value of literature in encapsulating the accumulated wisdom, the best that has been thought and felt within a culture. Through literature students get to know the background not only of the particular novel

or prose or poetry

but also, they learn about history, society, and politics of the country. By experiencing this, they open themselves to understanding and appreciating ideologies, mentalities, traditions, feeling, and artistic form

of

the heritage the literature of such cultures endows. The Language Aspect One of the main reasons for a teacher's emphasis upon the linguistic aspects while teaching literature is to give students knowledge with some sense of the subtler and varied creative uses of language. A main purpose of language-centered literature teaching is to help students find ways into a text in a methodical way

in order to probe into the deeper layers of meaning by noting the nature of the use of language in the text. The Personal Growth Aspect Teachers tend to facilitate

the personal growth of the students. Their main goal is to help students achieve an engagement with the reading of literary texts. Helping students to read literature more effectively is helping them to grow and mature as individuals as well as their relationships with the people around them. To encourage personal growth the teacher has to select texts to which students can respond and

with which they can use their ideas and imagination creatively.

43 However, the Specific objectives of teaching English may be summarized in the following manner: 1) To enable to listen to English with proper understanding 2) To enable to speak English correctly. 3) To enable the students to read English correctly and comprehend and interpret the text. 4) To enable the students to write English correctly and meaningfully, for example writing letters, applications, description and accounts of day to day events. 5) To enable the students to acquire knowledge of the elements of English language. 6) To enable the students to develop interest for English. 7) To increase students' ability to use planning, drafting and editing to improve their work. 8) To enable the students to express themselves creatively and imaginatively in the target language, i.e., English. 9) To enable the students to become enthusiastic and reflective readers through contact with challenging texts. 2.3.2 Objectives of Teaching English at Different Stages of Schooling Aims are those targets which are to be achieved in the long run. It may take years to achieve one aim of teaching. But objectives are short-term and are achieved immediately. Let's have a look of the objectives of teaching English at different stages of learning. a. Objectives of Teaching English at

Elementary Level

By the end of the Elementary Stage students should be able to . . . 1. learn the basics of the English language that would form the foundation for its mastery in the future. 2. use the basic structures of English sentences. 3. learn the core vocabulary assigned for this stage. 4. listen to and understand simple English. 5. express themselves orally using simple English. 6. read and understand simple written English materials.

44 7. write simple guided sentences in English. 8. develop an awareness of the importance of the English language as an international mean of communication. 9. develop an awareness of the importance of the English language as an international mean of communication in order to benefit from the achievements of other cultures. b.

Objectives of Teaching English at Secondary Level The following are the main objectives of teaching English at secondary level. 1.

To develop knowledge and understanding of Grammar. 2. To develop abilities to make use of the grammar in own writing English. 3. To understand the meaning of English passage. 4. To develop interest in reading English passages/ literatures. 5. To develop self-study habit. 6. To enhance competencies in writing essays and gist of the passage in own words/ language. 7. To develop their insight and favourable attitude towards English language. 8. To develop the understanding of the rules of grammar and their use. c. Objectives of Teaching English at Higher Secondary Level 1.

Motivate students

for studying English

language. 2. To encourage for composing poems and writing essay. 3. To develop the ability for grasping the theme of poem or English passage. 4. To encourage the students

to write the meaning or theme of

a poem or passage in their own words. 5. To develop the ability of appreciation of ideas and critical thinking. 6. To develop the creativity of the students related to verbal ability and reasoning and fluency of language. 7. To develop the ability of understanding other school subjects. 8. To develop the mastery of language for expressing

one's own

ideas, feelings and experiences. 9. To develop the ability of evaluation and analysis of language components.

45 10. To develop the values, moral and character of the students '

Check Your Progress' -1 1. Define instructional planning.

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..... 2. How are aims of teaching different from the objectives?

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..... 3. Mention the name of two "active" skills of language

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..... 2.4 Instructional Planning : Need and Importance

Teaching has never been easy. Now-a-days another term instruction is used widely. Instruction is scientific, objective and a more controlled process than teaching. It simply means no instruction is successful without a prior planning. An instruction can be successful when it is properly planned and designed.

There are two types of instruction plans - (1) long-term instruction plans: yearly and monthly plans and (2) short-term instruction plans: weekly and daily plans. However, for each kind of plan the following three aspects

are to be taken into consideration. 1. Contents of activities: what the teacher hopes the children will experience. 2. Objectives of curriculum: aspects expected to be developed through the activities.

46 3. Creation of the environment: how to provide an appropriate environment to achieve the objectives of the curriculum. Let's now discuss about the need and importance of instructional planning in detail. i. Creation of an Appropriate Environment Children live and develop through their interaction with the surrounding environment. Key factors of an appropriate environment are 'free from danger', 'appropriate for their development level', 'meeting the interests and curiosity of children' and 'stimulating children to try tasks that teachers want them achieve'. Teachers should try to create an environment that encourages children to voluntarily get involved in their surroundings.

ii. Instructional planning helps to make the process of instruction focussed and objective. iii. It makes the best use of resources iv. Proper justice is given to all activities if instruction is planned properly. 'Check Your Progress' -2 1. How is teaching different from instruction?

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..... 2. Name two short term instructional plans.

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..... 3. What are the three basic aspects of a plan?

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47 2.5 Unit and Lesson plan: Need and Importance Planning enables us to think about teaching and its activities in a systematic way before one enters the classroom. The outcome of planning is a coherent framework which contains a logical sequence of tasks to prepare for a more effective teaching and learning. Plans express our intentions. Plans are projects which need to be implemented in a real classroom with real students. 2.5.1 Need and Importance of Unit Planning Unit plans consist of concepts and learning goals that are taught over a period of time and are woven together, often across subject areas. A unit plan lasts two or three weeks (or longer) and includes several standards, skills, and desired outcomes for interconnected learning. It combines subject areas and involves overlapping lessons in the subjects, thus creating longer spans of class time for study and practice. At the secondary level, unit plans contribute to optimal learning When unit plans are done well, learning is maximized through multiple exposures to key learning concepts and goals. In simple terms, a unit plan is simply a more detailed view of your teaching map. Yet in many ways, it has a very similar purpose. Unit planning provides you with a sense of direction and organization that again helps you and the class to achieve significant academic gains within a particular time period. More specifically, a unit plan gives the following benefits: A unit plan forces you to make difficult

decisions about what to teach and how to teach it.

After taking the time to develop a unit plan, you are less likely to be side-tracked by objectives, lessons, or activities that do not advance your ultimate quest for academic achievement. Tempting diversions will look much less appealing if you have your sights set on your students achieving a particular set of goals in a particular four-to-six-week period. A unit plan keeps you on pace to reach your unit (and ultimately long-term) goals. Your unit plan, which should be referred to with almost daily frequency, is your point of reference when you ask yourself, "Given where I want to be in two [or four or six] weeks, am I where I need to be now? Am I spending too much time on certain skills and concepts given the other skills and concepts that must be included in these X weeks, or X days?" Given the limited number of weeks, days, and lessons in a unit, each moment becomes more precious, forcing you to pace yourself appropriately in order to meet your end goals.

48 A unit plan provides an opportunity to stimulate student interest through overarching content that is relevant to students. When you design your unit plan, consider what content will engage your students given their interests and backgrounds. As Jere Brophy indicates in *Tomorrow's Teachers*, "whether in textbooks or in teacher-led instruction, information is easier to learn to the extent that it is coherent (i.e., a sequence of ideas or events makes sense and the relationships among ideas are made apparent). Content is most likely to be organized coherently when it is selected in a principled way, guided by ideas about what students should learn from studying the topic." Your unit plan does precisely that-it creates discrete segments of learning that have a cohesive unity. And, you will help engage your students in learning because each unit will have an overarching idea that is relevant and interesting to students.

2.5.2 Need and Importance of Lesson Planning Lesson planning is a vital component of the teaching-learning process. Proper classroom planning will keep teachers organized and on track while teaching, thus allowing them to teach more, help students reach objectives more easily and manage less. The better prepared the teacher is, the more likely she/he will be able to handle whatever unexpectedly happens in the lesson. The following are the benefits of a lesson planning. Lesson planning: - provides a coherent framework for smooth efficient teaching. - helps the teacher to be more organized. - gives a sense of direction in relation to the syllabus. - helps the teacher to be more confident when delivering the lesson. - provides a useful basis for future planning. - helps the teacher to plan lessons which cater for different students. - Is a proof that the teacher has taken a considerable amount of effort in his/her teaching. 'Check Your Progress' -3 1. Mention two importance of unit planning.

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49 2. Write two importance of lesson planning.
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..... 2.6 Procedure of Unit and Lesson Planning 2.6.1

Procedure of Unit Planning A unit plan is to be prepared taking the following elements into considerations: i. Outlining the Academic Goal To begin planning a unit, first we need to outline the academic goals of the big vision of the unit. This phase includes deciding what students should know and be able to do at the end of the unit, the number of days or weeks required to maximize learning (great units always require slightly more time than expected), and selecting textbook chapters and stories and other materials to incorporate. ii. Division of units in appropriate time slots Next divide everything according to the available class periods or time slots to determine how to fit the pieces into the unit. Build in extra time for review and enrichment to ensure that all students have learned the material. With each lesson, pinpoint the specific goals and desired outcomes that are to be met to ensure that your students meet the learning goals of the overall unit. iii. Preparation of Overarching Questions for Unit Planning As we plan each unit, these overarching questions need to be asked: What is the big vision for the unit? What is the primary educational intent for this unit? What do students know right now? What should students know and be able to do by the end of each lesson? What should students know and be able to do by the end of the unit? How can instruction be adjusted to meet the needs of all students?

50 What will take place before and during the unit to make sure that all students are successful? What assessments will best ensure that all students have reached the desired outcomes? What happens when students do not know? What materials are available for enrichment activities? What are the cross-curricular connections? Is the time for the unit well justified? iv. Unit Outline Unit plans demand great amounts of time, energy, and planning and each step of the learning ties to the next. The planning outline is useful for completing the specifics of a unit. The outline can be like the following– a. Purpose of the unit: b. Unit title: c. Key concepts: d. Subject area(s): e. Desired outcomes: f. Overarching goals, big ideas: g. Overarching standards to be studied: h. Sectional standards: i. Daily standards: j. Daily big ideas: k. Sectional goals: l. Daily goals: m. Overarching questions (that reflect and highlight the big ideas): n. Sectional questions: o. Daily questions: p. Assessment types to be used:

51 Informal: Formal: q. Methods to monitor and adjust instruction during lesson: r. Methods to determine background knowledge: s. Key vocabulary: Tier 1: students should already know or be familiar with these; fairly easy to teach Tier 2: primarily new terms or the development of deeper understanding of the terms Tier 3: Difficult, problematic terms; specific to domain t. Materials needed: u. Time allotment per day: v. Number of days required to complete the unit: w. Desired outcomes based on previous lessons and student progress: x. Daily plan for lesson phases (include as many days as necessary): Day 1: Day 2: Day 3: y. Methods for connecting all learning: v. Deciding the Type of Unit. Unpack your standards to clearly understand what evidence you will need to see from students in order to know whether they have achieved the unit goal. Then decide among the types of units you might design: goals-based units (which revolve around the learning goals themselves for one content area), thematic units (which use a common theme to draw in various learning goals from different areas), and project-based units (which focus on an end-product, some creation or event that will serve as the vehicle for students' mastery of the learning goals). vi. Create your summative unit assessment. Successful teachers create their end-of-unit assessment tool before they begin teaching the unit. Begin to purposefully choose tasks that will allow students to demonstrate

52 their mastery of the unit goal. This will serve as an initial framework for your assessment that will later feature questions that test each individual objective. After creating your assessment begin to anticipate potential student misunderstandings of your unit content. vii. Translate your learning goals into lesson objectives. You must translate your general learning goals into more specific lesson objectives. These objectives should be student-achievement based, measurable, and rigorous. Consider all of the prerequisite knowledge and skills that a child may need to perform the goals you outline. viii. Sequence your content and scaffold your lesson objectives. Here you need to think critically about how you will order your content and scaffold those objectives over the course of your unit. You need to consider what order will result in the most effective sequencing of the objectives, based on Bloom's Taxonomy and level of rigor. ix. Schedule your objectives on the school calendar. Use a school calendar to plot the lesson objectives, ensuring that you have allotted enough time for the knowledge and skills you wish to teach and recognizing various days or weeks that won't allow for regular instruction. Make sure to plan for remediation, enrichment, and contingencies, and check your unit plan for alignment with other instructional tools. x. Create your beginning-of-unit diagnostic tool. Successful teachers also know where their students are when they begin each unit. To avoid covering material that they already know, develop a diagnostic that assesses prerequisite skills and knowledge of unit objectives at the beginning of each unit. This will also provide you with a benchmark by which to measure future growth. xi. Create a tracking system for your objectives. Once you've determined what you're teaching, you can now begin to create your classroom tracking system, a chart listing your objectives and your students' names that will allow you to record and measure the progress of your class and students on the knowledge and skills you are teaching. xii. Continually adjust your plan. Adjust your plans based on assessment data, including your diagnostic. Interpret your data to determine class strengths and weaknesses and tailor your instructional plans in response to this information. Determine ways to include remediation and review of

53 prerequisite skills into your unit calendar. Also, make sure to recheck your tools for alignment after making appropriate adjustments. 2.6.2 Procedure of Lesson Planning Planning is imagining the lesson before it happens. This involves prediction, anticipation, sequencing, organising and simplifying. When teachers plan a lesson, they have to make different types of decisions which are related to the following items: - the aims to be achieved; - the content to be taught; - the group to be taught: their background, previous knowledge, age, interests, etc. - the lessons in the book to be included or skipped; - the tasks to be presented; - the resources needed, etc. The decisions then depend on the teaching situation, the learners' level, needs, interests and the teacher's understanding of how learners learn best, the time and resources available. Lesson planning involves the following concepts to be taken care of. They are described here one by one. a. Hints for effective lesson planning: When planning, think about your students and your teaching context first. Prepare more than you may need: It is advisable to have an easily presented, light "reserve" activity ready in case of extra time. Similarly, it is important to think in advance which component(s) of the lesson may be skipped. If you find yourself with too little time to do everything you have planned. Keep an eye on your time. Include timing in the plan itself. The smooth running of your lesson depends to some extent on proper timing. Think about transitions (from speaking to writing or from a slow task to a more active one). Include variety if things are not working the way you have planned. Pull the class together at the beginning and at the end.

54 End your lessons on a positive note. b. Basic Elements of a Lesson Plan: 1. Bookkeeping info - stuff like the lesson name, the date, the book you're using and what unit/page you're working with, the age/level of students, the class name or number, etc. None of this really helps with the lesson itself, but it will help you organize your lesson plans and it also will help you easily identify who and what the lesson is for when you look at it later/next year/etc. This also makes lessons much clearer when you share them with others. 2. Target Language - this is the specific language you want to teach in this lesson. This can be a grammatical structure, a list of vocabulary words, a particular sound, etc. If you're planning along with a book, it should be easy to figure out what the target language is - but you still want to include it in your lesson plan because the lesson should be designed around the target language, not the book. (Most lesson plans also include an objective - the goal or aim of the lesson. 98% of the time, my objective is "to teach the target language", so I don't consider this strictly necessary.) 3. Materials - because it is easy to overlook something, you should list the materials you will need for your lesson and then make sure in advance that you will have these ready. This includes books, handouts, flash cards, realia (real-world objects that you use as demonstrations in your lesson), arts and crafts supplies, and anything else you will need for the lesson besides yourself and your students. You might even go so far as to include "chalk" because you can't always take it for granted that classrooms will have some, and you may need to bring your own or make special arrangements to have chalk - rather than waiting for the lesson to start and having to send a kid running down the halls in search of a classroom with extra chalk that you can take some of. 4. A step-by-step, chronological list of things to do in class. This includes taking attendance, the warmer/warmers, your actual presentation of the material, drills with the students, activities the students will do, assessments of student understanding, assignment of homework, etc. If you're teaching with a co-teacher, this list should specify what you should be doing and what your co-teacher should be doing at any given time. Each stage of the lesson should include: - a description of what you will do and what the students should do

55 - a classification: is this presentation, practice, or production? - a time estimate: how long should this stage take? Optionally: - is the class working as a whole, individually, in pairs, or in groups? - does the stage include students talking to each other, talking to the teacher, or not talking at all? 5. Extras: Some lesson plans include lots of other stuff. You can include a list of potential problems with the lesson and some solutions you've come up with in case they occur. You can include advanced exercises for students who get the material quickly, and/or remedial help for students who fall behind. You can specify the background knowledge students will need to complete the lesson. You can include extra activities to do if the lesson finishes early. I don't consider these things integral to a good lesson plan, but they can be helpful. c. Basic Structure of a Lesson: The structure of a lesson plan has two major parts. Lesson Plan Part 1- What to teach (refer to group task in session) Background info (students' age - no of students - time limit) Objectives Language skills Language Content: (structures, vocabulary, functions, etc.) Resources Attitude Lesson Plan Part 2 - Lesson Procedures (how we are going to teach) Warm-up Core lesson: teaching new language, recycling, project work, written and oral production. Tasks (which sequence to follow) Rounding off.

56 d. Steps of a Lesson Plan: The following steps are to be followed for planning a lesson. 1. Review (British English: Revision) - this can be going over homework together, talking about what you did in class the day before, taking questions from students about past material, etc. 2. Warmers/Lead-ins - these are short activities designed to get students ready for the main lesson. Warmers should mentally orient students toward working in English, and lead-ins should point towards or prepare for the content of the lesson. 3. Presentation - this is the part where the target language is first presented to the students. This does not have to mean that the teacher lectures and the students listen silently - the students can and should be actively engaged in the presentation stage. 4. Practice - at this stage the students practice the target language with structured exercises under the guidance of the teacher(s). Practice can include drills - repetitions of specific words, phrases, or sentences - and written exercises such as fill in the blank, multiple choice, matching, etc. 5. Production - production is when students use the target language to communicate. It is less structured than practice, and should involve students producing their own uses of the target language, either written or spoken. 6. Assessment - the students are tested on what they know. Teachers should of course assess students' progress during all stages the lesson but a specific assessment stage can help confirm that all students are on the same page. 'Check Your Progress' -4 1. What kind of background information is required while planning a lesson?

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57 2. What does review refer to?

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3. What are warmers/lead ins?

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2.7 Let Us Sum Up To sum up it can be said that planning is one of the vital parts of teaching. Now-a-days more and more researches have been conducted in this area. These researches have amply proven the fact that for every successful teaching activity there is an efficient planning system. The very word instruction means systematisation of teaching. Instructional planning involves two kinds of planning-unit planning and lesson planning. Unit planning is a comprehensive chalking out of the details of the units to be covered and lesson planning is of the lessons. Both are equally important for successful instructional transaction. The planning we make for the transaction of instructions for normal children will not be applicable for children with special needs. Cares and cautions are to be followed while preparing the unit plans and lesson plans. 'Check Your Progress' -5 1. what is input 'adaptation'?

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58 2. what is 'alternate goal' adaptation?

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2.8 Answer to 'Check Your Progress' Answer to 'Check Your Progress' -1 1. Instructional planning is an attempt to plan the transaction that would take place in a given classroom in the most objective and specific way. 2. Aims are the targets that are achieved in long run. But objectives are short-term targets and are to be achieved immediately. 3. Speaking and writing Answer to 'Check Your Progress' -2 1. Instruction is a controlled and manipulated version of teaching keeping strict adherence to the objectives of teaching. 2. Weekly plan and daily plan 3. The three basic aspects of a plan are: i. Contents of activities. ii. Objectives of curriculum content. iii. Creation of the environment. Answer to 'Check Your Progress' -3 1. i. unit plans contribute to optimal learning ii. unit plan provides an opportunity to stimulate student interest 2. - provides a coherent framework for smooth efficient teaching. - helps the teacher to be more organized.

59 Answer to 'Check Your Progress' -4 1. students' age, number of students and time limit 2. review means talking about what you did in class the day before, taking questions from students about past material 3. Warmers mentally orient students toward working in English, and lead-ins point towards or prepare for the content of the lesson. Answer to 'Check Your Progress' -5 1. Adapting the way instruction is delivered to the learner 2. Adapting the goals or outcome expectations while using the same materials 2.9

Unit End Exercises 1. Mention the objectives of teaching English at secondary level of teaching. 2. Which of the following aims need to be given more importance at secondary level of teaching and why? i. Language aim ii. Literary aim 3. What does the cultural aspect of language development refer to? 4. Describe the importance of unit planning. 5. State the need of lesson planning for a secondary teacher. 6. In what way can we bring modification in planning a lesson in order to suit the children with special needs? 2.11 References Ahuja N.P. 'Teaching of English'. Anmol Publication Pvt. Ltd. New Delhi.

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61 Unit-3 Approaches & Methods of Teaching English Structure 3.1 Introduction 3.2 Objectives 3.3 Difference between the Approach and the Method 3.4 Approaches 3.4.1 Communicative Language Teaching (CLT) 3.4.2 Cooperative (Collaborative) Learning 3.4.3 Bilingualism: 3.4.4 Task-based language teaching 3.4.5 ECLECTICISM 3.4.6 Language Across Curriculum 3.4.7 Constructivism: 3.5 Methods 3.5.1 Direct Method 3.5.2 Grammar Translation 3.5.3 The Structural Approach: 3.5.4 Situational Language Teaching 3.6 Language Skill 3.6.1 Introduction 3.6.2 How are the four skills used in the language classroom? 3.6.3 The basics in developing the Language skills 3.6.4 Objectives (Speaking):

62 3.6.5 Objectives (listening): 3.6.6 Objectives (Reading): 3.6.6 Objectives (Writing): 3.6.7 How to develop Speaking Skills: 3.6.8 How to develop Listening Skills: 3.6.9 How to develop reading skills 3.6.10 How to develop Writing Skills: 3.7

References: 3.1 Introduction Did we ever have a teacher in a Language Class who forced everyone to learn in the same way? Were all the students equally happy with that class? - Probably not. The chances are that a teacher who showed no flexibility and appreciation of variety in learning style was not very motivating or successful. Diane—Larsen-Freeman (1986) in "Techniques and Principles in Language Teaching" points out that "There is no single acceptable way to go about language teaching today". (p.86). It is realized increasingly that individual learners learn in different ways and any one particular method may not be suitable for all. Against this backdrop, may be concluded that no single approach or method is appropriate for all learning styles. A good lesson will therefore be one in which a wide variety of Activities' should be used taking from a variety of sources. By varying the technique, the students of all types will be given the chance to participate and perform. Each approach has something to offer. The teachers' task is to identify and exploit those elements. But unfortunately if we study the language teaching circumstances of our country, we find, there is a growing notion among the Second Language Teachers that they have to follow one single 'Method in vogue' for classroom instructions. They don't try to get to know their students, or try to sense the 'Pulse' of the class, whether the students are tired or confused or in need of quiet time or particularly interested to learn about the

63 second language. So, there remains a wide gap of communication in the true sense of the term between the teacher and the students. This is against the principles of language teaching as Language itself demands interaction or communication: "Language is a system of oral, written or gestured meaningful signs used consciously or unconsciously to communicate with members of a given society. These signs are regulated by rules which will be different according to each community." Whose quotation? So in Language Teaching itself, to engage the learners in communication, the teachers have to trust their own instincts and abilities to judge when to switch method. This is in tune with the 'Generative' and 'Productive' dimension of language, what the German linguist and philosopher Humboldt states "the infinite use of finite means". If these terms are to be used then they must be clarified. Language is a kind of process that requires hearing, processing, interpreting, organizing and producing. So we need to know specially the four basic skills that are associated with language teaching 'Listening'; 'Speaking'; Reading' and Writing along with different approaches and methods of teaching English. However, before proceeding to discuss the appropriate methodology for Second language teaching, we should clarify, in brief, the concepts of approach or principles, method and technique which are mutually related. Curriculum adaptation is not a separate method for children with disabilities. It is a process of making necessary changes in learning content such as modification, substitution/ replacement, omission as a last resort and compensation etc. without changing the learning purpose. Considering the need for support regarding differential classroom teaching must address variant learner needs in context of Special needs, Teacher education needs to be modified for including students with special needs in educational process. With more and more children from the disadvantaged groups being a part of the mainstream education system, the classroom teacher has to assume greater responsibility in the implementation of inclusive practices.

64 3.2

Objectives After studying this unit, you will be able to: 1.

Compare and contrast Approach, Method and Technique using the actual classroom teaching as point of reference 2. Understand the use of methods among language teachers worldwide in order to provide them food for thought when they make pedagogical decisions in their language classroom. 3. Understand that as different pupils learn differently, so no single method suits all. 4. Find out whether a teacher's preferred approach should be eclectic which uses the best parts of several well-known methods. 5. Learn that over the years, the objective of many teachers has changed from trying to find an ultimate "best method" to identifying compatible approaches and then deciding on strategies for what needs to be done in the classroom. 6. Accommodate in approaches and techniques in teaching children with disabilities.

3.3 Difference between the Approach and the Method A common error among teachers is to use interchangeably terms like approach, method, and technique. Before entertaining such pedagogical weakness we should first try to comprehend these three terms together. They represent, in fact, three levels of analysis and teacher's decision making for teaching and learning English in the classroom. An approach or strategy is the most abstract of all three concepts and refers to the linguistic, psycho- and sociolinguistic principles underlying methods and techniques. Actually, every teacher has some kind of theoretical principles which function as a frame for their ideas of methods

and techniques. Whereas approaches represent language teaching philosophies that can be interpreted and applied in a variety of different ways in the classroom,

methods are held to be fixed teaching systems with prescribed techniques and practices.

A technique is, on the other hand, the narrowest of all three;? Consisting of a wide variety of exercises, activities or devices used in the language classroom for realizing lesson objectives.

65 The diagram below is an attempt to distinguish them: Based on the diagram, it is clearly seen that approach encompasses the whole orientation of teaching. Approach is the broadest of the three, making technique the most specific, and the method determining the techniques. Approach Approach is the way in which you will approach the piece of literature you are teaching. You may centre on the diction, or the theme, or the structure, or the romantic (or modern, etc.) nature of the piece; whatever you choose to teach. Approach is what you are going to teach. Approach is General, it emphasizes on planning strategy Approach is a general guideline on ways of performing a work. It does not identify all the steps involved. Instead it just indicates the direction to proceed in or ways of handling some major or important tasks. Sl. No. 1. 2. 3. Method Method refers to how you are going to teach it: lecture, small-group work, PowerPoint, worksheet, class discussion, etc. Method is Specific, it emphasizes on technique in class Method refers to an overall plan for orderly presentation of language material based upon a Selected approach. Methods for performing different kind of tasks are often formally designed and specified.

66 So, in an Approach, several methods can be used. One must remember that there is no such thing as the best method. Thus, there is no single correct way to teach a class. Instead, there are many good ways of teaching the students. 3.4 Approaches The pedagogical tendencies which have characterized second and foreign language teaching have been profuse and varied. As Stern (1983: 453) phrases it, "The conceptualization of language teaching has a long, fascinating, but rather tortuous history", which Brown (1994: 52) portrays as the "changing winds and shifting sands of language teaching". This history has been formulated mainly in terms of diverse teaching methods, each of which has attempted to find more effective and efficient ways of teaching languages and each of which has been based on different views of what languages are and of how they are best taught. And the aim of this chapter is precisely to review such a methodological history of language teaching; framing recent approaches to language teaching against the backdrop of a general historical overview which evolves from the Grammar-Translation Method to the post-communicative period. 3.4.1 Communicative Language Teaching (CLT) The Communicative Approach emerged in the early 1970

s as a result of the work of the Council of Europe

experts. However, it can be traced to the work of Chomsky in the 1960s, when he advanced the two notions of 'competence' and 'performance' as a reaction against the prevalent audio-lingual method and its views. These two concepts were developed later on by Hymes, into a 'communicative competence' which refers to the psychological, cultural and social rules which discipline the use of speech (Hedge, 2000). CLT advocates avoided prescribing a set of practices through which these principles could best be realized, thus putting CLT clearly on the approach rather than the method end of the spectrum. The assumptions are that (a)

learners learn a language through using it to communicate, (b) authentic and meaningful communication should be the goal of classroom activities, (

c) fluency

is an important dimension of communication, Method is procedural Method is Rigid Approach is an axiomatic Approach is flexible 4. 5.

67 (d)

communication involves the integration of different language skills, and (e)

learning is a process of creative construction and involves trial and error.

Hymes, as a sociolinguist, was concerned with the social and cultural knowledge which speakers need in order to understand and use linguistic forms. His view, therefore, encompassed not only knowledge but also ability to put that knowledge into use in communication. Dimensions of communicative competence which are identified in the literature include: linguistic or grammatical competence, sociolinguistic or pragmatic competence, discourse competence. The theory of language teaching underlying the Communicative Approach is holistic rather than behavioristic. It starts from a theory of language as communication (Richards & Rogers, 1986) which implies knowledge of the grammatical system as well as performance. In other words, such competence includes both the theory and use of the language (Widdowson, 1984).

The centrality of grammar in language teaching and learning was questioned, since it was argued that language ability involved much more than grammatical competence. While grammatical competence was needed to produce grammatically correct sentences, attention shifted to the knowledge and skills needed to use grammar and other aspects of language appropriately for different communicative purposes

such as making requests, giving advice, making suggestions, describing wishes and needs, and so on.

What was needed in order to use language communicatively was communicative competence.

This was a broader concept including knowing what to say and how to say it appropriately based on the situation, the participants, and their roles and intentions. Rather than simply specifying the grammar and vocabulary learners needed to master, it was argued that a syllabus should identify the following aspects of language use in order to be able to develop the learner's communicative competence: i. Consideration of the purposes for which the learner wishes to acquire the target language; for example, using English for business purposes, in the hotel industry, or for travel ii. Some idea of the setting in which they will want to use the target language; for example, in an office, on an airplane, or in a store iii. The socially defined role that the learners will assume in the target language, as well as the role of the interlocutors; for example, as a traveler, as a salesperson talking to clients, or as a student in a school iv. The communicative events in which the learners will participate: everyday situations, professional situations, academic situations, and so on; for example,

68 making telephone calls, engaging in casual conversation, or taking part in a meeting v. The language functions involved in those events, or what the learner will be able to do with or through the language; for example, making introductions, giving explanations, or describing plans vi. The notions or concepts involved, or what the learner will need to be able to talk about; for example, leisure, finance, history, religion vii. The skills involved in the “knitting together” of discourse: discourse and rhetorical skills; for example, storytelling, giving an effective business presentation viii. The lexical content, or vocabulary, that will be needed (van Ek and Alexander, 1980) The main objective of the communicative method is students’ fluency, laying special emphasis on real-life communication. All four skills of language learning are developed: Speaking, Listening, Reading and Writing. Grammar is learned through practice. Classroom Activities or the techniques employed are: ? Role Play ? Language Exchanges ? Interviews ? Surveys ? Information Gap ? Pair Work ? Games ? Learning by teaching The teacher facilitates the students’ learning by organizing class activities and initiating communicative situations. The teacher’s role is to facilitate and manage the students’ activity, and also to be their partner in interaction. Authentic materials are used. The teachers, who teach specialized vocabulary communicatively, can choose materials from journals, films, posters, leaflets, and internet. The teacher initiates interactions among students and sometimes participates with them. The teacher fulfills a variety of functions: controls, assesses, facilitates, participates etc. The students interact a lot with one another and in various ways (group and pair-work is recommended). The emphasis is on developing the students’ motivation for learning. The students must learn by making sense and must perform a number of things into the foreign language. Both individuality and cooperation with other students are encouraged, which have a significant contribution to the creation of a feeling of security in the target-language. Generally speaking, the students’ mother tongue plays no part. This can be used, when possible, for certain explanations, translations and instructions. A lesson based on the communicative method is structured on five parts: i. Introduction (opening) ii. Presentation

69 iii. Practice / Development iv. Application / Comprehension v. Closing Modern CLT does not derive from one particular background, as might have been implied before. According to Savignon (2000: 126) the Communicative Approach has a “multidisciplinary perspective that includes, at least, linguistics, psychology, philosophy, sociology and educational research.” All those disciplines were involved to produce what nowadays is called CLT. The Communicative Approach is seen as an extension of the notional-functional syllabus. Therefore it also places great emphasis on helping students use the target language in a variety of contexts. In the first instance, the focus of CLT is its importance of learning language functions. In this case it is important that the teacher support the learners in creating meaning rather than helping them in creating perfectly grammatical structures or acquire native-like pronunciation. Consequently, learning a foreign language with success is linked to developing communicative competences. According to Nunan CLT is usually characterized as a broad approach to teaching, rather than as a teaching method with a clearly defined set of classroom practices. As such, it is most often defined as a list of general principles or features. One of the most recognized of these lists is David Nunan’s five features of CLT (2004: 6): i. An emphasis on learning to communicate through interaction in the target language. ii. The introduction of authentic texts into the learning situation. iii. The provision of opportunities for learners to focus, not only on the language but also on the learning process itself. iv. An enhancement of the learner’s own personal experiences as important contributing elements to classroom learning. v. An attempt to link classroom language learning with language activation outside the classroom. The principles of communicative exercises imply eight important constituents for grammar activity design: Grammar always derives from a certain context (‘clear and realistic context’), is regarded as communication (‘realistic use/processing of language’), is used to express ideas (‘meaning and meaningfulness of grammar stressed’), is a means of encoding experience (‘linkage to own knowledge, ideas, experience, wishes’), is seen as constituent of a creative processes (‘open ended exercises’), is only one aspect of language (‘integrated skills’) and finally is enjoyable (‘motivation’)

70 An example is given below : Name and type of activity Look at the pictures. Complete the sentences Teacher input The teacher (book) provides a text with sentences where some information is missing. Pictures (on the top of the exercise) are also given. Learner input Vocabulary; L2 knowledge and knowledge of prepositions which should already be known by the pupils Procedure Pupils have to complete the sentences. Beside the sentences there are pictures, which show what is going to happen. Pupils have to look at the pictures and then they have to complete the sentences. Communicative principles Task based, clear context, integrated skills: vocabulary and prepositions Pedagogical principles Practising or testing and also revision of prepositions which should already be stored in the minds of the children.

71 Criticism One of the most famous attacks on communicative language teaching was offered by Michael Swan in the English Language Teaching Journal in 1985. The communicative approach focuses on the use of language in everyday situations, or the functional aspects of language, and less on the formal structures. However, critics believe that there needs to be some sort of "bridge" between the two in order for effective language learning. 1. The approach relies extensively on the functional-notational syllabus which places heavy demands on the learners. 1. The various categories of language functions are overlapping and not systematically graded like the structures of the language. 2. A major premise underlying this approach is its emphasis on learners' needs and interests. This implies that every teacher should modify the syllabus to correspond with the needs of the learners. 3. The approach gives priority to meanings and rules of use rather than to grammar and rules of structure. The latter are taught by means of functions and notions. Such concentration on language behaviour may result in negative consequences in the sense that important structures and rules would be left out. 4. The requirements are difficult: availability of a classroom that can allow for group work activities and for teaching aids and materials. 5. Too much emphasis has been given -particularly in its early stages- to speaking and listening, to the detriment of reading and writing. 3.4.2 Cooperative (Collaborative) Learning An approach credited to Olsen and Kagan. It is a part of the collaborative approach. Co-operative learning is an instructional strategy that simultaneously addresses academic and social skill learning by students. In co-operative learning, students receive training in small group social skills and usually activities are structured with each student having a specific role. Neil Davidson & Peter Hawkes (1945) explain that, in co-operative learning, the teacher usually observes and listens, intervening in a group only when necessary. Students usually submit their work and are often urged to assess individual as well as group performance. Co-operative Learning is a part of Collaborative approach.

72 Collaborative Learnings, on the other hand, usually assumes that the learners already possess the necessary social skills and will build on the existing skills to achieve their goals. The students in Collaborative learning, are urged to organize and negotiate efforts themselves, with the activity not strictly monitored by the instructor. The teacher guides the students with the information needed when such input is solicited. The learners usually retain draft of their work to develop and complete further work. Both Collaborative and Co-operative learning emphasize the importance of active learning and the teaching learning experiences are shared by both the teachers and the taught. Both enhance higher order cognitive skills and promote diversity, social as well as than building skills of the learners. The instructional approach which is currently shaping the teaching of modern languages is in fact not new to education. The principles of cooperative learning were outlined by Quintilian in the first century and subsequently by Comenius in the seventh (Olsen and Kagan, 1992). Rousseau's ideas in the eighteenth century and Piaget and Vygotsky's developmental theories are also sources from which this approach draws. More recently, it is Dewey and Lewin in the early twentieth century who are considered important promoters of the idea of cooperation and interdependence among group members.

Cooperative learning is an approach whereby students work together in structured groups to reach common goals. It aims to foster cooperation rather than competition – each person's success is linked with every other member's success – and to develop critical thinking skills. The learners are thus direct and active participants in the learning process, must work collaboratively with other group members on tasks assigned, and must learn to monitor and evaluate their own learning. Teacher roles also change drastically from traditional - speaks less, acts as facilitator of learning and is responsible for the creation of a highly structured and well-organised teaching environment which promotes successful group-based learning. There are, five main principles which underlie their work and which could be considered key elements in ensuring the success of this approach (Richards and Rodgers, 2001; Naughton, 2004): i. Positive interdependence: it occurs when the success or failure of each group member is linked to the success or failure of the entire group. ii. Individual accountability: it refers to a situation in which both the group assumes

73 responsibility for achieving set goals and each individual member assumes responsibility for his/her part of the task. iii. Interpersonal and social skills: they determine the way in which learners interact with each other in order to attain their objectives and are usually taught explicitly to guarantee successful interaction. iv. Group formation or group processing: it involves making decisions as regards the size, make-up, or roles of and within the group and evaluating its success or limitations. v. Structuring and structures: it alludes to the different ways in which student interaction can be organised. In fact, there is an enormous variety of possible cooperative learning structures or methods, as Chafe (1998: 2) terms them. Richards and Rodgers (2001), and Naughton (2004), refer to three of the most frequently cited CL techniques that are summarized in the table below: Table 12: Cooperative learning techniques Academic material is broken down into sections, each of which is assigned to a team member. They then meet up in expert groups to discuss their sections, subsequently returning to their original teams in order to teach their group members about their section. The teacher presents a lesson and students in heterogeneous groups of four work within their teams to master the lesson. Individual quizzes are then taken and success is based on improvement. This more flexible framework structures a cooperative learning lesson into five categories: a. Objective setting b. Decision-making c. Task communication d. Monitoring and intervening e. Evaluating and processing JIGSAW (Aronson, 1978): STUDENT TEAMS ACHIEVEMENT DIVISIONS (STAD) (Slavin, 1982): LEARNING TOGETHER / LEARNING CIRCLES (Johnson, Johnson, and Holubec, 1994):

74 Perhaps more than any other recent language teaching proposal, cooperative learning has been extensively evaluated. And research results have generally been supportive of this approach. It has been found to correlate positively with achievement; to lead to improved social interrelations among students; to bear a positive relationship with the affective state of the learner; and to generate higher quality cognitive reasoning strategies. All in all, it has been evinced to be an effective method for increasing L2 acquisition, something which has led authors like Kagan (1995: 3) to conclude: "Cooperative learning and the ESL classroom – a natural marriage". Thus, it is not surprising that numerous assets have been associated to this approach, the most notable of which are summarized below (Hirst and Slavik, 1990; Kagan, 1995; Chafe, 1998; Naughton, 2004): i. In the cooperative classroom, input is more comprehensible, developmentally appropriate, and redundant; output is more functional, communicative, frequent, redundant, and consistent with the identity of the speaker; and the context is more supportive, motivating, communicative, referential, developmentally appropriate, and feedback rich, all critical variables that, according to Kagan (1995), foster language acquisition. ii. Motivation, positive attitudes, and higher levels of self-esteem are promoted by CL situations. iii. It can be used for a wide range of tasks and types of syllabus material. iv. It increases learner autonomy and allows students to act as resources for each other. v. It develops critical thinking skills, encourages cognitive strategy use, and fosters metacognitive awareness. vi. It helps to develop cross-cultural understanding. Nonetheless, CL has also been found to present problems in its implementation (Chafe, 1998; Richards and Rodgers, 2001; Troncale, 2002; Naughton, 2004): 1. Teachers may use it inadequately and thus need to be properly inserviced on cooperative learning theory and practice. 2. They may also feel excessively burdened in adapting to the new demands it places on them and to the novel roles they are required to assume.

75 3. Students themselves may feel reluctant to cooperate. 4. They may tend to resort excessively to their L1. 5. The input they receive may well also be too limited, something which can lead to fossilization if more advanced input is not provided. 6. Cooperative learning has been found to be less effective in promoting problem-solving skills than whole class instruction. 7. Higher achievers may obtain

3.4.3 Bilingualism:
The bilingual method of foreign language teaching was developed by C.J. Dodson (1967) as a counterpart of the audiovisual method. .

As the name suggests, the method makes use of two languages- the mothertongue and the target language. Hence, this can be considered as a combination of the direct method and the grammar-translation method The

architecture of the bilingual method is best understood as a traditional three-phase structure of presentation – practice – production. A lesson cycle starts out with the reproduction of a dialogue, moves on to the oral variation and recombination of the basic sentences, and ends up with an extended application stage characterized by previous a free, communicative exploitation of the work. Well-ordered activities are used to take the students upto a conversational level in the shortest possible time. It focuses on the development of oral skills. According to Lam (2001:93), bilingualism “refers to the phenomenon of competence and communication in two languages”. However, it is difficult to determine what constitutes competence in two or more languages. What seems clear nowadays is that the task of learning two linguistic systems gives them a neurological advantage in verbal aspects. Traditionally, bilinguals were only those individuals who had one or two parents speaking a language different from that of the community, or who lived or had moved to a country with a language different from his/her L1 and that of his/her parents. In order to provide for those communities with special language needs, several types of educational programs were developed hinging on two main issues: whether the non-dominant language should be used as a medium of instruction, and whether that language ought to be valued as a cultural asset worth acquiring for itself. Nunan and Lam (1998) provide four examples. a. Submersion models, in which ‘children’ just enter into the current educational

76 programs of the L2 country, without any kind of provision for their L1. b. Transitional bilingualism, in which the L1 is temporarily used but not respected as a target language. c. Heritage language programs, in which the L1 of immigrant learners is valued as a target language but not used for instruction. d. The language exposure time model, in which the L1 is valued and used for some subjects. The advocates of this method believe that it is the wastage of time for recreating a situation while teaching a foreign language. They think that teaching-learning method is useful when mother tongue equivalents are given to the pupil without duplicating the situation. It differs from translation method in two respects. In the first case it is the teacher only who uses the mother-tongue to explain meaning. Furthermore, pupils are given a lot of practice in the drill of sentence patterns.

Such practice is not provided in the translation method. The Bilingual method was the reaction against the direct method. Dodson vehemently attacks the direct method in the following words: “It is one of the tragedies at present being enacted in some emergent countries, where a major world language is being taught as a second language to young children by the direct method, that if this type of teaching were successful, which by all account it is not, the vernacular would disappear within a few generations. It is only possible to teach a second language by direct method techniques at the expense of the first language, and it is sheer hypocrisy to claim that the final aim of such teaching philosophies is bilingualism. Every aspect of the direct method teaching is directed towards keeping the two languages as far apart as possible, thus destroying the bridge which the learner must continuously cross to and fro if he wishes to be truly bilingual.” Dodson, thus, makes it clear that the excessive use of the direct method would result in disappearance of the vernacular in future. He was of the view that the direct method, operated at the expense of the first language, could not make the learner truly bilingual. This method is not an independent new method with new concepts and models. It is, in fact, a happy synthesis of the best principles and features present in the other methods. It has modified the principles of other methods to overcome the objections and criticisms and to suit the objectives of the second language learning today. This idea was expressed by Carrol in the following words:

77 “But, then, in these highly advanced times it could hardly be expected that a new method would represent anything more than a new combination of procedures.” Principles of Bilingual Method (a) The understanding of words and sentences in foreign languages can be made easier by the use of mother tongue. (b) There is no need to create artificial situations for explaining the meaning of words and sentences of the target language. (c) Use the target language for part or the whole school syllabus, including the evaluation process (d) Employ highly linguistically competent and specialized teachers (e) Foster exchanges with the target language community (f) Develop or maintain a positive attitude towards both the target language and the mother tongue (g) Start early (h) Students become functional bilinguals (i) The aims of this method as stated by Yardi are – to make the pupil fluent and accurate in the spoken and written words and to prepare the pupil in such a manner that he can achieve true bilingualism. (j) The main principles of the bilingual method as stated by Dr. Sharada Bhat

are: Controlled use of the students’ mother-tongue, the introduction of reading and writing early in the course of language learning and integration of writing and reading skills

Advantages of Bilingual Method According to this method acquisition of the mother tongue is very important for language learning process. When the mother tongue is firmly established in the minds of the students by the age of 7 or 8, it becomes easy to learn difficult words and grammar. Thus this method helps to save time by not creating artificial situations unnecessarily to explain or convey meanings in English. Give importance to other languages: In this method, importance is given to the mother tongue and its culture. Thus it does not lead to substitution of one means of communication for another.

78 Accessibility: This method of language learning ensures accessibility. When students start learning a language using this method, they find a level of familiarity. Through the use of the mother tongue, the teacher ensures that the learning is happening. Efficiency: Many new English language teachers face the difficulty to handle the students and make them feel as comfortable as with the local teacher. Learning the local language is considered as the sure way to improve behaviour management skills. It also helps in delivering the instructions related to lesson activities. If the concepts are explained in students' L1, then the new learners to English language will be able to grasp more knowledge about grammar and vocabulary. Thus it helps the students to be more efficient and faster. It's the teacher's tool: In the bilingual method, as the native language is used in the classroom, it is important to note that it's predominantly the teacher who makes use of L1. The Bilingual Method promotes both fluency and accuracy. It promotes theory as it lays emphasis on speech and pattern practice. It promotes accuracy as the meanings of new words are given in the mother tongue of the learner. It does not require any teaching aids and is suited to all kinds of school-rural and urban. Unlike the Direct Method, which ignores the linguistic habits already acquired by the learner in the process of learning the first language, the Bilingual Method makes use of them. The important contribution of this method is that it had made possible for the students to get both quantitative and qualitative acquisition of language skills. Disadvantages of Bilingual Method 1.

If the teacher fails to carry out this method properly, then it can degenerate into pure translation method. 2.

This

method can confuse the learner while contrasting the features of two languages. 3.

The teacher must be fluent in both the languages in order to make the concepts clear. 4. Students may develop dependency on their mother tongue. 5. Slows down

learning process and takes longer time to learn and be proficient in the target language.

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Nonetheless, becoming bilingual in a monolingual community in which the L2 is not used at all is no easy feat. A program of this type should fulfill a number of conditions: There are many factors affecting the process of becoming a bilingual, including the quality and quantity of the input received, the interactional style, the attitudes developed towards each language and the socio-cultural context. code-switching and diglossia are phenomena with important socio-cultural implications in a bilingual community. Code-switching involves the intentional or unintentional use of both linguistic codes at the same time. Diglossia is a social phenomenon which entails, rather than code-switch, language switch. Each linguistic variety is always associated to a different domain in a society. For instance, one linguistic variety is used for administrative matters and the other one in the street. Bilingual developmental sequences study the stages children go through in their acquisition process. First, they use a single lexical system in which they include items from both languages. Then, they distinguish the words belonging to each variety, but use one single grammar. In a third stage, they differentiate lexicon and syntax, and last, they become aware of the two languages (de Vega and Cuetos, 1999). 'Selection', 'Gradation', 'Presentation', and 'Repetition' are the sequences to learn. The equipment necessary for the Bilingual method in Yardi's opinion are: a printed text of the situation to be learnt. This text ought not to be exceeding thirty sentences in length at the secondary level. The text has to be linguistically graded and made interesting to the learner. Each situation in the text should have a picture strip, not just one composite picture as in the usual textbook, representing the development of the content in the text- lesson. The intention in using the picture strip is not to help the learner acquire the sentence meaning but to retain it. To conclude, this method is simple from the point of view of teaching and learning. That is why we see majority of teachers in Indian schools following this method. The method increases the rate and amount of learning in the classroom and it creates better attitudes in the minds of students towards learning English. It also establishes rapport between the teacher and the taught. 3.4.4 Task-based language teaching Task-based language teaching (TBLT) was said to be a logical development of communicative language teaching (Willis, 1996). It uses real communication activities to carry out meaningful tasks, and stresses the importance of targeting these tasks to the individual student as much as possible.

80 TBLT develops and perfects the communicative language teaching approach. The first person who has applied TBLT to teaching programs and practice is Prabhu. It was in Bangalore of southern India in 1979 that Prabhu began his bold experiments to put his theories into practice which seemed radical at that time. He thought that students may learn more effectively when their minds are focused on the task, rather than on the language they are using. Therefore, Prabhu is thought to be the originator of TBLT. The theoretical basis of TBLT dates back to cognitive psychology that has deeply affected the elementary education. As early as the year of 1977, a famous English linguist Dick Allwright said, "If the language activities involve the learners in solving communicative problems in the target language, language learning will take care of itself."

Task-Based Language Teaching refers to an approach based on the use of tasks as the core unit of planning and instruction in language teaching.

Although definitions of task vary in TBLT, there is a commonsensical understanding that a task is an activity or goal that is carried out using language.

For Prabhu, a task is 'an activity which requires learners to arrive at an outcome from given information through some process of thought, and which allows teachers to control and regulate that process' (Prabhu 1987:17).

While

Crookes defined a task as "a piece of work or an activity, usually with a specified objective, undertaken as part of an educational course, at work, or used to elicit data for research" (Crookes 1986:1).

Accordingly to Richards & Rogers (2001)—"Tasks are believed to foster a process

of negotiation, modification, rephrasing and experimentation that are at the heart of second language learning." (

p. 228) A Task-Based syllabus may be organised in terms of two syllabuses: Communication Tasks (the actual tasks a person undertakes when communicating) and related Enabling Tasks that facilitate a learner's participation in the former (tasks which explicitly focus upon the rules and conventions of the language system, the interpersonal knowledge and meaning). Task-Based models, on the one hand, organise learning in terms of how a learner applies his or her communicative competence to undertake a selection of tasks. The roots of Task-Based models can be found in several sources: the Situational Approach, the use of project-based materials, and the use of problem-solving activities. Let us look at some of the attractive features of task based learning. 1. More student centred learning where learners are encouraged to use language creatively and spontaneously through the tasks given. 2. Utilizing more authentic experiences and materials as well as principles of constructivism compared to top down teaching.

81 3. More of a sense of personal and active accomplishment including developing a greater sense of language ownership. 4. Increased student participation when tasks are well planned and implemented according to learners' learning style, learning and communicative strategies, personalities, multiple intelligences and the overall local contexts. 5. Making specific lesson goals more evident through movement towards success of task completion. Tasks, well-chosen and developed have also the potential to lessen the need for test cramming and excessive reliance on a result / test oriented syllabi – as described by Poole (2003) in the Asian EFL Journal. In 1989, Nunan published *Designing Tasks for the Communicative Classroom*. Some consider this book as a milestone of task-based approach to language teaching. In his book, he proposed a framework for analyzing communicative tasks, and that tasks are analyzed or categorized according to their goals, input data, activities, settings and roles. Researchers have proved that task difficulty has great influences on the effect of tasks? namely the accuracy, complexity and fluency of the learners' language outcomes. So, proper choice of difficulty in different stage of a TBLT class is of great importance. Tasks can be used as the central component of a three-part framework: "Pre-task", "Task cycle", and Post-Task, also called the "Language focus" stage.

82 Pre-task Pre task phase introduces the class to the topic and the task, activating topic related words and phrases. Here, the teacher roles as instructor.

The teacher introduces the topic and gives the students clear instructions on what they will have to do at the task stage and might help the students to recall some language that may be useful for the task.

Then instruct the students to do the task and make sure that all the students understand task instruction. Task cycle Task: The task cycle offers learners the chance to use whatever language they already know in order to carry out the task, and then to improve that language under teacher guidance, while planning their report of the task. Feedback from the teacher comes when they want it most, at the planning stage, and after the report. Exposure to language in use can be provided at the different points, depending on the task type of

the task. The students complete a task in pairs or groups using the language resources that they have as the teacher monitors and offers encouragement. Planning: Students prepare a short oral or written report to tell the class what happened during their task, how they did the task and what they decided or discovered. Then, they practice what they are going to say in their groups. Teachers must ensure that the purpose of the report is clear. Besides, the teacher is available for the students to ask for advice to clear up any language questions they may have. Clearly, the teacher acts as linguistic adviser and giving feedback; helping students to correct, rephrase or rehearse oral report and organize or draft written report. Report: Students then present their spoken reports to the class orally or read the written reports. The teacher chooses which group of students will present their reports and may give them some quick feedback on the content and form. At this stage the teacher acts as chairperson and may play a recording of others doing the same task for the students to compare. Post-Task Phase : This has also been called the Language Focus phase by Dave & Jare Willis of Aston University, UK. The language focus phase allows a closer study of some of the specific features naturally occurring in the language used during the task cycle. By this point, the learners will have already worked with the language and processed it for meaning, so they are ready to focus on the specific language forms that carry the meaning.

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Analysis: The teacher then highlights relevant parts from the text of the recording for the students to analyze. They may ask students to notice interesting features within this text or bring other useful words, phrases and patterns to improve students' attention. The teacher can also highlight the language that the students used during the report phase for analysis. Meanwhile the students examine and discuss specific features of the text or transcript of the recording. Practice: Finally, the teacher conducts practice activities. It begins with selecting language areas to practice based upon the needs of the students and what emerged from the task and report phases. The students then do practice activities to increase their confidence and make a note of useful language. On the other hand, the students can practice other features occurring in the task text or report stage. The selection of activities or tasks should be based on the students' need in order to motivate students, engage their attention, improve intellectual and linguistic challenge and promote their language development. Nunan (1989) suggest that a syllabus might specify two types of task: (1) Real-world task, which designed to practice tasks that important in a needs analysis and useful in the real life. (2) Pedagogical tasks, which have psycholinguistic basis in SLA theory and research but do not necessarily reflect real life tasks.

In the Bangalore Project, both tasks were used, as is seen from the following list: Task type Example 1. Diagrams and information Naming parts of a diagram with numbers and letters of the alphabet as instructed. 2. Drawing geometrical figures/ formations from sets of verbal instructions 3. Clock faces Positioning hands on a clock to show a given time 4. Monthly calendar Calculating duration in days and weeks in the context of travel, leave, and so on School timetables Constructing timetables for teachers of particular subjects 5. Age and year of birth Working out year of birth from age Willis proposes six tasks types based on traditional knowledge hierarchies as follows; Listing, Ordering and sorting, Comparing, Problem solving, Sharing personal experience, Creative task. While Pica, Kagany, and Falodun (1993) classify tasks according to the type of interaction that occurs in tasks accomplishment and give the following classification: 84 1. Jigsaw tasks: These involve learners combining different pieces of interaction to form a whole. 2.

Information-gap tasks: One student or group of students has one set of information and another student or group has a complementary set of information. They must negotiate and find out what the other party's information is in order to complete an activity. 3. Problem-solving tasks: Students are given a problem and a set of information. They must arrive at a solution to the problem. There is generally a single resolution of the outcome. 4. Decision-making tasks: Students are given a problem for which there are a number of possible outcomes and they must choose one through negotiation and discussion. 5. Opinion exchange tasks: Learners engage in discussion and exchange of ideas. They do not need to reach agreement.

General principles and characteristics of TBLT Task-based learning is based on

the use of tasks as the core unit of planning and instruction in language teaching.

Tasks that involve real communication are essential for language learning.

Learners learn language by interacting communicatively and purposefully while engaged in the activities and tasks.

The focus is on process rather than product.

Language that is meaningful to the learner supports the learning process.

Activities and tasks of a task-based syllabus are sequenced according to difficulty. The difficulty of a task depends on a range of factors including the previous experience of the learner, the complexity of the task, the language required to undertake the task, and the degree of support available (

Richards and Rodgers 2001). The Advantages and Disadvantages of TBLT: A Task-based approach can be defined as "how a learner applies his or her communicative competence to undertake a selection of tasks". Task-based Language Teaching has some clear advantages:

85 TBLT is a student-centred

approach. The students are free of language control. In all three stages they must use all their language resources rather than just practicing one pre-selected item.

During the task the learners are allowed to use whatever language they want, freeing them to focus entirely on the meaning of their message. This makes it closer to real-life communicative situation, which is a way of bringing the real world into classroom (Krahnke 1987).

A natural context is developed from the students' experiences with the language that is personalized and relevant to them.

The students will have a much more varied exposure to language with TBLT. They will be exposed to a whole range of lexical phrases, collocations and patterns as well as language forms. The language explored arises from the students' needs. This need dictates what will be covered in the lesson rather than a decision made by the teacher or the course book. It is a strong communicative approach where students spend a lot of time communicating. Just watch how much time the students spend communicating during a task-based lesson. It is enjoyable and motivating.

Motivation is provided mainly by the need to achieve the objectives of the task and to report back on it. Success in doing this can increase longer term motivation. Task-based learning is widely applicable as it is suitable for learners of all ages and backgrounds. Tasks provide a natural opportunity for revision and recycling and give teachers the opportunity to assess learners' progress. TBL provides clear objectives in terms of what participants will gain from the tasks. That is, each task has a clearly defined set of objectives, stating

what the participants

will be able to do at the end of the

task. TBL provides cooperative support. Classroom work is to be carried out on a cooperative basis involving a lot of participants' initiation right from the start. This should enable a supportive, non-threatening environment for participants to invest personally in the learning effort (Frost)

86 Beside those advantages, TBLT also has some disadvantages: The weaknesses of task-based learning lay not so much in the potential effectiveness of this type of instructional content but in problems of implementing the instruction.

Task-based learning requires a high level of creativity and initiative on the part of the teacher. If the teachers are limited to more traditional roles or do not have time and resources to implement task-based teaching; this type of teaching may be impossible. Task-based learning requires resources beyond the textbooks and related materials usually found in language classrooms.

Task-based instruction is not teacher-centred; instead, it requires individual and group responsibility and commitment on the part of students. If students are notably lacking in these qualities, task-based instruction may indeed be difficult to implement (Krahne 1987). Some learners revert to mother tongue when things get difficult or if the group feels impatient. Some individuals develop excellent communication strategies, e.g. miming and using gestures, but get by using just odd words and phrases and let others supply the more challenging language they need. This may make those individuals fossilize before advancing very far in the syntax of the target language. Some learners tend to get caught up in trying to find the right word, and do not worry over much about how it fits into the discourse. There is naturally more concern for use of lexis and lexical chunks than for grammar and grammatical accuracy (Willis 1996: 55). There is a risk for learners to achieve fluency at the expense of accuracy.

Pressure of time will force learners to make use of language that can be readily accessed rather than to attempt to create language in real time. There may be a minimal concern with accuracy and no incentive for learners to extend their existing language system (Skehan 1996). Evaluation of task-based learning can be difficult. The nature of task-based learning prevents it from being measurable by some of the more restricted and traditional tests (Krahne 1987). However, more recently the alleged demise of methods and the concept of post-

87 methodology have come into question (Larsen-Freeman 2001; Bell 2003). As Kumaravadivelu (1994: 28) has also pointed out, "as long as we are caught up in the web of method, we will continue to get entangled in an unending search for an unavailable solution, ... a search [which] drives us to continually recycle the same old ideas".
3.4.5 Eclecticism It initially takes a great deal of courage for critics to openly express their reservations as regards the Communicative Approach. As Ur (1996: 6) explains, this is because "'communicativity' was becoming axiomatic rather than a means to an end, treated as synonymous with 'good language teaching'". Perhaps one of the best-known methodologists who is among the first to voice his dissent is Swan (1985a, 1985b). While acknowledging the valuable contributions of CLT to the field of language teaching, he straightforwardly maintains that "A dogma remains a dogma, and in this respect the 'communicative revolution' is little different from its predecessors in the language teaching field". At this point, we are thus living in a "post-communicative" (Ur 1996: 7) period, or perhaps it is a post-methodological one, as Ur (1996: 7) also points out, since it is now believed that no single method is optimally effective for teaching languages. It seems we have learned enough from past experiences and research so as to practice a cautious eclecticism or integrated approach, where, as Swan (1985b: 87) puts it, we both try out new techniques and hold on to useful older ones. We have come to realize, in Stern's (1983: 474) words, that "language teaching cannot be satisfactorily conceptualized in terms of teaching method alone". And the majority of language specialists considers eclecticism a legitimate solution to the lack of universal solutions offered by any single method or, as Rodgers (2001: 4) terms it, "method synergistics" or a "disciplined eclecticism".

The eclectic theory of language was advocated during the year 1990's and because important for the educational theory of language learning.

Multiple tasks, high interaction, lively learning, objective correlative, and fast results are the salient features of this method.

The eclectic approach is the label given to a teacher's use of techniques and activities from a range of language teaching approaches and methodologies. The teacher decides what methodology or approach to use depending on the aims of the lesson and the learners in the group.

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In teaching practice, many have to come to favour of eclecticism, which generally holds that although no single ELT method can meet all teaching and learning needs, thus teachers need a set of principles to adapt their teaching procedure to the specific circumstances. When linguists thought to improve the quality of language learning they often did so by referring to general principles and theories concerning how languages are learned and

how knowledge of language is presented and organized in memory or how language itself structured.

There is a call nowadays to move towards eclecticism in language learning especially at the primary stage since it is the first stage in foreign language learning. Eclecticism has given a variety of names: effective or successful eclecticism, enlighten eclecticism, integrative eclecticism, new eclecticism, etc. The fact that it had many names testifies to the influence and popularity of this theory. The main principles of the eclectic method are: 1. Giving teachers a chance to choose different kinds of teaching techniques in each class period to reach the aims of the lesson. 2. Flexibility in choosing any aspect or method that teachers think suitable for teaching inside the classroom. 3. Giving a chance to pupils to see different kinds of teaching techniques that break monotony and dull on one hand and ensure better understanding for the material on the other hand. 4. Solving difficulties concerning presenting the language material in the pupil's textbook. 5. Using different kinds of teaching aids which leads to better understanding, and 6. Saving a lot of time and effort in presenting language activities.

The use of eclecticism does not mean to mix up different approaches randomly. There must have some philosophical backgrounds and some systematic relation among different activities. Usually it is recommended to mix structural approaches with communicative use of language.

Execution or Implementation In this approach teacher decides the method of teaching himself. He is free to employ any relevant techniques for his lesson and learners. Several different teaching methods

89 are borrowed and adapted to needs and abilities of learners. Learner's strength and learning style is always kept in mind. Wide range of resources is used to match the curriculum. It is flexible and elastic technique which keeps the needs of learners in mind. In the Eclectic method learners are believed to be the unique individuals and appropriate technique is applied for every single learner. This technique requires curriculum that is creative, innovative, and imaginative. It provides every student an opportunity to grow and develop in quite natural environment. This approach is heterogeneous and breaks monotony with variety of learning materials, methods and techniques An example of material chosen for different subjects may clarify the eclectic technique. Textbook is better for teaching mathematics, short stories or novels of supreme quality are good for teaching reading, and a workbook is used for teaching spelling. Eclectic approach keeps the learner busy all along the day. **Advantages**

Firstly, with this theory, it becomes easier and more possible for the learners to understand the language of the text with the context of culture.. Secondly, it blends the practices of listening, speaking, reading and writing into an organic whole.

Weakness Brown .D (1994:74) gives some of the weak points of eclecticism as follows: 1. Teaching English by eclecticism urged that practical eclecticism does not meet the criterion of efficiency. 2. Theoretical eclecticism is suspicious on logical and theoretical grounds. 3. The fault of eclecticism in language teaching lies in that attempts to make a kind of all-purpose language teaching out of existing methods and to persuade that eclecticism is the only right idea in foreign language teaching methodology. 4. Without principles eclecticism is likely to fall into a state of arbitrariness. **Conclusion:**

One of the major premise

of eclecticism is that teaching should serve pupils not methods. Thus teachers should feel free in choosing techniques and procedures inside the classroom. There is no ideal approach in language learning. Each one has its merits and demerits. There is no loyalty to certain methods. Teachers should know that they have the right to choose the best methods and techniques in any method according to pupils

90 needs and learning situation. Teachers can adopt a flexible method and technique so as to achieve their goals. They may choose whatever works best at a particular time in a particular situation. 3.4.6

Language Across Curriculum Language is central to the whole curriculum. Oral and written language are both essential to the thinking process which must take place in all areas of the curriculum According to Fillion (1991): "Language across the curriculum stresses concern for how people learn to use language, how they use language to achieve understanding and appreciation of their experiences (including the curriculum content introduced in schools) and how language use influences cognitive development." Language across the curriculum is primarily concerned with pupils' ability to use reading, writing and talk for an increasing range Origin LAC is a concept has been around for some time in academic and pedagogic theoretical discourse, but less so in school practice. It was developed in the late 70s / early 80s of the last century. It originated in Great Britain, where the idea of linking LAC with School Language policies as a whole received formal recognition in the so-called Bullock Report (entitled A Language for Life) Each school should have an organised policy for language across the curriculum, establishing every teacher's involvement in language and reading development throughout the years of schooling (DES 1975:514) A decade later this was underlined in the Swann Report (Education for ALL): Unless there is a school language and learning policy across the curriculum there will be wastage of effort and often confusion. (DES 1985: 419) The ideas of LAC itself, which had received real impetus in that report, have somewhat changed over time. Nevertheless, the basic tenets on which LAC rests, have stayed the same: they focus on the importance of language in and for school education, for all subject-matter learning, across the whole curriculum (Corson 1990:74). The principal features of LAC are— 1. Language develops mainly through its purposeful use (domains to be broadened) 2. Learning (often) involves talking, writing, shaping and moving (normally in reaction to perceptions) 91 3. Learning often occurs through speaking or writing as much as through shaping and moving 4. Language use contributes to / is a pre-requisite for cognitive development 5. Language is the medium for reflecting learning, for improving it, for becoming autonomous Language across the curriculum relates to thinking different forms and aspects of language education within the school, particularly emphasising the role of language in all subject-matter learning. LAC has two meanings: in the narrow sense it is a concept suggesting the importance of language work and language training in all non-linguistic subjects. In the wider sense, it is a concept demanding a comprehensive model of language education as the basis of a whole school language policy. The later includes linking all languages as subjects (mother tongue education, foreign language education, second (or third) language education and the language dimension in all other subjects. It certainly does not mean that each subject teacher must take responsibility for teaching sentence structure, grammar and composition skills in the subject areas. Rather, language across the curriculum is "verbalization as the fulfilment of understanding within each subject area". (Thaiss, 1984). The concept of LAC also claims that language and learning as well as language and thinking are deeply linked. Therefore, wishing to acknowledge and further develop children's existing mental and linguistic capacities, LAC focuses on active, constructive, potentially autonomous learning :

Language plays a central role in learning. No matter what the subject area, students assimilate new concepts largely through language, that is, when they listen to and talk, read and write about what they are learning and relate this to what they already know. Though speaking and writing, language is linked to the thinking process and is a manifestation of the thinking that is taking place. Thus, by explaining and expressing personal interpretations of new learnings in the various subject students clarify and increase both their knowledge of the concepts in those fields and their understanding of the ways in which language is used in each." (Ontario Ministry of Education, 1984; quoted in Corson, 1990, p. 75) The goals of LAC are – simply speaking – to support language development in each and every child, in all domains of language use, in each learning activity in school. John Carrol (1974), states that: "The various forms of pictorial expressions are almost always accompanied by language and require language to make them intelligible". Even highly abstract processes in Mathematics and psychomotor activities use the medium

92 not only in describing the techniques and processes but also in evoking responses. The student who is articulate in oral and written language, who can use words to manipulate ideas, to shape thoughts and to understand key concepts, has an indispensable tool for all school learning because the ability to communicate through language is a necessary skill in all subject areas. This involves such factors as: Students (in all subject areas) Using writing to order and classify thoughts Learning the language appropriate to the subject using the increasing precision the vocabulary of their subject Teachers (in all subject areas) Modelling the language of their subject Attending to the conventions of written language Becoming sensitive to the role and varieties of language learning The following learning skills which are traditionally regarded as the purview of the language teacher are shared by all subjects in the curriculum. i. Locating information - using encyclopedias and reference books and gathering facts from field trips and interviews. ii. Organising information - outlining and categorising iii. Acquiring information - using strategies such as skimming through reading and scanning and understanding the importance of pre-reading strategies. iv. Acquiring information - setting purpose for listening and through listening and observing. v. Communicating orally - speaking with accuracy and pose, and in writing with clarity and exactness, using the writing process. vi. Interpreting pictures - constructing simple graphs, tables charts, graphs, tables, charts and other pictorial pictures material cartoons including cartoons. vii. Evaluating and applying - applying problem-solving and information critical thinking skills. Each subject area has its special needs although there are many held in common across

93 the curriculum. The subject teacher needs to be aware of this and should provide learning situations which will foster the development and use of appropriate language. Example: English across the curriculum Art and architecture Explore art while learning the language of art. These resources help students to describe art and express their opinions on it while simultaneously learning more about art history. Business and tourism Worksheets for budding entrepreneurs to practise their skills. These worksheets tackle social issues in the business world and provide plenty of opportunities for students to build their confidence and hone their speaking skills. Culture Speaking and reading activities that encourage cross-cultural learning. These reading and speaking activities help students to understand more about how people live and their social customs in different parts of the world. Geography and the environment Activities on climate change, global warming, and key cities and countries around the world. These thought-provoking reading and speaking activities get students to engage with timely environmental issues while practicing reading and speaking skills. Information technology Key terminology and information on computing, past and present. Students learn IT terminology and the history of computing in these useful resources. Mathematics Worksheets for students learning key mathematical concepts and vocabulary. This section is devoted to resources for students tackling mathematics in English. Science and nature From Darwin's theories to cloning and how the brain works; a fascinating range of illustrated activities covering areas of science and the natural world. These resources give students the knowledge, vocabulary and key phrases to understand more about different spheres within science. Sports From the first Olympic Games to the modern day, fun language activities to help students

94 learn about sport. Activities help students learn about the language, history and culture of sport as well as modern day practices and health benefits. Cross-curricular webquests Webquest worksheets and projects for use in class or for homework. This developing section includes resources to keep your students glued to the computer screen for hours! Historical topics Reading, speaking and vocabulary activities that introduce EFL students to the past. Take your students on a journey into the past while learning English at the same time! Topic-based listening lessons These topic-based listening lessons on an eclectic range of subjects are designed to introduce content-based learning into the EFL classroom. LAC is a concept and a policy. As a concept it acknowledges the fact that language education in school does not only take place in specific language education, second language education etc. but also in each and every other subject, in each and every activity in school, across the whole curriculum. LAC leads to new forms of language use of L1 or LS (language of the School), to new types of discourse behaviour, to extended linguistic competences, the bases of which are already laid, mainly through early childhood socialisation and through L1/LS education in school. 3.4.7 Constructivism: Constructivist Teaching and Learning is a summary of a Master's thesis by Audrey Gray, University of Saskatchewan, entitled "The Road to Knowledge is Always Under Construction: A Life History Journey to Constructivist Teaching".

Constructivist teaching is based on the belief

that learning occurs as learners are actively involved in a process of meaning and knowledge construction rather than passively receiving information. Learners are the makers of meaning and knowledge.

Constructivist teaching

fosters critical thinking and creates motivated and independent learners. Constructivism holds that the primary responsibility of the teacher is to create and maintain a collaborative problem-solving environment where students are allowed to construct their own knowledge, and the teacher acts as a facilitator and guide. Constructivism (Li, 2005) holds that learning is an active process in which learners construct their own knowledge and understanding. They do not simply mirror and reflect what they are taught or what they read. Learners look for meaning and will try to find 95 regularity and order in the events of the world, even in the absence of full or complete information. Constructivist teaching theory (Li, 2005) holds that the students should be the center of teaching, although we should not neglect the importance of the teacher's guidance. We should use multi-media and Internet, construct real environments, carry on cooperative teaching and lead the students to self-constructed knowledge.

Constructivism draws on the developmental work of Piaget (1977) and Kelly (1991). Twomey Fosnot (1989) defines constructivism by reference to four principles: learning, in an important way, depends on what we already know; new ideas occur as we adapt and change our old ideas; learning involves inventing ideas rather than mechanically accumulating facts; meaningful learning occurs through rethinking old ideas and coming to new conclusions about new ideas which conflict with our old ideas. A productive, constructivist classroom, then, consists of learner-centered, active instruction. In such a classroom, the teacher provides students with experiences that allow them to hypothesize, predict, manipulate objects, pose questions, research, investigate, imagine, and invent. The teacher's role is to facilitate this process. Piaget (1977) asserts that learning occurs by

an active construction of meaning, rather than by passive recipience. He explains that when we, as learners, encounter an experience or a situation that conflicts with our current way of thinking, a state of disequilibrium or imbalance is created. We must then alter our thinking to restore equilibrium or balance. To do this, we make sense of the new information by associating it with what we already know, that is, by attempting to assimilate it into our existing knowledge. When we are unable to do this, we accommodate the new information to our old way of thinking by restructuring our present knowledge to a higher level of thinking.

Constructivist beliefs have recently been applied to teaching and learning in the classroom.

Why Is Constructivism Important?

Educational curricula and teaching methods are changing. One component of the current redevelopment of all subject area curricula is the change in focus of instruction from the transmission curriculum to a transactional curriculum. In a traditional curriculum, a teacher transmits information to students who passively listen and acquire facts. In a transactional curriculum, students are actively involved in their learning to reach new understandings. Constructivist teaching fosters critical thinking and creates active and motivated learners. Zemelman, Daniels, and Hyde (1993) tell us that learning in all subject areas involves inventing and constructing new ideas. Twomey Fosnot (1989) recommends that a

96 constructivist approach be used to create learners who are autonomous, inquisitive thinkers who question, investigate, and reason. The Constructivist Classroom A constructivist teacher and a constructivist classroom exhibit a number of discernable qualities markedly different from a traditional or direct instruction classroom. A constructivist teacher is able to flexibly and creatively incorporate ongoing experiences in the classroom into the negotiation and construction of lessons with small groups and individuals. The environment is democratic, the activities are interactive and student centered, and the students are empowered by a teacher who operates as a facilitator/ consultant. Constructivist classrooms are structured so that learners are immersed in experiences within which they may engage in meaning-making inquiry, action, imagination, invention, interaction, hypothesizing and personal reflection. Teachers need to recognize how people use their own experiences, prior knowledge and perceptions, as well as their physical and interpersonal environments to construct knowledge and meaning. This perspective of learning presents an alternative view of what is regarded as knowledge, suggesting that there may be many ways of interpreting or understanding the world. No longer is the teacher seen as an expert, who knows the answers to the questions she or he has constructed, while the students are asked to identify their teacher's constructions rather than to construct their own meanings. In a constructivist classroom, students are encouraged to use prior experiences to help them form and reform interpretations. This may be illustrated by reference to a personal response approach to literature, a constructivist strategy first articulated by Rosenblatt (1938). Rosenblatt (1978) argues for a personal and constructive response to literature whereby students' own experiences and perceptions are brought to the reading task so that in transacting with that text, the realities and interpretations which the students construct are their own. A Constructivist Classroom is Student-Centred

From a constructivist perspective, where the student is perceived as meaning-maker, teacher-centered, text-centered and skills-oriented approaches to literature instruction are replaced by more student-centered approaches where processes of understanding are emphasized. In a discussion of language arts instruction based on constructivist theories of language use and language development, Applebee (1993) suggests that rather than treating the subject of English as subject matter to be memorized, a

97 constructivist approach treats it as a body of knowledge, skills, and strategies that must be constructed by the learner out of experiences and interactions within the social context of the classroom. In such a tradition, understanding a work of literature does not mean memorizing someone else's interpretations, but constructing and elaborating upon one's own within the constraints of the text and the conventions of the classroom discourse community. A constructivist student-centered approach places more focus on students learning than on teachers teaching. A traditional perspective focuses more on teaching. From a constructivist view, knowing occurs by a process of construction by the knower. Lindfors (1984) advises that how we teach should originate from how students learn.

Students and Teachers are Interactive in a Constructivist Classroom Another quality of a constructivist class is its interactive nature. Authentic student- student and student-teacher dialogue is very important in a constructivist classroom. Belenky, Clinchy, Goldberger, and Tarule (1986) inform us that constructivists distinguish didactic talk, when participants report experiences but no new understanding occurs, from real talk where careful listening creates an environment within which emerging ideas can grow. Perhaps this defines the difference between teacher talk in a direct instruction classroom, and purposeful talk by students in a student-centered constructivist classroom where meaningful discussion occurs and meanings emerge. Belenky et al (1986) explain that in "real talk", domination is absent, while reciprocity, cooperation, and collaborative involvement are prominent. Consequently, constructivist activities in the classroom that focus on speaking and listening promote not only constructivist thought but also important connections between teacher and students. Organization and Management of a Constructivist Classroom are Democratic The organization and management of a class contribute appreciably to the creation of a classroom environment that promotes constructivist learning. A democratic classroom environment emphasizes shared responsibility and decision-making. A democratic classroom is self-regulating. Indeed, since student empowerment and autonomy are major goals in constructivist teaching, changing the power structure in the classroom is a desired course of action. Characteristics and Roles in a Constructivist Classroom There are many specific aspects of constructivism when relating it to the classroom and the learner, at whatever age. As mentioned before, the social aspect of constructivism is

98 important in the classroom. The socialization and interaction are an essential part of the classroom. It is in a constructivism classroom where a child can use his or her social activity to be influenced or influence other students' beliefs and values. The socialization can assist in "problem solving and conflict resolution" techniques. There is never a classroom that is free of problems. Helping to solve these problems as a group and letting the students resolve the conflicts is a vital feature of the constructivism classroom (Bloom; Perlmutter & Burrell, 1999). When the learner is a child, the constructivism approach teaches the child to be responsible for themselves. Also, the students can create a sense of belonging, and high self-esteem, for themselves and others in the environment of the classroom. One process that Bloom, Perlmutter, and Burrell (1999) mention is the "Peacekeepers". The Peacekeepers have rituals where they meet in groups, say a pledge, have symbols to give permission to speak and voice their cares and concerns within the classroom. Also, each student has a "basket of acceptance" where they bring an item that is special to them and they share it with the rest of the class. The Peacekeepers represents the belonging aspect in a constructivist classroom (Bloom; Perlmutter & Burrell, 1999). Another example is cohesiveness that is, brought on by the constructivism classroom. An example of cohesiveness is the students can develop rules, and mission and goal statements for their classroom. The teacher may assist by providing parameters and suggestions, but it is the students who learn self-management techniques and unity with others. Their contributions to the classroom shows that they have interest and care for themselves and others (Bloom; Perlmutter & Burrell, 1999). Open-ended assignments are another feature of a constructivism classroom. A student may have a different method in figuring out a math problem than what the teacher has in the book. The student can feel comfortable sharing the method with peers (Bloom; Perlmutter & Burrell, 1999). Relevance and creativity is another characteristic of constructivism in the classroom. Learning is based on the students' creativity from their prior knowledge and experiences (Bloom; Perlmutter & Burrell, 1999). Spigner-Littles & Anderson, (1999) also explain that to reach the creative side the teacher needs to assist in bringing about some new skills to coincide with the prior skills, "challenge their pre-conceived notions and beliefs, and possibly re-examine their worldly outlook. Windschitl (1999) mentions that an integrated curriculum is the way to go in a constructivist classroom. In this kind of classroom the teacher can create themes incorporating all subjects. The students can use their creativity and relevance to create a new or deeper understanding of several

99 subjects with a variety of learning activities that they can share with their peers. Also, student do not need to do the traditional paper and pencil tasks in a constructivist setting. They can write in journals, create and act out plays, create model, and other works of art. The students can be creative in their own unique way, and objectives and standards can still be observed. What is

instructional practice in constructivist classrooms? Values prior knowledge Is context embedded Integrates cooperative group work Multidimensional assessment Integrates language, content, and process

Example: Vocabulary Use objects EXAMPLE: Canvas –integrate with picture induction model and context embed it. Show pictures whenever possible. Use picture vocabulary dictionaries. Provide graphic organizers, which help students build associations Integrate as much as possible through thematic units Integrate reading and writing and work toward expressive vocabulary. In a traditional classroom, an invisible and imposing, at times, impenetrable, barrier between student and teacher exists through power and practice. In a constructivist classroom, by contrast, the teacher and the student share responsibility and decision making and demonstrate mutual respect. The democratic and interactive process of a constructivist classroom allows students to be active and autonomous learners. Using constructivist strategies, teachers are more effective. They are able to promote communication and create flexibility so that the needs of all students can be met. The learning relationship in a constructivist classroom is mutually beneficial to both students and teachers. Challenges of Constructivism There defiantly are some challenges when it comes to constructivism). Concern is constructivism does not just have a single meaning or approach (Airasian & Walsh,

100 1997). Some teachers are not sure as to which methods of teaching are appropriate to use in the classroom. For example, lecture, discussion, and cooperative groups can all be used, but when and with which students? Also, some students don't "like" to work in a group atmosphere, and they may cause problems with the groups. The teachers need to be competent in a variety of areas to help maintain a learning environment for every student (Windschitl, 1999). The next concern is time and management, which pertains to the students and the teachers. As mentioned before, the teachers need time to learn how to manage a constructivist classroom. The teacher has to adjust to letting the students making more decisions and interpret the information to how they understand it. In constructivism there is not necessarily one right answer. The role of the teacher is to guide the student, and the students have to get used to this, as well. The students will have to initiate more, and express their idea, instead of waiting for the teacher to say the "right ideas". Also, the actual time that the students are physically with the teacher can be an issue. When teaching in a high school setting, where the student change classes, the fifty minute time frame is clearly not enough time cover a theme that incorporates all of the subjects. The next concern of constructivism is the variety of learners and teachers. Previously mentioned, learners and teachers have different social and cultural background. In the constructivist view, race, gender, previous schooling, and individual contacts can all influence a person's learning. These contrasts can sometimes cause chaos. "Too many" meanings and can make for confusion, if not handled properly. Once again, the cooperation of parents, and community working with the school can help in the student's learning. The last concern is evaluation. If we are looking at each individual learner, then does there have to be a separate rubric for each student? And, if the student is involved in each process in the constructivist view then he or she needs to take part in determining the evaluation and standards. Again, a balance needs to be established to fit everyone's need, which can be complex. In conclusion, constructivism is a belief that the learner can use their previous and current beliefs, ideas, and knowledge to form and connect incoming information and eventually reach conclusions in subject matter. Learners and teachers need to be aware that we live in a world with a variety of perspectives and opinions. The diversity of cultures and issues can be some of the many challenges in a constructivist setting. With the use of instructional technology and open communication, the constructivism approach

101 can be successful and enriched learning can take place, in all types of learners (Rice & Wilson, 1999). 3.5 Methods In case of

English language teaching in India, there are some milestones in the development of this tradition.

According to D. Kanta Rao and J.M.Kanthi Thilakha: "If language teachers teach as they taught earlier, then one may not achieve the required goals of teaching English in the present global scenario." So, there could be as many ways of learning languages as there are people learning them. The way one learnt English is not exactly the way one is teaching it. Again, the way one acquired one's mother-tongue may be quite different from the way one learnt English. The following observation by V. Saraswathi is very important to quote in this connection. She says: "There is no best method. The history of language teaching presents a fascinating variety of methods. If there is such a variety of methods, which one are we to choose? There is no definite answer to this question, what works with one learner may not work with another. One may be a wizard in grammar but another may just hate it. Others might enjoy memorizing sentences." She further adds: "Different methods may be appropriate to different contexts. If we start searching for the perfect method or the ideal single solution to the problem of language learning, we bound to fail" Like V. Saraswathi, Diane-Larsen-Freeman's remark on language teaching methodology sums up a major trend away from unity to diversity in the following words. They comment: "There is no single acceptable way to go about teaching language today." The statements quoted above make it clear that no single approach or method is appropriate for all learning styles. A good lesson will, therefore, be one in which the teachers use a sort of board of activities taken from a variety of sources. By varying our techniques, we will give students of all styles the chance to shine some of the time. So we have to know some of the prominent methods that have been used in English...some are listed below:

102 3.5.1 Direct Method Made popular by Berlitz in the 1950s, it allows only the second language, uses everyday vocabulary, and stresses pronunciation. This was developed, as Rao has pointed out, "as a reaction against the grammar-translation method". Again this method is a logical extension of the Natural method. It is also an offshoot of the Behaviourist school of psychology. It insists that the key to all language learning lies in association. It stresses the need for direct association between experience and expression in the foreign language. The aim is to enable the learner to think in foreign language and to cultivate an unerring language sense. It recognises that language sense has its roots in the spoken language and lays stress on the oral approach. In the opinion of Diller this method has one basic rule: "no translation is allowed". In fact, this method receives its name from the fact that meaning is to be

conveyed directly in the target language through the use of demonstration and visual aids, with no recourse to the students' native language.

For example, in a reading lesson to class V, a new word 'watch' occurs. If we associate it with its intermediate in the vernacular, i.e. 'Gharee', we are teaching the meaning indirectly; but if on the other hand, we associate the word with an actual 'watch' or with the picture of a watch, we are teaching the meaning directly.

If such a direct association is not possible, the teacher can explain the meaning of new words by giving synonyms, definitions, explanations, or by inference from the context. The same technique with a few modifications here and there, can be followed in teaching compositions - oral or written. Many new words can be added to the vocabulary of the learner without the intervention of the mother tongue. According to Bhatia and Bhatia, the main aim of teaching English by this method is to enable the learner: "to think in English and to discourage the practice of inwardly thinking in one's vernacular and then overtly translating the thought into the foreign language. He should be able to grasp what he hears or reads in English and should be able to express his thoughts and wishes directly and fluently so that in due course of time he obtains a real command over the language". It was based on the involvement of the learner in speaking and listening to the FL in realistic situations. This method seeks to establish a direct bond between thought and expression, experience and language. Learners were encouraged to think in their Target Language (TL) and translation was forbidden. Formal grammatical rules were avoided. It was not an easy method to use in the artificial setting of a classroom. This method was also known for its tolerance towards errors. Berlitz was one of its scholars.

103 In its purest form, the practice of the direct method often created feelings of tension and exhaustion in both students and teachers. This was partly because of their mutual knowledge that their own first 3.5.2 Grammar Translation Most popular before the 1940s - It started to be slowly replaced by the Direct Method from the early 1900s. It is still popular, however, in countries where reading is more important than communicating. Problems learners expected to express themselves in TL too soon with too little structural knowledge inaccuracy and vagueness in learner TL performance need to learn by induction suits some students more than others Objectives to recreate L1 learning conditions, where understanding comes mainly through listening, speaking to encourage direct association of TL words and sentences with objects, notions and actions without the mediating use of L1 to provide practice in aural-oral skills before reading and writing to facilitate learning of grammar through practice and inference rather than explanation to ensure learners can function in the TL early, orally and in writing Sample classroom activities Teacher (T.) addresses students in TL and expects them to reply in it T. talks in TL, about classroom objects, asking questions, giving orders; students obey orders and tell class in TL what they are/ have been doing T. uses pictures to describe activities and events in TL T. demonstrates meanings of new action or relational words by miming students repeat new words and phrases in TL students asked to form own TL sentences according to what they have heard students read aloud passage of related content after the teacher, chorally then individually T. asks questions about passage in TL, students reply in TL. difficulties of vocabulary or structure explained in TL students make TL notes, write in TL, mainly on what has been covered in listening and speaking activities

104 The grammar-translation approach to the teaching of a second language is often called the classical approach, influenced as it is by "the formal teaching of Latin and Greek in Europe for many centuries" (Rivers 1968: 14). Given that the method was still applied in the mid-twentieth century to the teaching of non-current languages, its objectives would, it might be assumed, differ from those of the teaching of modern languages. Howatt (1984: 131) explains that the grammar-translation method was originally an attempt to adapt the scholastic study of foreign languages for a reading knowledge of their culture and history "to the circumstances and requirements" of school students. Hence, he suggests, the emphasis on sentence-level usage. Howatt claims that the first grammar-translation course for the teaching of English was written by Johann Flick, in Germany, in 1793. Yet many modern language-teaching classrooms of the nineteen- ?fties bore the typical characteristics of this approach, summarized here: to inculcate an understanding of the grammar of a language training in the translation and accurate writing of the language following strict grammar rules to provide students with a wide literary vocabulary to use language- learning as an intellectual discipline Students learn target language vocabulary lists (with L1 equivalents) from their textbook Teacher (T.) and/or students read textbook passage in target language (TL) aloud Students translate sentence by sentence T. explains rules of grammatical usage featured in the passage Students copy grammar rules, paradigms examples, exceptions in their notebooks, and can expect their knowledge of the rules to be tested Students do written practice exercises, e.g. ?lling in blanks in grammatical phrase or sentence- level exercises, or translate into TL specially selected phrases or sentences containing the grammatical usage concerned Students regularly do "proses", i.e. passages for translation to or from the TL Little interest in TL pronunciation, intonation TL not generally seen as a means of expressing one's own meanings, in writing or in speaking The language most used in the classroom is the mother tongue rather than the language being learnt The texts serves mainly as supports to the analysis of grammar & may often not be selected to suit the learners' level of ability, age & interests Problems Objectives Sample classroom activities

105 As Krashen (1987:128) mentions, "It can be claimed that grammar translation provides scraps of comprehensible input. The model sentences are usually understandable, but the focus is entirely on the form, and not on meaning ... students are forced to read word by word, and consequently rarely focus completely on the message. The sentences use in the exercises may be comprehensible, but here again, as in the model sentences; they are designed to focus the students on form." 3.5.3 The Structural Approach: Introduction

This approach as Kripa K. Gautam states "is based on the belief that language consists of 'structures' and that the mastery of these structures is more important than the acquisition of vocabulary. These structures are carefully graded in terms of both meaning and form.

Since structure is what is important and unique about a language, early practice should focus on mastery of phonological and grammatical structures rather than on mastery of vocabulary"

This approach, according to Kulkarni 'emphasizes the teaching and learning of the basic items or materials that constitute the framework of a language'. Hence, in structural approach students are taught to master the pattern of sentences. This approach employs techniques of the direct method of teaching. Speech is mainly stressed but reading and writing is not neglected. The structural approach

is not a method in the strict sense of the term. It

is an approach, a technique, a device which can be used to put into practice any method successfully. The term 'structural' according to Kripa K. Gautam "is referred to the following

characteristics: a) Elements in a language are linearly produced in a rule governed way. b) Language samples can be exhaustively described at any structural level of description (phonemic, morphological and syntactic). c) Linguistic levels are thought of as a system within systems. These sub-systems are pyramidally structured-phonemic systems leading to morphemic systems, and those in turn lead to be higher level systems of phrases, clauses and sentences. The two essential features of this approach are careful grading of structures, and vocabulary control. J.B. Bruton in a working paper presented at the Nagpur Seminar in 1958 summarises the basic assumptions regarding the nature of language and the methods best suited for the presentation of linguistic items. He says:

106 1.

Language is primarily a spoken thing and...therefore, our approach to a foreign

language should in a first instance be through its spoken forms 2. ...

Mastery over the signalling system of a language is more important than detailed knowledge of the forms of the language

3. ...this mastery is best acquired by repetition of the various components of

the

system in varied forms 4. ... since language arises from situation, the teacher's task is to create meaningful situations from which language will arise easily and naturally 5. ... mastery over a given range of structures and confidence in their use are best imparted by concentrating on the teaching of one item at a time 6. ... each item must be firmly established orally before

pupils encounter it in their textbooks. Yardi defines the term 'structures' as an "internal ordering of linguistic items", and further adds that

structures may be defined as "devices that we use to make signals, to convey meanings,

and indicate relationship." Thus the structural approach is based on structures which have been carefully selected and graded. According to Dr. (Mrs) Sharada V. Bhat: "selection of structure is made on four principles: usefulness, productivity, simplicity, and teachability". She further adds that: "the

structural approach distinguishes two types of structures, productive structures and other structures". Productive structures, as Dr. Bhat opines, are those with which other structures can be built. Naturally

the productive structures are given more importance, since after the mastery of those structures the student can build other structures by themselves. Some structures can be taught easily with demonstration. Every structure must be encountered and practised in a context of situation".

Objectives According to Menon and Patel the objectives of the new structural approach are as follows: - 1.

To lay the foundation of English by establishing through drill and repetition about 275 graded structures. 2. To enable the children to attain mastery over an essential vocabulary of about 3000 root words for active use. 3. To correlate the teaching of grammar and composition with the reading lesson.

107 4. To teach the

four fundamental skills, namely understanding, speaking, reading and writing in the order names. 5. To lay proper emphasis on

the

aural- oral approach, activity methods and the condemnation of formal grammar for its own sake.

Main features of structural approach

The structural approach makes use of the following features for teaching the language: Word order - Word order or the pattern of form is very important in Language for e.g: a) Jo broke his toy b) The toy broke Jo

The

sentence a) Jo broke his toy - makes proper sense. it shows the arrangement or pattern of words. The presence of function words:

Function words help in modifying meaning considered the following sentence - for e.g: a) I ate an ice cream. b) I'm eating an ice cream. c) I will eat an ice cream. In the above given example, we can see the modified meaning. The use of few

Inflections: By adding an affix, the base form of the word can be altered. e.g: a) In verbs: I play; he plays; I am playing ; I played b) In nouns; One boy; two boys; one man c) In adjective and adverb: Great - Greater - Greatest Principles of the

structural approach Prof. F.G. French has entitled the following principles underlying the structural approach: a)

Importance of Framing Language Habits - The structural approach lays stress on the importance of forming language habit, particularly the habit of forming words in English. b)

Importance of Speech - The structural approach is based on the principle of

108 effective use of speech. c) Importance pupil's activity - The

structural approach is based on the principles of the pupils' activity. The

importance of pupil's activity rather than the activity of the teacher

is the sure way to learning English. d) The principle of oral work - Oral work is the sheet anchor of the structural approach.

Oral work is the basis and all the rest are built up from it.

e)

Each language has its own grammar - Instead of teaching grammar of the target language, its structures are to be taught.

How should a teacher select the structure to teach the learner. The following principles should be kept in mind while selecting structures: i. Usefulness - the structures, which are more frequent in use should be introduced first ii. Productivity - some if the structures are productive, other structures can be built upon. for e.g: we have two sentence pattern- a) Mr. Roy is here b) Here is Mr.Roy. The former pattern is productive because we can frame many sentences on the same pattern like - He is there etc. iii. Simplicity - The simplicity of the structure depends upon the form and the meaning. iv. Teach-ability - Items easy from teaching point of view v. Frequency - The structures must be selected with a high frequency of occurrence. vi. Range - to know, in how many contexts it is applicable vii. Coverage - A word covering a number of meanings For e.g: Meals viii. Learnability- teacher should focus on the items that are easy for students to learn should be taken first. Gradation of Structure Structural approach upholds the teaching of English as a foreign language through the teaching of the structures of the language. The questions which structural approach attempts to answer primarily are: (1) should the structural items and sentence patterns to be graded? (2) how shall they be graded? and (3) what should be the fundamental principles of grading the structural items? through gradation of structure, we can get answers for the following Questions. Gradation means grouping synonyms. In structural approach, gradation of structure can

109 be taught by using the following patterns that should be taught at early stages: ? Grouping: i. Phonetic grouping - group according to sound. for example: cat, rat, mat etc. ii. Lexical grouping - grouping according to words used in same situation. iii. Grammatical grouping - pattern of sentences similar should be taught together. iv. Semantic grouping - Words having similar meaning grouped together. v. Structure Grouping - selecting items that are fit for each other. ? Sequencing: i. Grammatical sequencing - it will tell that it follows which structure. e.g.: I was watching a movie. I was watching a movie with my friend. ii. Semantic sequencing - A word having different meanings e.g.: The ball is there, under the bed. There are many balls in the bag. iii. Lexical sequencing - It Tells which word follows which e.g.: sit-stand, come-go, high-low ? Types of patterns of sentences:there are different patterns of sentence. as follows below: i. Two-part patterns like She goes (she / goes) ii. Three-part patterns e.g: He is reading (He / is / reading) iii. Four-part patterns e.g: Geetha went to school (Geetha/went/to/school) iv. Patterns beginning with 'there', 'wh' type question e.g: There are five baskets in the rack. What is your name? v. Patterns of Command and Request e.g: come here, sit down , stand up etc. vi. Formal pattern - like Good Morning, Thank You etc. ? Sentence Patterns: The structures may have the following pattern like: i. Statement of Fact - mention simple facts e.g: Pinky gets up at 6 a.m. She takes bath. she eats her breakfast. she goes to school. (subject-verb-object pattern) ii. Imperative sentence - Question form verb-subject-object pattern e.g: Did Pinky come to school today? has she taken her breakfast ? iii. Imperative sentence (imply compliance) subject remains hidden. e.g.: (Pinky) Come here , Close the door , Bring your book etc.

110 ? Phrase Patterns: Sentence using phrases are called Phrase pattern. e.g: That book is 'on the table' to develop listening and speaking skills as the foundation for reading and writing skills to use grammar as a means to an end, not an end in itself (inductive analogy rather than deductive explanation) to enable learners to communicate in TL students repeat sentences in TL in chorus, imitating the pronunciation and intonation of T., then in groups, then individually (almost like a mimicry) contexts, usually dialogues, perhaps with A/V support, based on everyday incidents in life of student in TL country students act out conversational interchanges in pairs students practise reading together after the teacher what they have just been repeating students repeat several times after the teacher pattern sentences containing key structure students repeat other sentences of identical structure but with minimal changes of vocabulary on cue words from T., students construct slightly different sentences on same structural pattern T. gives cues to small groups, then individuals, to make sure that all have assimilated the uses of the structure being drilled students asked to write out drill they have been repeating aloud, adding lexical variants of their own choosing emphasis on drilling structural patterns which is mechanical and non- individual Use of TL artificial and restricted reading and writing skills delayed Vocabulary is strictly limited to context learned Problems Objectives Sample classroom activities

111 Limitations of the Approach: i. The structural approach has limited application. It is best suited for the early stage of teaching English. ii. The structural approach ever emphasizes oral work and speech manipulation. There is blind repetition of structural items during oral teaching. Intensive drilling makes it mechanical. iii. The approach ignores reading and writing children fail to expand their language acquisition. iv. This approach fails to exploit children's mother tongue. v. The proper working out of the structural approach requires efficient teachers. There is acute dearth of such teachers. vi. It is not practicable in Indian schools. vii. It will not help cover the syllabus. Yardi finds out one main inadequacy with this approach that "they don't help to develop 'communicative competence", and he further states that "the structural approach may help in making correct sentences, it fails in helping the learner to make correct utterances" The Audio-Lingual Method The 1960s saw a transitional trend, rather than a clear-cut switch, from the Grammar- Translation and Direct Methods of the 1940s and 1950s to what soon became known as the audio-lingual (or "aural-oral") method. This method, in Howatt's words, "was derived from the structural approach developed by Fries at Michigan". Audio-lingual and structuralist approaches emerged, Wilga Rivers suggests, under the influences of behavioural psychology (notably Skinner, 1957). Also, it came under the influence of the American structural linguists (e.g. Bloomfield 1933, Fries 1945, Harris 1951) and anthropologists (e.g. Pike 1947), who analyzed, described and explained the structures and systems of languages from listening to them in native-speaker use. The emphasis was laid mainly on every-day language – the model structure (pattern- sentences) and on structural exercises (structure-drills). Audio-lingualism is summarized by Moulton (1961: 86) as being based on these slogans: "

Language is speech not writing.

A language is a set of habits. Teach the language, not about the language.

A language is what its native - speakers say, not what someone thinks they ought to say. Languages are different."

112 3.5.4

Situational Language

Teaching The overlap between language approaches may again be illustrated here. The late 1950s and early 1960s saw the British tradition of English language teaching influenced by A. S. Hornby's: Progressive English for Adult Learners (1954–56), which he referred to as situational. This meant, for Hornby, "that each new pattern or lexical item should be introduced to the class in advance of the work with the text" (Howatt 1984: 263), a principle central to the audio-lingual approach. The 1960s also saw the kind of situational approach represented by the audio-visual courses which related film-strips and recorded dialogues. The situational method tended to organize its language syllabus according to relevant physical and social situations, but then used techniques from direct and audio- lingual methods to pursue syllabus objectives.

The Oral Approach or Situational Language Teaching is based on a structural view of language. Speech, structure and a focus on a set of basic vocabulary are seen as the basis of language teaching. This was a view similar to American structuralists, such as Fries. However, what distinguishes The Situational Language Teaching approach is its emphasis on the presentation of structures in situations.

Teacher role: context setter and error corrector. Student role: memorizer and imitator. This approach, popularly known as the S-O-S approach, came into being as an alternative to the direct method. It is an outcome of the experiments carried out in the army camps during world War II. It is the presentation and practice of carefully selected and graded grammatical structures of English in effective, meaningful situations, initially through speech and later through reading and writing.

Language is viewed as structurally related elements forencoding of meaning, the elements being phonemes, morphemes, words, structures and sentence types.

According to Rao the theory underlying this approach is that language exists in situations; it cannot be used in vacuum. Language is used according to the needs of the situation. In view of this Rao suggests presenting a new language item in meaningful situations. It would make the input comprehensible for the learner. Situational use of English is aimed at in this approach. Prominent names associated with this approach are Charles Fries, Harold Palmer and A.S. Hornby. Harold Palmer points out that there are three processes in learning a language- receiving the knowledge or materials, fixing it in the memory by repetition, and using it in actual practice until it becomes a personal skill. By using meaningful situations, according to Geetha Nagraj, the use of mother-tongue

113 can be avoided. In view of this GeethaNagraj suggests that these language items should be given in meaningful situations, the learners can deduce the meaning and the context from the situation in which it is used. The characteristics of this approach: 1.

Focus on vocabulary and reading is one of the most salient traits of SLT. In fact, mastery of a set of high frequency vocabulary items is believed to lead to good reading skills. 2. An analysis of English and a classification of its prominent grammatical structures into sentence patterns, also called situational tables, is believed to help learners internalize grammatical rules. 3.

Speech is the basis of language teaching - new language items and vocabulary items are presented orally before they are presented in the written form. 4. The language items which are commonly used by native speakers in their day-to-day language are selected for teaching. 5. The items are also graded according to their usefulness, frequency and teachability. 6. The language items thus selected are presented and practised in meaningful situations. Vocabulary items are selected with reference to the general service list. 7. Reading and writing are based on items which have already been introduced and practised orally.

Behaviouristic background The behavioristic view of language learning constitutes the cornerstone of Situation Language Teaching. The approach gives primacy to the processes over the conditions of learning. The following processes are noted in this approach: 1. The act of receiving knowledge or material 2. Repetition to fix that knowledge or material in memory. 3.

The use of the knowledge or material in actual practice until it becomes a personal skill. The behaviorist theory of learning is based on the principle of habit formation. Mistakes are banned so as to avoid bad habit formation. Following the premises of behaviorism, a teacher presents language orally then in written form.

114 SLT objectives 1. The objectives of Situational Language Teaching involve accurate use of vocabulary items and grammar rules in order to achieve a practical mastery of the four basic skills. 2. Learners must be able to produce accurate pronunciation and use of grammar. The ultimate aim is to be able to respond quickly and accurately in speech situations with an automatic control of basic structures and sentence patterns. 3.

Teaching involves situational presentation of new sentence patterns and drills to practice the patterns. The teacher moves from controlled to freer practice of structures and from oral use of sentence patterns to their automatic use in speech, reading and writing. According to Situational Language Teaching, a lesson starts with stress and intonation practice followed by a revision and a presentation of new material (mainly structures or vocabulary). The teacher then proceeds to oral practice and drilling of the elements presented. Finally, the lesson ends with reading activity or written exercises.

According to the Situational Approach, and to insure that the language that is being taught is realistic, all the words and sentences must grow out of some real situation or imagined real situation. Thus, the meaning of words are tied up with the situations in which they are used. The learners know the meaning of the word "blackboard", not because they have looked it up in a dictionary, but because they have learned the word in situations; by hearing commands such as: "Look at the blackboard!"; "Clean the blackboard!"; "Write on the blackboard!". This example stresses the association between the word "blackboard" and the action of "looking at it", "cleaning it", or "writing on it. Even if the classroom environment is limited, the teacher's inventiveness should be put into practice in the pretence of a situation picked up from outside the classroom. Since the purpose of teaching a foreign

language is to enable the learners to use it, then it must be

heard, spoken, read, and written in suitable realistic situations. Neither translation nor mechanical drills can help if they are not connected to practical life. Drilling words and structures or making a maximum of sentences out of substitution tables would, inevitably, lead to the unreality, boredom, and remoteness of the language process. The difference between American structuralists, such as Fries and the British applied linguists such as Firth and Halliday, lies in the fact that structures must be presented in situations in which they could be used. The situational environment should be presented in such a way that even the slowest

115 learner gets involved in what the teacher or the other learners do and say in the classroom. The idea of making the learners cooperate with one another underlines the social touch of this approach. Learners are always eager to take part in make-believe situations, especially when they assume roles and enact a situation before the rest of the class.

Disadvantages ? Though this approach got well established by 1975 but soon then some doubts were also raised on its efficiency. In Prabhu's words 'the S-O-S principles were increasingly being questioned, mainly on the grounds that learners practice situation didn't ensure that they could make sentences correctly in other context. ? The other charges were that the teachers were required to do a lot of preparatory work. ? The structures soon become over generalized and mechanical. ? Less attention was paid to the reading skill ?

Chomsky (1957) showed that the structural and the behavioristic approaches to language are simply incorrect as they do not explain the fundamental feature of language learning: the ability to create novel and unique sentences. Children do not acquire their mother tongue through repetition and habit formation. There must be, however, an innate predisposition that lead them to a certain kind of linguistic competence. 3.6

Language Skill 3.6.1 Introduction Languages are generally taught and assessed in terms of the 'four skills':

listening, speaking, reading, and writing.

Listening and reading are known as 'receptive' skills while speaking and writing are

known as 'productive' skills. They are communication skills that are important in all subject areas in the curriculum.

Hence, literacy of all these skills should have a central position in the curriculum. All language learners will need to develop their skills in each of these areas, and language classes should incorporate activities related to all these skills. If pupils are given the opportunity to make choices and decisions about what they do, they will be more motivated to engage with learning activities. A pupil's language proficiency can vary from class to class in accordance with the type of task and the learning context. In school and in life, students face a diversity of circumstances that require language 116 skills. For this reason, experience with a variety of reading, writing and speaking activities in school can help learners acquire the skills they need to be successful. 3.6.2 How are the four skills used in the language classroom? Through daily

activities, teachers provide learners with opportunities to develop each skill: students listen (to the teacher use the target language, to a song, to one another in a pair activity), speak (pronunciation practice, greetings, dialogue creation or recitation, songs, substitution drills, oral speed reading, role play), read (instructions, written grammar drills, cards for playing games, flashcards) and write (fill-in-the-blank sheets, sentences that describe a feeling, sight or experience, a dialogue script, a journal entry). 3.6.3 The basics in developing the Language skills Speaking :

Learners need to know how speakers differ from one another and how particular circumstances call for different forms of speech. They can learn how speaking styles affect listeners. Thus, the rate at which they speak, the volume and the precision of pronunciation may differ substantially from one situation to another. It is useful for students to know that speech should differ in formality, such as when speaking to a judge, a teacher, a parent or a playmate. They may also benefit from learning about the differences among various dialects. The subjects in the curriculum and examples from the media may provide occasions for different forms of speech. Oral presentations can be derived from poems, stories, newspaper and magazine articles, as well as scientific reports. Dramatic acting and watching skits and plays may provide the richest opportunity to see how character and circumstance affect speech. Listening: Listening skills are essential for learning since they enable students to acquire insights and information, and to achieve success in communicating with others. Poor listening can lead to unnecessary arguments and problems. So, Students' listening skills has to be enhanced with practice. Reading: "Learning to read is no longer sufficient for preparing students for a knowledge- based and life-

long learning society. They have to be equipped with the skills of 'Reading to Learn'. Reading helps to develop thinking skills, enriches knowledge, enhances language proficiency and broadens life experience. Emphasis has to be placed on motivating learners and providing them with proper guidance and opportunity to enhance their

117 learning capacity through reading. Writing: Skill in writing develops only through regular experience of all types of writing. Writing is a complex process and teachers have a vital role in helping children, as they work through the challenges that allow them to become competent and confident writers (Pinnell and Fountas, 2000). Through effective teaching of the writing process, children have the potential of becoming writers who: ? understand both the constraints and possibilities of written language conventions can organize and structure various kinds of texts understand that texts have multiple purposes and a range of audiences. 3.6.4 Objectives (Speaking): to engage critically and constructively in the exchange of ideas, particularly during class discussions and conference with instructors; to conceive and develop ideas about a topic for the purpose of speaking to a group; to choose and organize related ideas; to present them clearly in standard English; and to evaluate similar presentations by others; to vary one's use of spoken language to suit different situations explain concepts/ideas in organized manner using examples or details use a variety of sentence patterns, new vocabulary, and high-frequency idioms in spontaneous conversation 3.6.5 Objectives (listening): to recall significant details; to comprehend main ideas; to draw inferences about information; to make judgments concerning the speaker (e.g., attitude, intent); to make judgments about the information (e.g. , type of evidence, logic of arguments). 3.6.6 Objectives (Reading): Understanding the basic conventions of written English

118 Constructing meaning from texts Locating information and ideas. Knowledge of the use of written symbols Knowledge of letter-sound relationships Skills of word recognition Grammar knowledge Skills in contextual understanding. 3.6.6 Objectives (Writing): Write complex sentences in paragraphs Demonstrate the correct use of capitalization, punctuation and spelling (e.g., using reference materials to edit and revise) Use pre-writing skills to organize and develop a paragraph Write a detailed paragraph with topic sentence, supporting details, and conclusion Describe a detailed procedure in writing Summarize articles on familiar topics Identify parts of a composition – outlining content/sequence of paragraphs 3.6.7 How to develop Speaking Skills: To develop the Speaking Skill the pupil should have: Control over vocabulary Grammatical accuracy Control over phonology Developing vocabulary 1. Move from concrete to abstract concepts 2. Focus on vocabulary in clear contexts 3. Use word lists, diagrams, labels and other visual displays that remain on the wall to provide ongoing support and consolidation

119 4. Get the pupils to provide their own words as much as possible 5. Make sure that pupils (whose peers are literate) are constantly developing their own personal dictionaries Developing structural accuracy 1. As early communicative ability develops the pupil will move from nods/gestures to single words then incorrect forms. 2. At this stage, encourage communication particularly by promoting small-group activities Developing phonological accuracy 1. This should never be ignored as bad pronunciation and intonation patterns can impede comprehension and contribute to serious spelling problems The teacher should also ensure the following strategies and classroom talk that include: Repetition of key words Paraphrase Miming and gesture to support spoken words Modelling Checking for understanding Summarizing Modelling grammatical accuracy without constantly 'correcting' the pupil Making use of classroom routines that quickly become familiar to the pupil – circle time, roll call, tidy up, passing on objects etc. – to encourage oral participation Encouraging the use of complete sentences as appropriate Listening to individual pupils but provide feedback to all Using minimal responses Language learners who lack confidence in their ability to participate successfully in oral interaction often listen in silence while others do the talking. One way to encourage such learners to begin to participate is to help them build up a stock of minimal responses

120 that they can use in different types of exchanges. Such responses can be especially useful for beginners. Minimal responses are predictable, often idiomatic phrases that conversation participants use to indicate understanding, agreement, doubt, and other responses to what another speaker is saying. Having a stock of such responses enables a learner to focus on what the other participant is saying, without having to simultaneously plan a response. Recognizing scripts Some communication situations are associated with a predictable set of spoken exchanges - a script. Greetings, apologies, compliments, invitations, and other functions that are influenced by social and cultural norms often follow patterns or scripts. So do the transactional exchanges involved in activities such as obtaining information and making a purchase. In these scripts, the relationship between a speaker's turn and the one that follows it can often be anticipated. Instructors can help students develop speaking ability by making them aware of the scripts for different situations so that they can predict what they will hear and what they will need to say in response. Through interactive activities, instructors can give students practice in managing and varying the language that different scripts contain. Using language to talk about language Language learners are often too embarrassed or shy to say anything when they do not understand another speaker or when they realize that a conversation partner has not understood them. Instructors can help students overcome this reticence by assuring them that misunderstanding and the need for clarification can occur in any type of interaction, whatever the participants' language skill levels. Instructors can also give students strategies and phrases to use for clarification and comprehension check. By encouraging students to use clarification phrases in class when misunderstanding occurs, and by responding positively when they do, instructors can create an authentic practice environment within the classroom itself. As they develop control of various clarification strategies, students will gain confidence in their ability to manage the various communication situations that they may encounter outside the classroom. 3.6.8 How to develop Listening Skills: We Spend a lot of Time Listening - Adults spend an average of 70% of their time engaged in some sort of communication, of this an average of 45% is spent listening compared to 30% speaking, 16% reading and 9% writing. (Adler, R. et al. 2001).

121 Listening strategies are techniques or actions that provide directly to the comprehension and recall of listening input. Effective language instructors show students how they can adjust their listening behavior to deal of listening strategies and match appropriate strategies to each listening situation. Have inviting body language - Inviting body language means positioning yourself in a way that makes it inviting and easier for people to come talk to you. This means facing the person who is speaking to you and standing with an open posture. Moving slightly closer toward the person speaking to you. Smiling and laughing when it is appropriate. Tilting your head when hearing new or interesting information. Nodding your head if you agree or understand what someone is saying Listen without distraction - An important part of listening is being able to zone out background noise, thoughts, and conversations so you focus on the conversation in front of you. Being distracted by other things takes your attention away from the speaker and lessen your ability to fully listen. Turning off communication devices like cell phones is a polite and easy way to get rid of further distractions. Listening Actively Take note of the speaker's body language. Someone's body language can communicate a lot more than the actual words they are saying. For example, if your partner keeps

122 looking down at the floor, that might be an indication that they are shy, embarrassed, or sad. Since words only convey a fraction of the message, "listening" to body language cues can help you further understand what the speaker is trying to communicate besides what their words convey. Listen with the intent to learn. Some people focus on how they are going to reply when someone is talking to them, rather than absorbing and understanding what their partner is trying to communicate. That isn't a habit of someone who is a good listener. Instead of thinking of your response, try to fully absorb what your partner is trying to say to you, and view every conversation you have as a learning opportunity. You might not be knowledgeable or fascinated with every topic of discussion, but listening with the intent to learn offers other points of view different from your own, and a chance for you to grow as a listener. Be open-minded. A basic rule of listening is to judge only after you've heard and evaluated what someone has to say. You must wait to form your opinions, because once you deem someone to be ignorant, ill-informed, or shallow, you immediately shut them out and stop listening to what they have to say. You might disagree with someone, but you will never find out until you listen to their ideas and opinions. Try to empathize. Empathizing is trying to feel yourself, what the speaker is feeling at that moment. Identifying with the speaker in this way allows for better understanding of what they are trying to communicate, and where their feelings are coming from. Remember to use an active-listening attitude. Using an active-listening attitude can help reinforce positive listening practices and encourage respectful listening tendencies. Exercising an active-listening attitude means: Acknowledging that listening is just as important as speaking in a conversation. Hearing what somebody has to say to is equally important as voicing your opinion to them. Being aware that listening is necessary for productive exchanges of information. Those who remember to prioritize listening create less confusion in a conversation, cause fewer misunderstandings, and misspeak less frequently. Understanding that listening to others is not only necessary, but all around beneficial for the betterment of the conversation. Always try to absorb some piece of new information when you encounter and interact with new people.

123 Responding Appropriately Use top-down listening strategies to prepare your response. Using a top-down strategy means you, as a listener, calling on information you already know (about the subject you and your partner are discussing, your partner, the context of your conversation, and the specific language being used to create the conversation), in order to plan what you will say next. Some other components of this strategy involve: Anticipating. Paraphrasing. Differentiating fact from opinion. Interpreting tone. Drawing conclusions. Use bottom-up listening strategies to gather further information and prepare a response. Using a bottom-up strategy means using specific linguistic signifiers to draw meaning from what the speaker you're listening to is saying. These signifiers include the actual language the speaker uses to express themselves, the grammar used to create their message, and the sounds used to create the message. Some other components of this strategy include: Picking out individual words. Noting words of similar origin. Identifying placement patterns of words. "Identifying prefixes, roots, and suffixes". The listener taps into background knowledge of the topic, the situation or context, the type of text, and the language. This background information activates a set of expectations that assist the listener to interpret what he has heard and anticipate what

he will hear next. These are listener based Listening for the major idea: Predicting Drawing assumptions Cutting The listener depends on the language in the message, that is, the arrangement of words, sound, and Interacting strategies:

124 Listening for specific information Recognizing cognates Recognizing word-order patterns Listening for Meaning They encourage students to evaluate their comprehension and their strategy use immediately after completing an assignment. They build comprehension checks into in-class and out-of-class listening assignments, and periodically review how and when to use particular strategies.

By raising students' awareness of listening as a skill that requires active engagement, and by explicitly teaching listening

strategies, instructors help their students develop both the ability and the confidence to handle communication situations they may encounter beyond the classroom. In this way they give their students the foundation for communicative competence in the new language.

Genuine materials and situations prepare students for the types of listening they will need to do when using the language outside the classroom. Radio and television programs Public address announcements (airports, train/bus stations, stores) Speeches and lectures Telephone customer service recordings Use paper, tin sheet, aluminum foil, or any substance that comes in sheets; produce sounds in various ways: by crinkling, rubbing, tearing, waving, shredding, wrapping, scratching, etc. One child does the action, the rest with eyes closed; have to guess how the sound was made. Practice the vocabulary beforehand. Students sit in a circle and share a conversation with the others and the teacher. They also share journals, diaries, stories, and maths and science experiences. The teacher starts telling the story while the students act out the different actions that appear in it. There are no further instructions given. It is left to the students to listen carefully and to imagine how and to do it.

3.6.9 How to develop reading skills “Successful integration of reading skills into the English Language curriculum will

125 help young learners develop a positive attitude towards learning to read and reading to learn” (ELCG, 2004, p.A27). The underlined Reading Strategies will help the students to develop the reading skill: Reading Aloud involves the teacher reading aloud a text and demonstrating a positive attitude to reading, reading behaviour and book orientation. Students are provided with opportunities to enjoy a variety of texts and to engage with the text afterwards through activities, such as discussion and mime. Storytelling involves the teacher telling a story with the use of pictures or real objects, e.g. puppets or storyboards, to support the students’ understanding of the content. Students are provided with opportunities to participate in the story and develop some listening and basic reading skills. After Storytelling activities can include retelling the story or role-play. Shared Reading involves teachers modelling, instructing and explaining reading skills and strategies through sharing the reading process with students. They read and reread the text, e.g. a big book or picture book, involving the students more and more with the reading. Students are provided with opportunities to learn and develop the skills, strategies and confidence needed to participate in Guided and Independent Reading as well as the Home Reading Programme. They complete After Reading activities either as a whole class, in groups or individually. Guided Reading involves teachers working with individual students or small groups of students with similar learning needs. Teachers provide opportunities for students to practise effective strategies they have been taught in Shared Reading sessions. Students read books at their Instructional Reading Level. Independent Reading involves teachers providing uninterrupted time for students to practise and integrate skills and strategies they have learned in Shared and Guided Reading sessions as well as enjoy the reading experience. The students read books at their Independent Reading Level. Home Reading involves teachers selecting books to be read at home with the guidance and encouragement of parents or guardians. The students will practise the strategies and skills they have learned during Shared and Guided Reading. The letter books revisit and consolidate the sounds taught in class while the small books revisit and consolidate the taught language structures. Following strategies are also needful in the process:

126 Semantic strategies – finding out about meanings, e.g. word meanings, common expressions, picture cues Syntactic strategies – finding out about language structures, e.g. sentence structure, word order, text organisation Graphophonic strategies – finding out about: ? the sounds of language, e.g. rhyme, alliteration, onset and rime, individual sounds ? the relationships between sounds and letters and about combining sounds (blending), e.g. differences between letter sounds and letter names, alphabetic principle, analogy and letter clusters ? language in print, e.g. letter and word shapes, letter clusters, sight words, punctuation, layout After the reading activities, also the students should be given opportunities to finally strengthen their reading skills by: rereading the text while, e.g. asking questions, asking students to point out focus language and structures and matching word cards to text in the book completing activities, e.g. games, work sheets, writing activities, drawing pictures, completing cross-curricular activities (collage, learning a song, creating a drama performance) and role play and finally realizing: ? the purpose of a text (the text type) ? how it has been written (structural and language features) ? what it means ? how they could use it ? what the author meant by writing it.

3.6.10 How to develop Writing Skills: Four Stages provide opportunities for students to learn and develop their writing skills. These are: Copying is necessary to help students to acquire and apply concepts about basic conventions in writing and put language into use at an early stage of learning. Copying activities help students reinforce the language that they have come across for a communicative purpose. It need not be a mechanical and boring exercise.

127 Controlled Writing In controlled writing, students are given a limited choice in what language to use, and few errors are likely to occur. Students can have some initial writing practice within a safe setting. Guided Writing provides explicit teaching through lessons focused on the specific needs of individuals and conferring with individuals within a small group. Students are encouraged to use the language they know and to write for a range of purposes and audiences with substantial assistance from the teacher. Independent Writing helps students activate their linguistic knowledge in new contexts. They make use of their creativity and express personal ideas and feelings. They need to be assisted in getting started and in organising their ideas. Guidance and language preparation are required for independent and free writing. Other strategies are also there to develop writing skills: ? Brainstorming and expanding Teacher introduces the topic by using a concrete example or resource such as a set of pictures Teacher prompts pupils to provide more words for items. Then prompts further description Example : It was raining cats and dogs. I was coming home from school with my friend. I stood under a tree for some time. I saw an old beggar lying unconscious a few yards away. My friend advised me to ignore him. I walked up to the beggar and found he was feverish. I called the local people to the spot. The local people made arrangements for him to be taken to the hospital. I got drenched but felt happy. When I got home I told my parents about the incident. They were proud of me. It was

128 I was returning from ----- with ----- . We stood ----- when I saw ----- . I walked up to ----- . I called ----- and then ----- . I got ----- . When I got home

----- . ? Word poems Making poems from single words is an excellent way of getting pupils to use all the language that they know in an imaginative way. The result is a great sense of achievement, particularly for those whose level of English is still low. Method: 1. Write a single word on the board. It could be a word that the pupils have recently learnt or the name of a member of the class. 2. Brainstorm all the words that the pupils know that start with the letters in the name, and write these under the original word. 3. Then, working in pairs, pupils make a short poem using, as a basis, some of the words/ideas they have collected. ? Newspaper Many pupils become familiar with the idea of 'News' in both the mainstream and the language support class. A project for pupils who have developed basic literacy is the compilation of a 'class newspaper'. Method: 1. Teacher shows a newspaper to the class and brainstorms/discusses what is in a paper. 2. Pupils look back through the work that they have done and talk about what they could put in a newspaper

129 3. Class is organised in pairs and each pair must discuss and decide what they will contribute to the paper. Contributions could include text, pictures, wordsearch or crosswords, etc. 4. Pupils work on their contributions over several sessions 5. Teacher brings the work together in a scrap book, or other form, and it is shown to all classes. Use of Technology or ICT Overall, there are a set of necessary but not sufficient conditions which must be met for inclusive education to become a meaningful model for meeting special educational needs. These are: An opportunity for pupil participation in decision-making processes A positive attitude about the learning abilities of all pupils Teacher knowledge about learning difficulties Skilled use of specific teaching methods Parent and teacher support Our conclusion is that this process of making accommodations does not constitute pedagogy but is an element of it. Our view is that questions about a separate special education pedagogy are unhelpful given the current policy context, and that the more important agenda is about how to develop a pedagogy that is inclusive of all learners. References: 1. Anthony, E. M. (1963). Approach, method, and technique. *English Language Teaching*, 17, 63-67. 2. Carless, D. (2002). Implementing task-based learning with young learners. *ELT Journal*, 56(4), 389-396. 3. Cook, V. (1991). *Second Language Learning and Language Teaching*. London: Edward Arnold Pub. 4. Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: Oxford University Press. 130 5.

134 4.3.1 Concept of Instructional Material Instructional Materials as the name suggests, are materials of visual, audio and audio - visual category that helps to make concepts, abstracts and ideas concrete in the teaching/ learning process. These are also materials which the teacher uses in supplementing his teachings. Instructional Materials include materials used to facilitate learning for better results. Likewise, it is the use of the chalkboard, charts, models, overhead projectors, films, television and computers in teaching process. Broadly speaking, it is not just the use of tools of technology alone but a systematic, integrated organization of machines, hard wares and soft wares and human potential for the solution of problems in education. In order to ensure an effective teaching learning process, it is important for the teacher to be thoroughly acquainted with the teaching resources and services available to him. The components of instructional materials available to teachers and students are in large numbers and also vary according to the functions of each of them. Examples of instructional materials are charts, maps, diagrams, comics, models, globes, slides, film strips, television, radio cassettes, video, recorders, cinema, public address system, laboratories and museums, flash Cards, flannel boards, card boards, Calendar, Computers, etc.

4.3.2 Classification of Instructional Materials The Instructional Materials could best be classified in to three forms: audio, visual and audio-visual aids. The audio (deal with sound only) the visual (as in sight) and audio- visual (a combination of audio and visual i.e. sound and vision) for instance: AUDIO: These include such things as radio, record players, cassettes, gramophone etc. These aid teaching through the sense of hearing. They can be used in teaching of songs, poems, rhymes and at the sametime different content matters can be melodiously presented via them. These materials help us develop listening and pronunciation skills. Side by side, students get training in the subtle skills of language like, stress, intonation and pause. VISUAL: This category consists of maps, film strips, specimen, pictures, charts, blackboard, posters etc. Usually it appeals to the pupils through the sense of sight. Until facts are presented in the form of visual aid, pupils may not readily grasp the meaning of ideas, concepts and facts. English has many topics and concepts that demand concretization of concepts through visual presentation. Here, the utility of visual aids is more of a necessity. Sometimes to introduce a topic or a poem we need the visual objects. Moreover, poets and writers can be introduced through visual presentation of facts.

135 AUDIO-VISUAL: As have said already, this group consists of a combination of both audio and visual materials. Television, films and projector etc. come under this category. In today's education these materials are in heavy demand, because they satisfy both the auditory and visual passion of learners. Moreover, the use of more than one sense stimulus makes the process interesting and comprehensive. Language subject like English can greatly benefit from this. Specially, these materials help in listening and speech practice.

4.3.3 Factors Guiding the Selection of Instructional Materials The teacher who wants to use instructional materials should consider the following variables to guide him in the selection of the types to be used in the teaching learning exercise.

1. Availability The teacher should ensure that the instructional materials to be used are easily available for use before the date of use. It means that the materials should be in store and the teachers should look at it and test it before the starting of the lesson. If the teacher has to prepare it himself, he should do so at least a day before the lesson. Instructional materials that are not available or not easy to prepare should be negated by the teacher in his lesson plan.
2. Accessibility It is the duty of the teacher to ensure that the materials to be used as instructional materials are not only available but also accessible to him. They should be within the reach of the teacher on the date and time of use. There should be no excuse that the materials are readily available but locked up in the store because the store-keeper is nowhere to be found or the keys to the store have been misplaced.
3. Affordability The instructional materials to be used should not be expensive. The cost should be such that either the teacher or the school can afford. It is no use to say that something is available but not affordable due to high cost. The cost should not be outrageous. It should be within the budget of the school.
4. Suitability The teacher using the instructional materials should ensure the appropriateness of the materials for his intended learners. The materials should be suitable for their age, experience and intelligence. The legal, safety and ethical aspects of the materials to be used should equally be considered. The materials should not portray any anti-social attitude. They should also be free from

136 any bias, distortion or prejudice. If the materials would need electric power then an alternative should be sought to avoid disappointment from electricity. 5. Simplicity The instructional materials to be used should be simple to operate or manipulate. The teacher should test the materials and ensure their workability before the actual date of use. There should not be any technical problem and where electricity is to be used provision should be made for an alternative power. No teacher should use electric failure as an excuse for nonperformance. In a situation where an instrument demands the hands of a technician, he (the technician) should be in hand and the teacher should have an insight into the operation of the instructional materials. 6. Quality The instructional materials selected for teaching by the teacher should be of good quality. Teachers should avoid the idea of "managing" with poor quality materials because he might not achieve the desired aim. 7. Recency The instructional materials should be the best or nearest to the best. It should not be out of date. The instructional materials should reflect current and original thought. 4.3.4 Importance of Instructional Materials The instructional materials help

improve students' knowledge, abilities and skills, monitor their assimilation of information, sustain students interest for longer period, provide opportunity to all students to share experience necessary for new learning and bring more permanency in learning. This is for the fact that such materials enhance, facilitate and make teaching/learning easy, lively and concrete. Books, journals, archives, newspapers, reports, internet are some of the widely used instructional materials. Instructional materials allow the instructor to engage learners by supporting concepts through the use of multimedia, including sound clips, video, images, hands-on experience and interactive games. Materials offer learners the opportunity to practice concepts and develop a product that demonstrates their level of understanding. Consequently, those products are then used to evaluate learners' knowledge. Instructional materials allow the instructor to support learners with varying levels of ability and foundational skills by providing additional support. Many educationists agree that instructional materials bring about improvement in the 137 teaching/learning process as well as permit teachers and students to interact in a controlled environment. Also, most educators generally agree that the creative use of variety of instructional materials will increase the probability that students would learn more, retain better and acquire requisite skills. Instructional materials help the teacher with the means for extending the learners' horizon of experience and provide the teacher with rich sources of communicative materials which could be produced jointly by the teacher and the students. Several studies have been conducted to test the value of Instructional materials and other sensory devices. These researches have proved that Instructional materials when properly used in teaching learning situations can accomplish a lot of complex tasks. The instructional materials also offer real experiences in giving the teacher basis for thinking and understanding. They provide concrete basis for conceptual thinking and therefore reduce meaningless responses of students. At the same time, they overcome the limitations of time, space and size by helping the students to understand things that are too small or too big, or too slow or too fast. Therefore, instructional materials can provide members of a group with a common or joint experience. They also break language barriers and ease difficulties and in the end make the lesson more meaningful. They save time and thus enable students grasp ideals more effectively and quickly. Likewise, they help to simplify and emphasize facts and clarify difficulties. They reinforce other teaching methods and materials. They improve the efficiency of other method and effectiveness of the teaching process. Instructional media usage in practice teaching can make instruction to be much more interesting and enjoyable. The changing images and use of special effects, among others, can reduce boredom of the learners and enhance classroom interaction. Media can also promote student-student interaction, student-teacher interaction, and teacher-student interaction, if pre-instructional planning incorporates principles such as stimulus variation, feedback, reinforcement, learner' participation, and so on. Media also saves teaching time as if requires short-time to present large information. Media can be used to reveal needs and stimulate students' question. Thus learners' interest can be aroused, maintained, and stimulated to promote their imaginative power. On the whole, media ensures the application of classroom-oriented communication techniques. 4.3.5 Effective Use of Instructional Materials It is wrong to bring into the class those instructional materials that cannot be easily used to convey facts, ideas and concepts to the pupils. This means instructional materials are not just selected on the basis of their attractiveness but on the basis of certain criteria that will ensure their effectiveness in the teaching and learning processes. In order to

138 make the best use of instructional materials, the following criteria should be considered: (a) Reliability: As much as possible, teachers should make sure that the instructional materials are so selected that they can be used to achieve the objective of a particular lesson. The instructional materials must be relied upon to achieve the objective of the lesson. (b) Relevance: Care must be taken to ensure that only instructional materials that relate to the topic are used while teaching. (c) Cost: The instructional materials should be within the reach of the teacher or the school. The cost of the instructional materials will determine whether it can be bought and used or not; otherwise the teacher selects only those instructional materials that cost less. Beside the above criteria, to ensure the best and maximum use of instructional material the following suggestions may be considered. i. Workshops and seminars should be organized from time to time for teachers where they would be taught not only how to produce instructional material but also how to use them effectively for the achievement of educational goals. ii. Resources centers should be established at strategic locations and be well equipped with instructional materials where teachers could loan from. To this end, the resource centers should be brought near teachers, suffice is to say the centers should be developed in all educational institutions. iii. The availability of reference texts and instructional materials are very vital for high academic performance, while, teachers should make efforts to improvise some of these materials, the educational authority should play their own role by making these materials available in schools. iv. Government should provide assistance in the area of book publishing so that cheaper and more qualitative useful text books can be produced in English. v. Storage is an important factor that influences positive or negative use of instructional materials. Storage facilities should be provided where they could be stored for use at a later date. vi. Parents should be enlightened on the significance of the study of English for their children in order to benefit fully from the new education system.

139 Check Your Progress-1 Q1. Why is a television more approachable by the students than a radio?

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..... Q2. Instructional materials are the real teachers in an open and distance learning system, why?

..... Q3. Mention the three criteria to be taken into consideration while selecting instructional media.

..... 4.4 The Use of Instructional Material for ELT (English Language Teaching) There are several inherent advantages in the use of media by the teachers. First, effectively used media is vital for encouraging and facilitating students' learning. Second, through the use of media, subject content can be more carefully selected and organized. Thus, the quality of instruction delivered by teachers can be improved as subject content can be delivered in a well-organized, consistent, specific, and clearly defined manner. Third, the delivery of instruction can be much more standardized as learners with varying abilities can receive the same message and their individual differences catered to using media. Let's discuss about some instructional materials that can be used by the teacher of English to make the teaching learning transaction effective. 4.4.1 Smart Board A SMART Board is a brand of interactive white board. It is a large touch-sensitive whiteboard that uses a sensor for detecting user input (e.g. scrolling interaction) that are equivalent to normal PC input devices, such as mice or keyboards. A projector is used 140 to display a computer's video output onto the whiteboard, which then acts as a huge touch-screen. The SMART Board usually comes with four digital writing utensils that use digital ink replacing the traditional whiteboard markers. The digital ink works by using an active digitizer that controls the PC input information for writing capabilities such as drawing or handwriting. Older versions of the SMART Board only worked with one point of contact on the board, so multiple people could not be touching the board at the same time. The newer models are equipped with multi-touch technology, which allow up to four students to collaborate using the board by responding to multiple touches at the same time. This means two students could be solving a math problem at the same time on the board or label a diagram together easily. A wireless keyboard and mouse can be used with it, so also a write-on tablet which allows interacting with the tablet and having everything appear on the projected screen. Both the wireless mouse and the write-on tablet are great tools because they allow the teacher to circulate the room, which is essential for good classroom management, while still interacting with the screen at the front of the classroom. Older SMART Boards used clickers, wireless handheld devices that can be connected to it so students can answer quiz questions and Polls.

There are several advantages of bringing in a SMART interactive whiteboard into a classroom setting. Here are some of the advantages of SMART board for English Language Teaching.

1. Provides Flexibility: Interactive whiteboards allow many different forms of media – including photos, illustrations, maps, graphs, games, and video, to be displayed. These tools not only enrich the classroom experience but also help to expand the nature of content that can be used in learning. In addition, SMART Boards makes learning to be more dynamic owing to the different forms of presenting information.
2. Enhances teaching/learning experience: SMART Boards provide new ways for teachers to teach, and students to learn. These tools support a wide variety of learning styles. For instance, visual learners can watch as their tutors use the whiteboards to project visual elements, whereas audio learners can listen and have discussions. On the other hand, the Boards come with touchscreen capabilities that allow tactile learners to touch and interact with the board.
3. Interactive and Sharing: The interactive nature of SMART boards offers learners an opportunity to share and participate in the instructional process. Interactivity provides a platform for students to demonstrate their grasp of the subject through touching, drawing, and writing. Every learner has an opportunity to participate or contribute to the presentation and/or discussion via notebooks and tablets. In addition, the boards provide for rapid assessment whereby learners can receive immediate feedback. Teachers and students are able to identify individual strengths and weaknesses in various subject areas and isolate areas/topics that need more focus or review.
4. Low-Maintenance: SMART Boards are neat and easy to use. There are no hassles in cleaning or maintaining whiteboards. The data on the screen can be modified using a specialized highlighting tool or pen. There is no need for using unhygienic chalk or marker pens.
5. Access to Online Information & Tools: SMART boards allow learners to easily access a rich database of online resources. Teachers can use the wide variety of online information sources such as knowledge databases, online video and news items to reinforce their lessons. Learners can also quickly access the wide range of powerful tools and resources to conduct research and supplement their usual study material.
6. Going Green: Interactive boards are also environmentally friendly. They offer teachers an entirely different way of presenting information to students, which eliminates the need for writing, printing or photocopying. Which, contribute to eliminate waste and pollution, from over-utilization of paper and ink.
7. Technology Integration: SMART boards allows for integration of various technologies in order to improve the learning experience. For instance, it is possible to attach tools such as microscopes, document cameras, cameras or video cameras to a whiteboard to aid in instruction. It is also possible to integrate the interactive learning tools with a wide range of software applications.
8. Communication: Interactive whiteboards allow for connectivity in different locations; making ideal collaboration and distance learning environments. When using SMART boards, student show to increase student-to-student collaboration and increase overall participation in the lesson.

4.4.2 Chalk Board

A Chalk Board is used to present instructional content and for delineating ideas. When integrated with other media, it can give full explanation. However, most teachers do not use chalk. But the teacher of English must use it to explain concepts, write difficult words, draw diagrams and provide useful descriptions. Neatness of the chalkboard must be ensured through the use of guidelines, templates, compasses and straight-edged rulers. Chalkboard should be divided into sections. Lettering should follow the occidental form of lettering, that is, from the left sector of the chalkboard to the right. Or use of only the middle portion of the chalkboard can be used. Chalks to be used for teaching must be in the form of wedges and cones so as to give uniform thickness of line. Coloured chalks may be used when it is appropriate to show distinction among parts of drawings and for emphasis of teaching points.

4.4.3 Flannel Board

It is basically a story-telling board covered in a flannel or felt material that teachers can use with young learners to tell visual stories with pictures, and a variety of other manipulatives that are made from felt cut-outs. Flannel boards can come in a variety of sizes and can be mounted on a wall or be a smaller table-top style with an easel that easily folds up to be put away.

Flannel board sets are soft, colorful felt cutouts of shapes, alphabets (upper and lower case) colors, numbers or story characters and props. Commercial sets can be found for fairy tales, nursery rhymes, popular literature, safety lessons, maps, the seasons, calendars, animals (zoo, jungle, farm, pets, etc.), special holidays, dinosaurs, multi-cultural ideas, Bible characters, games, transportation and many more early childhood themes. They can be purchased, pre-cut or teachers and caregivers on a budget can make their own designs from felt.

Encouraging a child to re-tell a story or a number sequence or identify colors and shapes is a great independent activity as well as

fun. Re-telling reinforces learning and abstract concepts. Young learners will gravitate toward this anyway if the materials are left on the board for their use. They will also make up their own creative stories using the flannel board shapes in a free-play setting. Children enjoy touching and feeling the soft manipulative shapes.

Below given are a number of pictures of different kinds of flannel board.

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145 4.4.4 Picture and Picture Cut-outs Pictures and cut-outs are required for the young learners to understand the concept better. Pictures give concrete shape to our understanding of things and characters. They also give knowledge of the context. A picture is a useful instrument for the teacher of English to teach language to the young learners. There is a popular saying that says, "a picture is better than thousand words". Pictures are helpful in presenting abstract things in a concrete manner. As pictures are attractive, they hold the attention of learners easily. Moreover, illustration through pictures saves time and energy. Pictures are easily available everywhere. Relevant pictures can be found in newspapers, magazines, calendars and posters. The size of the picture must vary according to class size. However, the teacher must take the following factors into consideration while using pictures: i. Pictures should be hanged in such a place so that all students can follow ii. Pictures should be used at a particular point of discussion and then must be kept aside Picture cut-out is a special kind of picture cropped from the original picture in order to highlight a part of the picture under discussion. Generally a cut-out is highlighted by different colours or marked special by lines or boxes. Sometimes a cut-out is completely cropped up from the original picture and pasted on board for showcase. The importance of cut-out is that it emphasizes certain aspect of the picture that is more important than the other. "Cut out" photography is a way to manipulate an image with the purpose to distinguish one or more items at the picture as if it was coming in or out of that very same photo. This is done to provide extra-focus to the matter of concern. This is done when we explain a particular part of the prose or poetry. For example, a cut-out picture of a valley can be pasted in a book or in a paper-board while explaining 'vale profound' of 'The Solitary Reaper'. A cut out photo creates a "visual assumption" and tangible impression of the matter under discussion. A teacher can use the cut-out picture of a grasshopper while explain John Keats poem the Grasshopper and the Cricket. Given below is the picture of a cut-out.

146 4.4.5 Charts When information is presented graphically, it is known as chart. Generally, charts are used when it is essential to present a large quantity of information or to present the relationship between parts of information. For the purposes of clarity, it is desirable to consider charts as a means of visualization with certain attributes. It may be defined 'as combinations of graphic and pictorial media designed for orderly and logical visualizing of relationships between key facts or ideas'. Edgare Dale defines chart as a visual symbol summarizing or comparing or contrasting or performing other helpful services in explaining subject matter. The main function of the chart is always to show relationships such as comparisons, relative amounts, developments, processes, classification and organizations. A chart can be in the form of a tree or in the form of a flow-chart or of a table chart. A teacher of English can use chart to motivate students, to show relationship between facts and figures and to provide abstract ideas in visual form. The following are some of the benefits of chart-

147 i. Charts help the learners to understand the difficult matter easily ii. Charts empower the skill of observation among the learners iii. New words in a lesson can be listed in a chart and displayed However, while using a chart a teacher of English should take the following into considerations: i. Charts should be visible to all learners at the same time; ii. Charts should be hanged in such a place that all students can follow iii. Charts should be used at a particular point of discussion, not for the whole time; after discussion it should be kept aside

4.4.6 Tape-records Tape-records are wonderful instruments for educating children. These are very useful particularly for language subjects. The students can have good listening and speech practices through this. A tape-record can be played, replayed as many times as one desires. This facilitates learning of content matter easily. Students can record their own practice of speaking and get feedback immediately. This instrument also helps to build up vocabulary knowledge among learners. A tape record has the following advantage: i. Facilitate Diverse Learning Objectives ii. Contribute to self-learning activities iii. They motivate learners psychologically iv. Involvement of learners v. Increases student's concentration vi. Accommodate individual needs vii. Help learning monitor the information input Tape-records are useful device for teaching listening and pronunciation skill. This is found in conventional language laboratory along with audio cassettes for the linguistic training of the students. Tape-record can be used to monitor the progress of language learners. Students can record their performance and can have self-feedback. Besides, a teacher of English can use it to support his/her teaching during the classes.

148 4.4.7 Radio Instructional radio allows educators a very economical means of information dissemination, and, permits them to reach a large numbers of students in a particular time. This medium is considered by many to have great potential in educational programming. In 1979–80, the AIR (All India Radio) conceived and implemented an experiment to use radio broadcast for language teaching. The experiment was conducted in collaboration with the department of education, Government of Rajasthan. Under this experiment an attempt was made to teach Hindi as a first language to school going children. The experiment was a success. Radio as an instrument has the following advantage: 1) Immediacy Books tell us about events that may have occurred long ago. Because they are not revised each other, may often be five or ten years out of date. But radio can be as upto date as the latest broadcast. 2) Realism An announcer who tells radio listeners what he sees as he sees it may be more impressive than a newspaper reporter dealing with identical matter. The broadcaster is on the scene, and tones of his voice communicate shades of meaning that the newspaper story, hours or days after the event, cannot convey. We may hear not only broadcaster's voice but also the background. We should bring the world to the school and school to the world, which a radio can do very effectively. But radio's realism lacks the pictorial quality provided by television & motion pictures. 3) Solves the problem of space and time Through on-the-spot broadcasts radio can actually overcome the barriers of space and time. 4) Emotional impact Radio brings dramatic feelings into the classroom. It has the warmth of drama; the personal feeling of actor's presence- it can carry to the listener all the emotional overtones of the broadcast materials. Human voice can be heard and its feeling and attitude conveyed even through one has closed his eyes. Sound alone can convey deep emotional experience with great poignancy. 5) Authenticity: Radio has been often used to bring two classrooms the first kind of expertness, authority in subject matter. Expertness in methods is also provided by radio.

149 6) Inexpensiveness: Radio can be used inexpensively when there is need to emphasize local problem or conditions of one kind or another because it reaches many people, its per capita cost is small. English as a language can have all these advantage to its credit. Radio is a powerful device for the learners of English. Students learn new vocabulary, their contextual use by listening to it. Radio also gives wide exposure of different subject matter relating to a target language. Because it has a variety of programmes students get the facility to know a wide variety of contents. Radio can also be used as a supplement to the class teaching. The teacher of English can select relevant programmes broadcast by different stations and made the students listen. We have a radio channel which is purely meant for educational purpose. This is known as GYANVANI. This is spearheaded by IGNOU. Now NSOU also joins hand with it. Besides this channel there are other channels where relevant programmes are broadcast for the learners. The teacher must make the learners aware of all these channels and initiate them to listen to these channels. It is said that more the listening the better the speaking. Radio provides that platform of listening to the potential learners. 4.4.8 Television Television is now considered the best medium of learning and entertainment for the learners. It now has a significant role in educating children through its various programme broadcasts. Information transferred through television is different from traditional education methods. Explanations related to the subject and examples can be presented visually, so the learner gets motivated, his/her desire for learning increases, and therefore learning and remembering become easier. Allowing thousands of people spread over a large and distance geographic regions to receive the same program at the synchronous time, television broadcast helps overcome the problem of inequality and imbalance among the regions by providing equality in opportunities. Television may grant positive motivation such as attracting the learner's attention to a certain point or arousing attention with the movements of the camera's coming close, going away, and reflecting details. Invisible or virtual objects, today, can be animated with different expression methods such as cartoon films. It enables distinguished instructors to reach a large mass of students at the same time. The most distinctive specialty of television is its ability to present information to the student which other tools cannot. Television is an effective tool in expressing abstract concepts or ideas. Abstract concepts are usually produced and conveyed with words. Besides this, in making an abstract concept concrete, the role of animation and visual experimentation is very important. The limitation here is how to combine the text, which is involving information, with moving views, animation, concrete ideas, utterance and objects like pictures. Television in the learning process could be helpful in understanding abstract ideas directly.

150 The teacher of English can suggest students to watch news channels and programmes which can benefit their knowledge of English. Students learn many more concepts, theories and contents through television. This is a popular medium because it uses both auditory and visual stimuli simultaneously. Different educational agencies like the SIETs use television for educational purposes. They telecast programmes for various classes and in all subjects during the school hour. The teacher of English can use this as a medium of learning for the students. Besides, we have a programme called GYAN DARSHAN telecast by IGNOU. This can hugely benefit students. The additive property of television is that it provides visual stimuli to the learners which they like most. It catches the very attention and psyche of the learners. So students learn easily and quickly through this medium.

4.4.9 Films and Film Strips Films are the most popular media now-a-days. The most attractive part of a film is its movability. Film projectors and videotape projectors are used to project motion pictures, when motion is a significant factor of a subject. Educational films are in black and white, and colour. There are also sound and silent motion pictures. Videotape availability has further widened the possibilities for the use of motion pictures, as they can be shown through monitor, that is, cathode ray tube, or projected using video projector or through the digital projector, for group use. Motion pictures are relevant for all subject disciplines, but much more helpful for students of literature subjects like English. Motion pictures when accompanied by sound may constitute a very effective way of emphasizing distinctive features for the tasks, which needs distinguishing the visual aspects of simulation. Motion pictures are also very good for ensuring students' positive attitude toward the subject of instruction. They can also be used to modify students' attitude. Filmstrip projectors project images contained in filmstrips, which are series of small slides photographed in permanent sequence on a 35mm or 16mm film either in colour, or black and white. Some filmstrip can also be used to project slides. Teachers can use filmstrips and slides to enrich their instruction. They are less expensive, easily handled and stored for future use. They are adaptable for use in every subject area, and the rate of presentation for classroom use can be controlled by teachers using remote, reverse, and advance mechanisms.

4.4.10 Overhead Projector From the name of the equipment itself, it would be evident that in overhead transparency projector, the projected image is obtained behind and over the head of the instructor. The OHP reflects images coming from a powerful light that shines through a transparency on a screen by means of tilted, highly polished mirror and lens assembly. The image is

151 bright enough to be seen even in a lighted room. The projector area ranges from 3"x3" to 10"x10". Normally overhead projectors are compared to a projection lamp, to act as a source of light, condensing lenses to concentrate all the light into usable beam, a polished mirror and lens assembly and a blower for cooling the system. Using the overhead projector, transparent materials are projected so that a group can see. It is simple to operate, and it is a versatile media for teachers to use. A teacher can maintain eye-to-eye contact with students while projecting transparencies in a lighted room. The following are some of the advantages of overhead projectors.

- A large image in a minimum projection distance is obtainable
- Permits the instructor to face the class as he writes or indicates points of importance on the transparency
- Projected images obtained could be seen even in a lighted room
- Simple and convenient to operate the equipment
- Low cost, home-made materials could be used in minimum time.

Below given is the examples of overhead projector.

152 4.4.11 Language Laboratory Language laboratory is an audio-visual mechanism used in modern teaching methods to learn the target language, which here is English. It provides an extensive platform to the learners to learn the target language. English being a foreign language demands better practice and exposure. Language laboratory provides that opportunity to the learners. Basically, language laboratory is a room having equipment and infrastructures of linguistic nature in order to promote language proficiency of the learners. There are different kinds of language laboratories. Let's deal all these in nutshell. i. Conventional Laboratory: this is the most traditional type laboratory among all. The laboratory has a few audio cassettes and a tape-recorder of the target language. This laboratory is useful for teaching pronunciation to the students. ii. Lingua Phone Laboratory: This is an improvised version of the conventional laboratory where the learners are provided with a headset to listen to audio cassettes being played. iii. Web Assisted Language Laboratory: it uses computer with an internet connection to teach language. The language course materials are easily available on computer and are collected on the demand of the learners. iv. Multi-Media Hi-tech Language Laboratory: this laboratory uses softwares available in the market for language learning. The lab has all kinds of equipment necessary for language teaching. Advantages of Language Laboratory: i. The lab provides a controlled atmosphere where it is easy to monitor the student and their practice of language. ii. The students can evaluate their own performance and can have self-feedback. iii. The lab also adds on understanding of the subject matter as it makes use of different media simultaneously.

4.4.12 Language Games Psychologists believe that learning should be a pleasurable and rewarding experience. Children tend to learn more when they are tension-free. They can and do learn a lot of things through games. Language games have both fun and excitement for the learners

153 with an additive pedagogical purpose. It must be noted that language games would fail in their purpose if they are not planned in advance and used methodically and carefully. According to Peter Hubbard et.al, "Games are often wrongly regarded as an end-of- term activity or something to fill in the last five minutes of a lesson. In fact, they can be used at all stages of practice from controlled to free". Language games can be of four kinds: Listening games, speaking games, reading games and Writing games. The idea of play-way method of teaching English was proposed in the late 19th century as it was brought that interesting games, if included in the teaching activity, could increase the motivation of the learners; learning will take place in an atmosphere of freedom and enjoyment. This idea has been incorporated in all the late methods of teaching English in the form of language games. Language games can introduce a healthy competition among the learners in English classes. They are useful for improving the learner's knowledge of vocabulary, grammar, and his language skill. Young learners learn better and faster if learning involves fun and excitement. Language game is such a technique that makes the learning attractive and lively. Generally a language game is introduced as a preliminary activity to communicative teaching lesson. It can also be used for vocabulary and grammar teaching. The effectiveness of games depend on various issues such as class size, division of students into groups, nature of the game, attitude of the learner towards the game etc. Games ignite thinking ability of the learners and bring maximum involvement of learners. Here are some guidelines for making the games attractive– i. The class should be divided into several groups of equal size; ii. Students of various capabilities are to be there in a group; iii. Games are to be presented in the form of a puzzle or problem; iv. Newer games are to be attempted always. Repetition brings monotony. Types of Language Games 1. Jumbled Words: Through this type of game the students are able to develop the skill of construction of a sentence and also sequence of words in. 2. Expanding the text: This type of expanding the text game is used to develop the skill of formation of sentences, to improve their grammatical knowledge and to improve the skill of concept and creativity. 3. Reading Aloud: This type of game is used to develop the skill of listening ability and also the questioning ability. 4. Word Card: Word card game is used for construction of sentences and to develop creative thinking coherence and continuity of writing skills.

154 5. Three Picture Story: It helps to develop the skill like creativity in speech, imagination, pronunciation and sentence formation. Role of Language Games in Language Teaching A language is learnt by using it and this means by using it in situations and communicatively. Disembodied sounds, words, phrases and sentences, however wrapped about with rules, do not carry language remove such elements and look at them closely, much as them to the intermingling streams of discourse. The situations which bring a foreign language to life in the classroom are provided by gestures, by handling and touching things, by incidents and activities, by pictures, by dramatization, by interesting stories spoken or in print and not least by certain contests and games. In these the language is linked with action and is no longer a disembodied thing. Games therefore should not be regarded as a marginal activity, filling in odd moments when the teacher and class have nothing better to do.

Language learning itself is complex and many sided as a matter of four communicative skills. One more introductory point is that the game brings teachers and learners into a more agreeable and more intimate relationship, and that too helps to ease and process of learning and teaching. Language games, if organized well with care and interest, help the learners, especially the young ones acquire a lot of language, because while playing a game learners have opportunities to learn without stress and anxiety, which is good for learning. The teacher uses a lot of language without conscious attention on it and this language is useful for acquisition. These serve as a valuable input for language acquisition in a tension-free situation.

4.4.13 Reading Cards

Reading cards are otherwise known as flash cards. Flashcards are small cards with a picture or symbol on them used both in teaching and in development work. In the classroom, flashcards are commonly used to teach reading. A picture, for example, of an elephant may be drawn or stuck on a card and the word 'elephant' written underneath it or on a different card. The students are encouraged to associate the pictures and the words through various 'look and say' activities and games, for example, Kim's game, Pairs, and so on. In teaching and development work, flashcards may have pictures, symbols drawn or painted on them. They are particularly useful for stimulating discussion in small groups, as well as for sharing information and reminding people of a recommended process with posters, research the local situation and pre-test them. To use flashcards in a classroom situation, such as learning to read, show the picture and the word together. Ask students to look at the picture and say the word. Then they look at the word and say it again. After presenting a number of words with pictures that the students already know, ask for volunteers to come out and match pictures and words. When the students have learnt to read the words, you can divide them into teams and play reading games using the flashcards. Below here given an example of a reading card.

Animal Cards : Lucy, in her blog Bakei my smile, refers to 'Animal Cards' to teach firstgrade kids about different reading strategies. She cards were called—Chunky Monkey, Stretchy Snake, Eagle Eye, Flip Flop Froggy, Lips the Fish, Turtte Talk and so on. Each brightly coloured picture card signified some activity like— (a) Chunky Monkey—break the word into smaller chunks. (b) Stretchy Snake—Identify the Sounds in the Words. (c) Eagle Eye—Look at the words and pictures carefully. (d) Hip Hop Froggy—Try using short and long vowel sounds to see which one sounds right. (e) Lips the Fish—Make the initial Sound with the lips. By holding up each card, the learners were basically shown some writter instructions which they read and were urged to perform accordingly.

4.4.14 Worksheets

Worksheet commonly refers to a sheet of paper with questions for students and places to record answers. A worksheet lists questions or activities for students to work through. Pre-prepared worksheets can be used successfully with groups with differing abilities or language skills because each person can work at their own pace. Worksheets can be used for homework or a revision programme, or they can include further details to be studied for the next lesson. Worksheets provide flexibility in the classroom as well as in the workshop, because they can be used individually, in pairs, or in small groups to facilitate teamwork skills. Through worksheets children learn in different ways by engaging themselves in various activities like colouring, drawing, solving exercises and puzzles. Below given the example of a worksheet where a learner has to complete the information about himself/herself.

4.4.15 Handouts

Reading handouts give students activities to complete or questions to answer whilst reading. The handout contains key points which will be the same for all students.

It spares student tedious note-making and thereby help them in the greater concentration

on the lecture. But the information it provides is partial and relies on the students completing the information either from the lecture itself, or from further reading thus removing the passive element in a situation where all the information is provided.

Given below is an example of handout for your better understanding.

4.4.16 Power Point Presentation

Power point involves combinations of visual and/auditory materials. It is a learning resource package, which can be effective when several media are used concurrently for specific instructional purposes. Power point is a multi-media approach of education where there is the use of many medium simultaneously. Using multimedia or multi-image, a large amount of information can be passed across to students, and high interest can be created in students. Furthermore, different media can be tailored towards different objectives outlined for the lesson.

Power Point has become very popular in teaching

because it's easy to learn and widely available. It provides the ability to equip a teacher's

presentations with different types of media - including images, sounds, animations, and much more. This enhances the students' abilities to retain what they're being taught, especially those who are visual learners. Teachers can focus on the class and interacting with the students instead of writing on a board, because the text and the entire presentation are already there in the form of a

Power Point file. PowerPoint helps structure the content and processing of a lesson or lecture. Aiding note-taking (and thus facilitating study) is another purported advantage of using PowerPoint. Students like the lecture outline and graphs on the screen, and it has a positive influence on students. PowerPoint enhances instruction and motivates students to learn. PowerPoint encourages and supports teaching learning process by facilitating the material presentation. The template provided is designed to default to good presentation criteria such as the number of lines of information in each slide and appropriate font sizes. The use of the default templates can improve the clarity and the arrangement of a presentation. It helps the teacher avoid the common use of excessive text often found on OHV (Over Head Projector). PowerPoint is able to perform a variety of manipulations, such as editing text before printing it out, and the teacher can add new slides for adding new materials. PowerPoint is also fun to be applied and fun to watch. It is not hard to learn in one hour. It allows the users to reflect on a lesson and correct any changes, and they can create the perfect lessons and are being able to print them out.

159 Using Power Point improve the students' learning motivation, increasing authentic materials for study, encouraging interaction between the teacher and the students. Many concepts of grammar and other linguistic items can be best taught through power point presentation. Check Your Progress-2 Q1. Name different kinds of flannel board used for teaching language to young learners.

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..... Q2. What is the use of a picture cut-out?

.....

..... Q3. What is a language game?

.....

..... Q4. How can worksheet be used to teach English language to the learners?

.....

160 4.5

Construction of Teacher Made Test for English Proficiency

Teacher-made test is the major basis for evaluating the progress or performance of the students in the classroom. English as a foreign language needs a comprehensive process of evaluation by the teacher. Moreover, it is a skill based subject. The four skills of listening, speaking, reading and writing need elaborate testing so that learners' proficiency can be easily deciphered. Let us discuss about the construction of a teacher-made test. Steps in Constructing Teacher-Made Test 1. Planning the Test. In planning the test the following areas are to be taken into consideration:

the objectives of English Language Teaching,

the purpose for which the test is administered, the availability of facilities and equipments, the nature of the testee, the provision for review and the length of the test.

A thorough planning makes a test comprehensive and valid. 2.

Preparing the Test. The process of writing good test items is not simple – it requires time and effort. It also requires certain skills and proficiencies on the part of the writer. Therefore, a test writer must master the subject matter he/she teaches, must understand his testee, must be skillful in expression and be familiar with various types of tests. 3.

Reproducing the Test. In reproducing test, the duplicating machine and who will facilitate in typing and mimeographing be considered. 4. Administering the Test. Test should be administered in an environment familiar to the students, sitting arrangements is observed, corrections are made before the start of the test, distribution and collection of papers are planned, and time should be written on the board. 5.

Scoring the Test. The best procedure in scoring objective test is to give one point of credit for each correct answer. In case of a test with only two or three options to each item, the correction formula should be applied. Example: for two option, score equals right minus wrong ($S = R - W$). For three options, score equals right minus one-half wrong ($S = R - 1/2 W$ or $S = R - W/2$). Correction formula is not applied to four or more options. If correction formula is employed students should be informed beforehand. 6.

Evaluating the Test. The test is evaluated to know

the quality of the student's responses and the quality of the test itself. Index difficulty and discrimination

161 index of the test item is considered. Fifty (50) per cent difficulty is better. Item which are 100 per cent answered and zero (0) per cent answered by students is

valueless in a test of general achievement. 7. Interpreting Test Results. Standardized achievement tests are interpreted based on norm tables. Table of norm are not applicable to teacher-made test.

As our concern is on teacher-made test, let's delimit our discussion to it. Norm is not essential for it.

Types of Teacher Made Test I. Essay Examination Essay examination consists of questions where students respond in one or more sentences to a specific question or problem. It is a test to evaluate knowledge of the subject matter or to measure skills in writing. It also tests students' ability to express ideas accurately and to think critically within a certain period of time. Essay examination maybe evaluated in terms of content and form. In order to write good essay test, it must be planned and constructed in advance. The questions must show major aspect of the lesson and a representative samples. Optional questions

are to be avoided and large number of questions with short answer are to be preferred

rather than short question with very long answer. According to Monroe and Carter there are twenty types of essay examination as cited by Calmorin, 1994.

These are as follows:

a. Selective recall. The basis is given. Example – Name the four types of skills in ELT and their function in the classroom.

b. Evaluating recall. The basis is also given here. Example – Name five strategies by which one can be a good reader of English.

c. Comparison of two things (specific). There is one single designated basis. Example – compare the type of mother tongue influence that is found in grammar translation method and that of direct method. d.

Comparison of two things (general). Here comparison is made between two things in general. Example – compare grammar translation method with direct method.

e. Decision (for or against). Example – In which in your opinion, can you do better, an oral or a written examination? Why? 162 f. Cause or Effect. Example – Why is

listening a pre-requisite for better speaking?

g. Explanation of the use of exact meaning of some phrases or statement in a passage. Example – What does 'melancholy song' signify in the poem "The Solitary Reaper"?

h. Summary of some unit of the test or some articles read. Example – Summarize the first two paragraphs of the poem "The Solitary Reaper". i.

Analysis. (The word itself is seldom used in the question). Example – What are the characteristics of active listening by which you can differentiate it with passive listening?

j. Statement of relationship. Example – Why is the knowledge of grammar an essential for better writing? k. Illustrations and examples of principles of construction in language, etc. Example – From your own experience give three examples of the use of adverbs in your daily life. l. Classification. Example – To

which skill of language does 'debate' belong to?

m. Application of the rules or principles in new situations. Example – Why should

the mechanics of writing be taught before the students are taught free writing?

n. Discussion. Example – Explain briefly the four skills of ELT. o. Statement of aim. Example – State the principles of better writing. p. Criticism. As to the adequacy, correctness, or relevance of a pointed statement or student's answer to a question on the lesson. Example – What is wrong with the statement "Practice makes perfect". q. Outline. Example – Outline the rules in constructing matching type test in English. r.

Reorganization of facts. (a good example of review-question to give training in organization). Example – Discuss how functional communicative approach can be used in Indian classroom. Does it require any modification? s.

Formulation of new questions, problems and questions raised. Example – What else must be known in order to understand the

skill of reading better other than the matter under consideration? t. New method or procedure. Example – Formulate a conversation between two strangers on the topic of 'giving information for a nearby fair'.

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Advantages of an Essay Examination: a.

Easy to construct. In terms of preparation, essay examination is easier to construct. Thus it saves time and energy. b.

Economical. Economical when it comes to reproduction of materials. It can be written on the board. c. Trains the core of organizing, expressing and reasoning power. Encourage students to think critically and express their ideas. d. Minimizes guessing. Guessing is minimized because it requires one or more sentences. e. Develops critical thinking. Essay type questions call

for comparison,

analysis, organization of facts, for criticism, for defense of opinion, for decision and other mental activity. f. Minimizes cheating and memorizing. Essay test minimizes cheating and memorizing because essay tests are evaluated in terms of content and form and that an answer to question is composed of one or more sentences. g. Develops good study habits. It can develop good study habits in the sense that students study their lesson with comprehension rather than rote

memory. Disadvantages of Essay Examination:

a.

Low validity. It has low validity for it has limited sampling. b. Low reliability. This may occur due to its subjectivity in scoring. The tendency of the teachers to react unfavorably to answers of students whom he consider weak and give favorable impressions to answers of bright students

affects the reliability. c. Low usability. This kind of test is

time consuming to both teacher and students wherein much time and energy are wasted. d. Encourage bluffing. It encourages bluffing on the part of the testee. The tendency of the students who does not know the answer is to bluff his answers just to cover up his lack of information. If bluffing becomes satisfactory on an easy examination, inaccuracy of the measuring instrument may occur and evaluation of the students' achievement may not be valid and reliable.

e.

Difficult to correct or score. Difficulty on the part of the teacher to correct or score occurs as the

answer consists of one or more sentences.

164 f.

Disadvantages for students with poor penmanship. Some teachers

react unfavorable to responses of students having poor handwriting and untidy papers. Scoring an Essay Examination:

a. Brush up the answers before scoring. b.

Check the students' answer against the prepared model. c. Quickly read the papers on the basis of your opinion of their worthiness and sort them into five groups: 1) very superior, 2) superior, 3) average, 4) inferior, and 5) very inferior.

d.

Read the responses of the same item simultaneously. e. Re-read the papers in each group and shift any that you feel have been misplaced. f. Avoid looking at the names of the paper you are scoring. II. Objective Examination The two main

types of objective tests are the recall and the recognition. The recall type is categorized as to: a. Simple recall b.

Completion The recognition type is categorized as: a. Alternative response b. Multiple choice c. Matching type d.

Rearrangement type e. Analogy

Recall Type 1. Simple recall type. This test is one of the easiest tests to construct among the objective types where the item appears as a direct question, a stimulus word or phrase, or a specific direction. The response requires the subject to recall previously learned materials and the answers are usually short.

Example– Name the part of speech which is used to join two sentences.

165 2.

Completion test. This test consists of a series of items which requires the subject to fill a word or phrase on the blanks. An item may contain one or more blanks. Indefinite and overmutilated statements, keywords and statements directly taken from the book should be avoided.

Example: Mr. Mitra died --snake bite.(Use correct preposition in the blank).

Recognition Type 1. Alternative Response Test. This test consists of a series of items where it admits only one correct answer in each item. This is commonly used in classroom testing.

Some of the dichotomous alternative are true-false, right-wrong, yes-no, correct-incorrect, etc. Example: adverb qualifies a noun. (

true/false)

Suggestion for the Construction of Alternative Response Type: a. Items must be arranged in group of five and each group must be separated by two single spaces. b. Responses must be simple as TF, XY, etc. and if possible be placed in one column at the right. c. Avoid lifting similar statement from the test. d. Language to use must be within the level of students. Flowery words must be avoided. e. Specific determiners like all, always, none, never, not, nothing, no, are more likely to be false and so must be avoided. Moreover, determiners as may, some, seldom, sometimes, usually, and often are more likely to be true, hence, these should

also

be avoided. f. Qualitative terms as few, many, great, frequent, and large are vague and indefinite and so they must be avoided. g. Partly right and partly wrong statement must be avoided. Consider statement that represents either true or false. h. Ambiguous and double negative statements must be avoided. 2. Multiple Choice Type. This consists of items

having three or more plausible options. It is regarded as one of the best tests. This is widely used due to its flexibility and objectivity in scoring. In teacher-made test, it is applicable for

166 testing vocabulary, reading comprehension, relationship, and drawing inferences from a set of data.

Example: Bibhas --- for Benaras to offer puja to lord Shiva. (Carries out, Sets out, goes out)

Rules and suggestion for the Construction of Multiple Choice Items: a. The main stem of the test item may be constructed in question, completion or direction form.

b. Questions that tap only rote learning and memory should be

avoided. c. Use unfamiliar phrasing to test students' comprehension, thus avoid lifting words from the

text. d. Four or more options must be provided to minimize guessing. e. Uniform number of options must be used. f.

Arrangement of correct answers should not follow patterns. g. Articles "a" and "an" are avoided as last word in an incomplete sentence. This word gives clues. h. Alternative should be arranged according to length. Varieties of Multiple Choice Type items: a. Stem-and-options variety. This is commonly used in the classroom and other standardized test.

The stem serves as the problem and is followed by four or more options. b. Setting-and-options variety. The optional responses are dependent upon a setting or foundation which includes graphical representation, a sentence, paragraph, pictures, equation, or some forms of representation. c. Group-term variety. Consists of group or words or items in which one does not belong to the group. d. Structured-response variety. This makes use of structure response which is commonly used in testing natural science subjects. This test on how good the students are to judge statements which are closely related. e. Contained-option variety. This variety is designated to identify errors in a word, phrase, sentence or paragraph. 3.

Matching Type. This type consists of two columns in which proper pairing

167 relationship of two things is strictly observed. Column A is to be matched with column B. It has two forms: balanced and unbalanced, the latter being preferred. In balanced type the number item is equal to the number of option. In unbalanced type, if there are 5 items in column A there are 7 items in column B. Remember, the ideal number for matching type is 5 to 10 and maximum of 15. In constructing matching type, avoid using heterogeneous materials. Do not mix dates and terms, events and person and many others. the question item should be placed on the left and the option on the right. option column should be in alphabetical order and dates in chronological order.

Example: 1. _____ apples A. Yellow 2. _____ oranges B. Red 3. _____ bananas C. Purple 4. _____ plums D. Orange E. Blue 4.

Rearrangement Type. This type consists of a multiple-option item where it requires a chronological, logical, rank, etc., order.

Example: rearrange the following in their order to make a meaningful paragraph. (A) While doing so, we may also correct any distortions that we may discern (B) With all our experience and insight, we should be able to visualize them well in advance (C) The celebration of the 50th anniversary of the country's independence is a historic moment (D) Also, it is a time to consolidate on the gains that we have made (E) But, most of all, it is a time to gear up for the opportunities and challenges that lie ahead. (F) It is a time to introspect and evaluate what we have achieved in the last five decades

168 5. Analogy Type:

This type is made of items consisting of a pair of words which are related to each other. It is designated to measure the ability of students to observe the pair relationship of the first group to the second. The kinds of relationship may be: according to purpose, cause and effect, part-whole, part-part, action to object, synonym, antonym, place, degree, characteristics, sequence, grammatical, numerical and associations.

Example: a whale lives in the ocean, like wise find out answer for the rest using the same analogy and make sentences. car snake tiger

Advantages of Objective Type Test: a. Easy to score. It is easier to correct due to short responses involve. b. Eliminates subjectivity. This is due also to short responses. c. Adequate sampling. More items can be included where validity and reliability of the test can be adequately observed.

d. Objectivity in scoring. Due to short and one correct answer in each item. e. Eliminates bluffing. Since the students only choose the correct answer. f. Norms can be established. Due to adequate sampling of test. g. Save time and energy in answering questions. Since the options are provided, time and energy may be utilized properly. Limitations of Objective

Test: a. Difficult to construct b. Encourages cheating and guessing. c. Expensive. Due to adequate sampling, it is expensive in terms of duplicating facilities. Questions cannot be written on the board. d. Encourages rote memorization. It encourages rote memorization rather than memorizing logically because an answer may consist only of a single word or a phrase. A student's ability to think critically, express, organize and reason out his ideas is not developed. e. Time consuming on the part of the teacher.

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Check Your Progress-3 Q1. What is a teacher-made test?

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..... Q2. How is a recall type question different from a recognition type question?

..... Q3. What is an analogy type test item?

.....

..... 4.6 Teaching Portfolio

The Teaching Portfolio is a documented statement of a teacher's teaching responsibilities, philosophy, goals and accomplishments as a teacher. It is a flexible document, and can be used in a number of ways, depending upon the needs and interests of the faculty member.

Pat Hutchings, (1993) defines teaching portfolio as "a coherent set of materials, including work samples and reflective commentary on them, compiled by a faculty member to inquire into and represent his or her teaching practice as related to student learning and development." A teaching portfolio is a collection of documents that together provide a record of: The ideas and objectives of teaching The courses to be taught The methods to be used

170 One's effectiveness as a teacher How one assesses and improves his/her teaching

A good teaching portfolio is one that has clear statements of teaching responsibilities and goals, and solid evidence showing how those goals have been reached. A teaching portfolio is a dynamic document, and must be updated continuously. It becomes a lifetime record of a faculty member and his/her scholarly achievement as a teacher.

There are three major parts in a

portfolio: 1. Teaching responsibilities This section is typically a list with a brief explanation of the faculty member's teaching responsibilities. In essence it describes "What one does as a teacher"

with supportive narrative as to the content, level, size, special circumstances, or other relevant details about the courses. For example, the faculty member would list courses taught by title, term it was taught, number of students enrolled, whether a lecture or a seminar, etc. Also, any independent study courses, honors courses, or dissertation mentoring would be included here. 2. Teaching philosophy and goals Secondly, the teacher states his or her philosophy and goals for teaching. Here the focus is "Why one did it."

The following questions may be appropriate for this:

Given my responsibilities, what goals did I attempt to reach through my teaching? Why did I choose to teach in the manner I used? What was I trying to achieve as a teacher? What did I expect my students to gain from my course: mastery of content, critical thinking skills, etc? For example, an instructor may state that he or she wants the

students to develop critical thinking skills. Then the instructor explains that this goal lead to a different style of teaching beyond the content-based lecture to include cooperative learning activities and out of class research assignments. 3.

Evidence of effective teaching Finally, a collection of data and documents present a record showing how well the teacher met his or her teaching goals. This

concerns itself with the phrase "How one did it" and

includes a review and interpretation of the results of students, survey ratings,

171 peer review, alumni letters, teaching awards and classroom assessments of student learning. As in the example above in (2), if an instructor states as a goal that students should develop critical thinking skill, then evidence to show how this goal has been accomplished should be presented, e.g., results from exams, assignments and classroom assessments that show progress towards critical thinking skills, results from students' evaluations, etc.

Key Functions of a Teaching Portfolio is to: Collect evidence of teaching ability Contextualize the process of teaching

Summary data must be in a simple, readable format Focus on quality, not on quantity Organized and its various sections

relate to each other Allows for self-reflection Provide an opportunity to show one's personal style of teaching

Importance of a Portfolio for a Teacher of English? The teaching portfolio can serve many purposes for a teacher of

English. Some of these are: It reflects the teacher's goals as a language trainer It helps in assessing one's teaching

strengths and areas which need improvement It documenting one's progress as a teacher It generates ideas for future

teaching/course development It helps in identifying one's personal teaching style It helps to find out new ways of

gathering student feedback It helps the teacher in collecting multiple sources of evidence that document the

implementation of one's teaching goals and their success Check Your Progress-4

172 Q1. Mention three major part of a teaching portfolio?

..... Q2. What help can a teacher of English get from portfolio?

..... Q3. How can a portfolio be a part of continuous and comprehensive evaluation?

..... 4.7 Let Us Sum Up Instructional Materials, when carefully selected and integrated, can ensure that student develop the right attitude toward-instructional content. Furthermore, classroom interaction between the teacher and students can be enhanced through its proper use. The use of it would also promote teachers' efficiency in the design, production and handling of classroom transaction. With its judicious use teachers can make students' attitude more positive, encourage their self-motivation, demonstrate associated factors and ideas, highlight specific topics and concepts, encourage relevance and credibility, and enhance understanding. The teachers can also deliver their lessons with much more vigour. Teacher-made tests play important role in the evaluation of student's performance. These can be essay type or objective type. Essay type tests are essential for the measurement of higher order learning skills whereas objective type tests are useful in measuring the

173 factual and conceptual knowledge of the learners. The exceptional children are exceptional in all matters. They cannot get the benefit from the teaching learning material designed for normal children. Hence different kind of adaptations are essential for them to get the maximum benefit. There are some general provisions and also some specific provisions by which we can adapt the teaching learning material to yield the maximum benefit. 4.8 Answer to "Check Your Progress" Check Your Progress-1 Q1. Because a television satisfies both the auditory and visual thirst of the learners Q2. As teachers are not there in open and distance learning, the learners have a direct emotional attachment with the teaching learning materials. Q3. Reliability, relevance and cost are three criteria of selection of teaching learning material. Check Your Progress-2 Q1. Story-telling board, graphic board, sorting board, game board, creativity board and collection board are different kinds of flannel boards used in teaching English to the young learners. Q2. A picture cut-out is used to emphasize a particular part of subject matter under our discussion. By over emphasizing the concept we draw the attention of students as desired. Q3. A language game is a joyful and fun based activity through which learners are exposed to different kinds of linguistic items meant for developing their linguistic efficiency. Q4. Worksheets provide a package of linguistic items to the learners on any given concept or subject matter. It aims at developing mastery on that very subject matter. Check Your Progress-3 Q1. A teacher-made test is a technique of evaluation where the items are prepared by

174 the concerned subject teachers of the school in order to test the learning progress of students. Q2. In a recall type question the learner has to retrieve information purely from his/ her mind. But in a recognition type question the learner has the privilege to get the options for it. Q3. An analogy type test item is an item where questions are asked to find out relationship between two concepts. Check Your Progress-4 Q1. The three parts of a portfolio are teaching responsibility, teaching philosophies and goal, and evidence of effective teaching. Q2. The teacher of English can get the following helps from a portfolio. it documenting one's progress as a teacher it generates ideas for future teaching/course development it helps in identifying one's personal teaching style it helps to find out new ways of gathering student feedback Q3. A portfolio gives a comprehensive information about the teaching learning process in a given academic year. It is also a living record which means it is constantly updated. So it is both comprehensive and continuous. Check Your Progress-5 Q1. As these students are not normal and they have deficiencies to overcome, these learners need extra help in their learning. material adaptation will help them learn better. Q2.

Break tasks into smaller subtasks. Provide additional practice to ensure mastery.

Q3. If a disabled child is found Is reluctant talkers during group activities then give the child a turn to talk after another child who is particularly talkative. This gives the reluctant child ideas about what to say.

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Has difficulty staying focused during small group activities, then have him sit in such a way that distractions are minimized, such as away from the window or door or next to quieter children. 4.9

Unit End Exercises Q1. Describe the role of instructional material in ELT. Q2. How are charts useful in ELT? Q3. Briefly explain different types of objective test items used frequently for testing English proficiency. Q4. How are adaptation in TLM helpful for the disabled learners. 4.10 References Association for Educational Communication and Technology (AECT) (1977). The definition of educational technology. Washington DC: Author Agun, I. (1988) Educational media management. In I. Agun & I. Imogie (Eds.). Fundamentals of educational technology. Ibadan: Y: Books. Apel, H.J. (1993). Teacher training in theory and practice. /Education, 47. 25-43. Blythe-Lord, R. (1991). The educational media design handbook. London: Macmillan.

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179 Unit - 5 Evaluation Structure 5.1 Introduction 5.2 Objectives 5.3 Evaluation - concept and need 5.3.1 Concept and
Types of evaluation 5.3.2 Need and Importance of Evaluation 5.4

Testing

language skills and language elements (Vocabulary, grammar and phonology) 5.5

Adaptation

of evaluation tools for children with disabilities 5.6 Individualized assessment for children with disabilities 5.7 Error
analysis, diagnostic tests and enrichment measures. 5.8 Let Us Sum Up 5.9 Answer to "Check Your Progress" 5.10
Unit End Exercises 5.11 References 5.12 Webliography 5.1 Introduction It is a well-known fact that any teaching is
preceded by, collaborated with and succeeded by evaluation of different kinds without which the act of teaching would
lose much of its vitality. Any decision taken in the field of education is directly or indirectly associated with the system of
evaluation. English, being a foreign language needs quite a good attention in this regard. Evaluation helps the teacher
know his/her effectiveness as a teacher. It also helps him/her and the concerned authorities to take right kind of
academic decisions on the basis of assessment results. It helps in the promotion of the learners to the next higher course
of instruction. There are many more functions of evaluation. Let's study evaluation in the context of ELT (English
Language Teaching).

180 5.2 Objectives After having gone through the unit, the students will be able to: ? Know the concept and varieties of evaluation Know different language skills and how they are tested Know different evaluation tools in English and how best they could be adapted to suit the CWSN Understand the essentialities of individual assessment for disabled children Know the concept of error analysis and diagnostic test and will understand their needs in ELT 5.3 Evaluation - Concept and Need 5.3.1 Concept and Types of Evaluation Evaluation is a comprehensive term that includes the assessment of learners' ability, attitude and knowledge with the help of tools and instruments in order to take academic decisions about the learners. The terms which have association with evaluation are assessment, measurement, examination and test. Though these terms have different meanings but they are used in the context of evaluation. The meaning of the term assessment is closer to that of evaluation, which means judging the efficacy of a course of instruction or learners with the help of some measuring instruments with respect to certain pre-fixed standards. Measurement is the quantification of students' performance in a given test after instruction is carried out for a stipulated period. Examination is the process through which students' academic capacity is measured. Test is a tool or instrument through which examinations are carried out. Evaluation is 'formative' when it is carried out during the course of instruction in order to bring improvements in the proficiency level of learners. The teacher uses varieties of means to judge the performance of students during the course of instruction. This evaluation also helps the teacher know his/her skill in the teaching learning transaction. The example of a formative test can be class test after a chapter is over, periodical spelling test, periodical reading test etc. Evaluation is 'summative' when it is taken at the end of a course. It is used for promotional purpose. The students' performances are summarised and decisions are taken whether to promote them to the next higher class or not. The example of a summative test can be

181 the session-end test of class ix after which the decision of promoting the students to class x will be taken. Evaluation is 'diagnostic' when it tries to find out the inherent learning difficulties of learners. In course of their learning, some learners may not have satisfactory progress. This may happen due to various causes relating to the learner. Diagnostic test intends to find it out. For example, if two students of a particular class commit spelling errors then a diagnostic test relating to spelling may be conducted in order to know the causes of spelling errors. Evaluation is 'placement based' when it intends to select students for a required course of instruction. For example, if we want the best speaker in a school should be the secretary of debate club then we must select the best student-speaker from the existing talent pool. Evaluation is continuous when it happens all the time through numerous interactions of the teacher with the students. There is no specific time or place for it. An evaluation is said to be comprehensive when it tests the students in all three domains– cognitive, affective and psychomotor. 5.3.2 Need and Importance of Evaluation We now have an idea about the essentialities of evaluation in educational practice. Let us discuss it specifically. i. Evaluation helps in deciding the effectiveness of a course of instruction ii. Evaluation helps the teacher to know his ability and makes him/her aware of the academic loopholes iii. Evaluation helps to take important academic decisions iv. Evaluation gives feedback to the students about their performance and ability in any subject of discussion v. Evaluation promotes students into next higher classes vi. Evaluation screens students and selects the fittest candidate for right course of instruction vii. Evaluation brings motivation among the learners to learn new things Check Your Progress-1 Q1. How is formative evaluation different from summative evaluation?

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182 Q.2 When can be an evaluation comprehensive?

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..... Q.3 Briefly state the importance of evaluation in educational process.
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..... 5.4
Testing Language Skills and Language Elements (Vocabulary, Grammar and Phonology)

At all levels but the most elementary, it is generally advisable to include test items which measure the ability to communicate in the target language. How important, for example, is the ability to discriminate between the phonemes /i:/ and /I/? Even if they are confused by a testee and he or she says look at that sheep sailing slowly out of the harbour, it is unlikely that misunderstanding will result because the context provides other clues to the meaning. All languages contain numerous so-called 'redundancies' which help to overcome problems of this nature. Furthermore, no student can be described as being proficient in a language simply because he or she is able to discriminate between two sounds or has mastered a number of structures of the language. Successful communication in situations which stimulate real life is the best test of mastery of a language. It can thus be argued that fluency in English—a person's ability to express facts, ideas, feelings and attitudes clearly and with ease, in speech or in writing, and the ability to understand what he or she hears and reads—can best be measured by tests which evaluate performance in the language skills. Listening and reading comprehension tests, oral interviews and letter-writing assess performance in those language skills used in real life.

5.4.1 Vocabulary as a Language Element

One of the areas in which the first and second language speakers differ substantially is the use of vocabulary. The handling of vocabulary in both the cases is quite different. While it is expected that the native speakers are well aware of the common vocabulary 'use-patterns' the second language learners may not have that level of awareness. In case of English the same principle holds true.

183 The second language learners are very often economical with their use of words. This is because of the dearth of stock words and phrases they want to use. Hence they start pulling the near-meaning words or breaking the conversation and writing into segments that convey the meaning without using the correct word. For example, if a second language student wants to use the word 'sailor' but if he/she does not know the word or failed to remember it, s/he can express it saying the 'boat-man' or 'the person who goes deep into the sea'. This of course depends on the frequency of the word heard or read by the target learner. The lower the frequency of words, the lower is the probability of being used. Another factor that determines the knowledge of vocabulary is the learner's culture and personal linguistic world. The more the learner can relate words and phrases into his own world the more s/he learns. Not only that, very often the learners own mother tongue or first language intrudes upon the territory of the second language. Code-switching and code mixing are the examples of this. This happens due to the lack of exposure for the target language. In most cases the learners who are English- disadvantaged are because of their limited exposure of the target language and preponderance of first language upon the later. Any second language learner of English must know at least 2000 most commonly used words in order to prove him/her as a good communicator. Learners face more difficulty in using functional words and chunk words, such as get a job, make coffee than the so called common words.

Testing Vocabulary

A test of vocabulary measures students' knowledge of the meaning of certain words as well as the patterns and collocations in which they occur. Such a test may test their active vocabulary (the words they should be able to use in speaking and in writing) or their passive vocabulary (the words they should be able to recognize and understand when they are listening to someone or when they are reading). Obviously, in this kind of test the method used to select the vocabulary items (=sampling) is the utmost importance. While testing a student's vocabulary the first task here is to determine the degree to which we want to concentrate on testing the students' active or passive vocabulary. The next task is to decide whether lexical items in the test should be taken from the spoken or the written language. Vocabulary as a language element pervades in all the four skills of language—listening, speaking, reading and writing. We can test knowledge of vocabulary through all these elements. Let's discuss one by one.

1. Test of Vocabulary through Listening Comprehension

Here the learner is to be exposed of an audio programme for a period of 15 minutes to 30 minutes. Then s/he is to be asked to describe the theme of the audio matter within

184 five best words. Or the learner may be asked to give a title for the audio talk s/he has listened. The time limit and word limit may vary according to the maturity of the students. A marking scheme is to be built on the theme of the audio programme and it is to be clearly decided about how much number is to be given for what kind of words and phrases. Here, a possible list of words and phrases are to be prepared in advance to make the evaluation ease.

2. Test of Vocabulary through Oral Production Tests Conversational exchanges At first a class is to be divided into pairs. The teacher must arrange the pairs in such a way that meaningful conversation can take place. A theme or concept is to be given to each of the pair to make conversation. The time limit and word limit may vary according to the maturity of students. The teacher will prepare a rating scale on the theme/s and will assign marks to the students. The best use of vocabulary will get the highest mark. Using pictures for assessing oral production Some pictures are to be selected as per the maturity of the students. Then they are asked to describe the pictures. Here, with the usage coherence and cohesion are also to be judged. For this a comprehensive marking scheme is to be prepared. The short talk Learners are asked to give a short talk of 5-10 minutes based on a theme or concept. The list of potential vocabulary is to be framed. Learners are awarded marks as per the use of vocabulary. Group discussion and role playing Learners are given topics on which group discussions can be carried out. The flow and fit of vocabulary is measured for each learner by an expert or by the teacher. The same can be done with role-playing.

3. Test of Vocabulary through Reading Test Matching tests (word matching, sentence matching) Matching is a linguistic game which can be used to promote knowledge of vocabulary among young learners. The learners are asked to match column 'A' with column 'B' finding appropriate resemblance for each other. Below given are the examples of two different kinds of word matching, one is relationship-based and the other picture-based. Both are helpful in building up vocabulary talent among learners.

185 Similarly, sentence matching test can be given to learners of higher grade. Below given are the examples. rain no neck coat car ring night glasses out gown over fit sun coat under bag hand wear

186 Completion items This is another way to test learners' vocabulary talent. Here a sentence is given to the taste and somewhere in between there lies a blank space to be filled by the learner with correct word or phrase. Here is an example for your better understanding. There are some people who think that only the poor and less educated people use slang, but this idea is _____. (A) accurate (B) popular (C) erroneous (D) widespread (E) ineffectual

Rearrangement items Rearrangement items are a bit developed form of testing vocabulary talent of young learners. These tests are for higher grade learners and for the students who at least read English for four to five years. This type of item not only tests the knowledge of vocabulary but also the higher order cognitive skills like analysis, synthesis and evaluation. Let's take an example. In this example the learner is given six sentences of which the first and sixth are in order. s/he has to rearrange the rest four in their perfect order in order to make the theme meaningful. (1) Even though he had prepared well P. in the examination hall Q. and could not do R. for the examination S. he got nervous (6) as well as he had hoped to do

Cloze Test A test in which one is asked to supply words that have been removed from a passage in order to measure one's ability to comprehend text. Cloze tests provide evidence of how easy a text is to read and understand for a specified target audience.

Cloze

reading tests are used by teachers to measure how well a student comprehends a reading

passage. Cloze reading exercises are short passages or paragraphs where you supply the missing words which have been removed from the test's passage.

187 A Cloze Reading Test can be referred to as a "deletion test", as key words in the passage are left blank or deleted for you to fill in. Close Test activity or procedure is also referred to as an English exercise or assessment quiz. Cloze tests are great vocabulary builders and are indicative of your level of English comprehension. Cloze reading test can be multiple choice, where you may be required to choose from a list of words to "fill in" the blanks, or be required to select the best word to complete the sentence based on your vocabulary skills. In the latter, the students' answers may vary but are required to make grammatical sense.

Below given is an example of cloze test.

Cloze Practice Paragraph Can we see (1) the earth is a globe? Yes, we can, when we watch a ship that sails out to sea. If we watch closely, we see that the ship begins (2) The bottom of the ship disappears first, and then the ship seems to sink lower and lower, (3) we can only see the top of the ship, and then we see nothing at all. What is hiding the ship from us? It is the earth. Stick a pin most of the way into an orange, and (4) turn the orange away from you. You will see the pin disappear, (5) a ship does on the earth. 1. A. if B. where C. that D. whether E. when 2. A. being disappeared B. to be disappeared C. to have disappeared D. to disappear E. having disappeared 3. A. until 188 B. since C. after D. by the time E. unless 4. A. reluctantly B. accidentally C. slowly D. passionately E. carefully 5. A. the same B. alike C. just as D. by the way E. similar to

4. Test of Vocabulary through Writing The knowledge of vocabulary is best tested through writing skill. But for it the learner must be prepared enough and must have mastered the other skills. Let's discuss some of the means through which we can test the vocabulary talent of learners. Testing composition writing A composition is a piece of writing formed by putting together the ideas you have on a subject. This suggests two important points about writing a composition. The first is that you must have some ideas on the subject about which you are going to write. The second is that you must be able to put these ideas together in such a way that they will form an effective whole. For this along with other skills one primary need to write better composition is having a good stock of vocabularies. A composition can be controlled or free. For young learners controlled and guided composition is better. When the learner develops maturity in writing then only free composition can be introduced to test him/her.

189 5.4.2 Grammar as a Language Element Grammar is the study of how words come together to form sentences categorized by meaning, form, and function, English words fall into various parts of speech: nouns, pronouns, verbs, adjectives, adverbs, prepositions, conjunctions, articles, and interjections. One can communicate more clearly if s/he understands how each of these parts of speech operates in a sentence. The ultimate goal of teaching grammar is to provide the students with knowledge of the way language is constructed so that when they listen, speak, read and write, they have no trouble applying the language that they are learning. Language teachers are, therefore, challenged to use creative and innovative attempts to teach grammar so that such a goal can successfully be achieved. In other words, whatever exercises are given, the most crucial thing is that the teachers provide the students with an opportunity to be able to produce the grammatical item making use of syntactically and semantically correct examples of sentences comprised of appropriate and relevant vocabulary. However, the knowledge of grammar of a second language learner in India (which is English here) has the following three features.

is accurate and follows the rules of English is influenced by the learner's first language conforms to a typical pattern of language development which does not reflect English or the first language

These above features say us about two kinds of knowledge that a learner usually possesses—explicit and implicit. Explicit knowledge is generally accessible through controlled processing. In short, it is conscious knowledge of grammatical rules learned through formal classroom instruction. In this respect, a person with explicit knowledge knows about language and the ability to articulate those facts in some way (Brown, 2000). For instance, Ramesh knows every rule about present tense, but he frequently makes mistakes in speaking and writing. Explicit knowledge is also obtained through the practice of error correction, which is thought to help learners come to the correct mental representation of a rule. the speaker is concerned with the correctness of her/his speech/written production; and s/ he knows the correct rules (Krashen, 1987). Implicit knowledge is automatic and easily accessed and provides a great contribution to building communicative skills. Implicit knowledge is unconscious, internalized knowledge of language that is easily accessed during spontaneous language tasks, written

190 or spoken (Brown, 2000). Implicit knowledge is gained in the natural language learning process. It means that a person applies a certain grammatical rule in the same way as a child who acquires her/his first language (for example, mother tongue). According to Brown (2000), the child implicitly learns aspects of language (for example, phonological, syntactical, semantic, pragmatic rules for language), but does not have access to an explanation of those rules explicitly. As an example, Rohit speaks and writes English with good use of present tense, although he has no idea about the grammatical rule behind it. To sum up, implicit knowledge is gained through a sub-conscious learning process. That is why native speakers of a language do not always "know" (consciously) the rules of their language. Now, let's come to the question of teaching. Teaching of grammar, all through the world, is dominated by two methods/approaches—deductive approach and inductive approach. A deductive approach is derived from the notion that deductive reasoning works from the general to the specific. In this case, rules, principles, concepts, or theories are presented first, and then their applications are treated. In conclusion, when we use deduction, we reason from general to specific principles. Dealing with the teaching of grammar, the deductive approach can also be called ruledriven learning. In such an approach, a grammar rule is explicitly presented to students and followed by practice applying the rule. The deductive approach maintains that a teacher teaches grammar by presenting grammatical rules, and then examples of sentences are presented. Once learners understand rules, they are told to apply the rules given to various examples of sentences. Giving the grammatical rules means no more than directing learners' attention to the problem discussed. To sum up, the deductive approach commences with the presentation of a rule taught and then is followed by examples in which the rule is applied.

In this regard, learners are expected to engage with it through the study and manipulation of examples. An inductive approach comes from inductive reasoning which says that a reasoning proceeds from particulars (that is, observations, measurements, or data) to generalities (for example, rules, laws, concepts or theories). In short, when we use induction, we observe a number of specific instances and from them infer a general principle or concept. In the case of pedagogical grammar, most experts argue that the inductive approach can also be called rule-discovery learning. It suggests that a teacher teach grammar starting with presenting some examples of sentences. In this sense, learners understand grammatical rules from the examples. The presentation of grammatical rules can be spoken or written. 191 Besides these two approaches a third approach of teaching grammar is gaining currency and is considered to be the best approach in teaching grammar to the young learners. This is called situational or contextual approach. The approach says that

if learners are to achieve a functional command of a second language, they will need to be able to understand and produce not just isolated sentences, but whole texts in that language. Language is context-sensitive; which is to say that an utterance becomes fully intelligible only when it is placed in its context.

This means language is to be taught in a real situation or creating a near-real situation through simulated activities. Grammar can be taught through text, through stories, through songs and rhymes that largely resembles the real situation. Testing the Knowledge

of Grammar The following are some of the common types of objective items used to test awareness of the grammatical features of the language.

They are as follows: 1. Multiple-choice items To test English grammar mastery, the multiple choice test must be used due to its merit of guaranteeing the fulfilment of the content validity of achievement tests.

The most common type of multiple choice grammatical item is one in which the test maker gives the testee a sentence with a blank and four or five choices of a word or phrase which completes the sentence correctly. An example is given below for better understanding. The boy stepped on a piece of ice and flat on his face a. fell b. fall c. felled d. fallen 2. Error-recognition items

Error correction items are also useful for testing grammar. An error correction item is one in which the testee is given a sentence with an error. Four words or phrases in the sentence marked with letters, and the testee needs to decide which of the words or phrases has the error.

This is one of the popular items of testing knowledge of grammar from young learners up to the adult learners.

Generally, an incorrect sentence is given; the students are asked to correct the sentence and rewrite it or are asked simply to find out the error and mention it separately or underline it.

192 Example: I have no difficulty to study the art of management. (find the error from the words underlined and correct the sentence) 3.

Items to Test Knowledge of Word/Sentence Order Items can be prepared to test testees' knowledge of word order. The traditional way is to present the testee with four alternative word orders. For example, I wonder how she knows a) how it costs much. b) how much it costs. c) it costs how much. d) it how much costs.

Understanding of appropriate sentence order can also be tested in a similar way by giving testees several sentences and asking them to put them in order. This type of test tests knowledge of references, cohesive devices, etc. 4.

Rearrangement items

Here the given elements have to be arranged in the correct order to form a phrase or a sentence. These items check grammar and reading. For example, '

Won't I need a coat?' 'Well, you know how.....' A. warm is it today B. today is it warm C. is it warm today D. warm it is today E. today is it warm 5.

Completion items Completion items are items in which the testees are asked to fill in blanks in sentences. For example, Give the book to----- woman in the blue dress. (

supply correct article to the blank space mentioned here. 6.

Transformation items Another type of grammar item makes use of transformations. In this type of item, testees

193 are given a sentence and the first few words of another sentence to change the original sentence without changing the meaning. For example, Jim hasn't been home in a long time. It's been a long time-----

7.

Word Changing Items Another type of item is one in which the testees are given a sentence and a word which they need to fit into the sentence by changing the form of the word. For example, I have never to Australia. (be) 8. '

Broken sentence' items These items consist of sets of phrases which have to be put together in a sentence by adding the necessary prepositions, articles, etc. to the given phrases.

This type of item tests the student's ability to write full sentences from a series of words and phrases, and thus not allow the test writer to concentrate exclusively on testing those particular grammatical features which may have just been practiced in class. It is nevertheless a useful device for testing grammar provided that the tester is aware that several other areas of the language are being tested in addition to those on which he or she wishes to focus attention. In this type of test item, students should be instructed to make whatever changes are necessary to form good sentences, adding articles, prepositions, etc. where required and putting verbs in their correct tense. Take / drug and stimulants / keep awake / while revise examination / often be very harmful / it be far better / lead / balanced life / and get enough sleep / every night. / There / be / limit / degree and span / concentration / which you be capable/ exert. / Brain / need rest / as much body. / Indeed, / it be quality / than quantity work / that be important. 9. Pairing and Matching Items

the aim in these items is to choose two words or phrases out of a whole set and to match them according to similar grammatical features, meaning etc. These items check grammar and vocabulary. 10. Combination Items

Sentence combining exercises can play a part in testing grammar as well as its more traditional use as part of composition testing and training. For example, testees might be instructed to combine the following sentences using a relative pronoun. I met a man. The man went to the same high school I did.

194 (I met a man who went to the same high school I did.) 11.

Addition Items Students are instructed to insert the word in capitals in the most appropriate place in each sentence. (a) Have you answered all the questions? (

YET) (

b) Some students had not mastered the correct techniques for answering examination questions. (STILL) (c) There may be little choice of questions. (

OCCASIONALLY) 12. Gap Fills or Close Tests These items look a lot like completion items but unlike the latter where the missing words have been erased subjectively by the teacher (only grammatical forms or only vocabulary) in cloze the erasing is systematic (every nth word is erased, usually every 5th, 6th or 7th irrespective of its function in the sentence). 13. True-false Statements These items are a variation of multiple-choice. Here you have to read or listen to a text and based on the reading or the listening, you have to consider whether certain sentences are true or false.

5.4.3 Phonology as a Language Element

Phonetics is concerned with how sounds are produced, transmitted and perceived. Phonology is concerned with how sounds function in relation to each other in a language. In other words, phonetics is about sounds of language, phonology about sound systems of language. Phonetics is a descriptive tool necessary to the study of the phonological aspects of a language. Whereas syntax is about sentence formation, and semantics about sentence interpretation, phonetics and phonology cover the field of sentence utterance. As phonetics and phonology both deal with sounds, and as English spelling and English pronunciation are two very different things, it is important to keep in mind that we are not interested in letters here, but in sounds. For instance, English has not 5 or 6 but 20 different vowels, even if all these vowels are written by different combinations of 6 different letters, "a, e, i, o, u, y". For example, take a word "please" and its phonetic transcription is [pli:z]. Thus the word please consists of three consonants, [p,l,z], and one vowel, [i:]. And sounds considered from the phonological point of view are put between slashes. Among these twenty vowel some are pure vowels and some are diphthongs. Let's know the soundsystem of English language with their phonetic transcriptions. This is given below.

195 In any language system phonology is an important component, so also in English. It constitutes the basics of any language system. The following are some of the causes for which phonology must be an important part of English language teaching and evaluation.

- Phonology brings reality in language teaching. Without it language teaching becomes prosaic and monotonous
- Pronunciation is an important part of communication and therefore, importance should be given to listening aspects to understand the message
- Phonology is an important component of metalinguistic awareness. The communication between teacher and taught is based on that. Hence, in any language teaching the basic matters, so in the case of phonology. But our concern here is not to discuss the pros and cons of it, but to discuss how this as a linguistic element can be best evaluated. But before that let us discuss some of the common problems faced by the second language learners in India and then we will move to the process of evaluation.

196 The first problem that Indian students face in learning English pronunciation is relating to articulation. The beginner starts articulating all the letters and thus giving a new dimension to speech. For example, in the word 'psychology' the letters 'p' is silent, but is pronounced by a beginner who comes across the word for the first time. Another problem is how to pronounce. Taking the same example, we can see that there is high probability that learners pronounce 'cho' in psychology as cho not ko. Learners are unaware of the disagreement between spelling and pronunciation of the sound. They try to infer the pronunciation through the spelling of words. The word 'think' can be pronounced as 'tink'. Thirdly, the students are unaware of the allophones of sound. For example, the sound / p/ will have three different sounds depending upon these contexts: pen, spool and cap. The first 'p' in 'pen' is pronounced as an aspirated sound, the second in 'spool' is unaspirated and the third in 'cap' is unexploded. The fourth problem for Indian English learner is its prosodic aspect. English has a different pattern of stress and rhyme, so also intonation. Rhyme and intonations are created by the alteration of stressed and unstressed syllables. The Indian learner has a different set of stress pattern in his/her mother-tongue. Not only that, English has different levels of stress—high-primary, medium-secondary, and tertiary. The Indian English learners are not aware about this fact most of the times.

Phonological Awareness Skill Test

Like other skills the teacher of English must test the knowledge of phonology among his/her learners. Test items designed to test phonology attempt to assess the following sub-skills:

- ability to recognize and pronounce the significant sound contrasts of a language,
- ability to recognize and use the stress patterns of a language,
- and ability to hear and produce the melody or patterns of the tunes of a language (i.e. the rise and fall of the voice).

Having good phonological awareness skills means that a child is able to manipulate sounds and words, or "play" with sounds and words. For example, a teacher asks a child to break the word "cat" into individual sounds: "c-a-t." The following activities can be undertaken to test phonological awareness skill among the learners: Recognizing when words rhyme (e.g., "Do 'cat' and 'shoe' rhyme?") and coming up with a word that rhymes (e.g., "What rhymes with 'key'?")

197 Segmentation of words in sentences (e.g., "Clap for each word you hear in the sentence 'The dog is furry.'") Blending syllables (e.g., "I am going to say parts of a word. Tell me what the word is. 'Pan-da.'") Segmentation of syllables (e.g., "Clap for each syllable you hear in the word 'refrigerator.'") Deletion of syllables (e.g., "Say the word 'strawberry.' Now say it without saying 'straw.'") Identifying sounds in words (e.g., "What sound do you hear at the end of 'tulip?") Blending sounds (e.g., "Put these sounds together to make a word. 'D-oo-r.'") Segmentation of sounds (e.g., "Tell me each sound you hear in the word 'cat?") Deletion of sounds (e.g., "Say 'chair.' Now say it without the 'ch.'") Addition of sounds (e.g., "Say 'cook.' Now say it with an 'e' at the end.") Manipulation of sounds (e.g., "Change the 's' in 'sad' to 'd' and say the new word.")

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Q.2 What are active and passive vocabularies?

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198 Q.3 What do you understand by inductive teaching of grammar?

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Q.4 How is phonetics different from phonology?

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5.5 Error Analysis, Diagnostic Tests and Enrichment

Measures 5.5.1 The Concept of Error Analysis Every learner has a mechanism of acquiring language. Noam Chomsky, the famous grammarian calls it Language Acquisition Device (LAD). It is so designed that when a learner learns another language the mechanism of the first language affects the process of learning the second language. Let us call the first language which is generally the mother tongue of the learner as L 1 and the target language, which is English as L 2 . The learning of L 2 is affected by the way L 1 is learnt. In the process of learning L 2 learners commit a lot of mistakes, which are called errors in English language learning. In order to make the process of learning English 'error-free' we need to analyse why these errors occur. Then we can find out the relevant solution for the same. This process of analysing the causes of errors, classifying them into different categories and finding out the ways to deal these errors is known as error analysis. An error is a form in learner's language that is inaccurate, meaning it is different from the forms used by competent speakers of the target language.

Error analysis

is a method that documents the errors that appear in learner language, determine whether those errors are systematic, and (if possible) explain what caused them.

While native speakers make unsystematic 'performance' errors (like slips of the tongue) from time to time, second language learners make more errors, and often ones that no native speaker ever makes. An error analysis focuses on errors that are systematic violations of patterns in the input to which the learners have been exposed. Such errors tell us something about

199 the learner's inter-language, or underlying knowledge of the rules of the language being learned (Corder, 1981, p. 10). Bose (2005) mentioned that one of the reasons for learner's

errors is the interference of his mother tongue, which is described as the negative and positive transfer between the mother tongue and the target language. The negative transfer happens when the forms of the target language and those of the learner's mother tongue are different from each other whereas, the positive transfer between the mother tongue and the target language is similar. He added that a teacher can plan remedial teaching after he corrects the written compositions of his learners and collects their common errors in a note book. Ferguson (1965) pointed out that one of the major problems in the learning of a second language is the interference caused by the structural differences between the native language of the learner and the second language.

Error analysis theory first distinguishes an error from a lapse or a mistake. It is thought that an error appears when a learner is ignorant of a certain language rules and makes errors in usage, but a lapse or mistake appears when a learner is so careless that he/she does not use the language rules he/she has mastered. Then causes for errors are divided into three parts roughly: (1) inter-lingual errors: The learners bring the habits of mother tongue into target language, which leads to negative language transfer; (2) intra-lingual errors: This kind of errors are caused by the learners' wrong understanding about the rules of target language or by incomplete learning; and (3) other errors: errors in improper teaching or learning materials; in cultural habits of target language; in pronunciation and words; and in usage, expressions, and style. This shows language acquisition is a creative process of constantly making errors. Students will make progress in language by making errors and correcting them. 5.5.2 Need of Error Analysis Firstly, learners accept large amount of language input, then process and digest the new information, and finally change parts of the knowledge into their own skills. During the learning, it is inevitable and natural for learners to make errors for it is these errors that show they are working hard and try to put what they have learned into practice. Gaies (1983) thought that in the past years, errors were regarded as a window of language acquisition and a reflection of language internalization. Secondly, through analyzing and studying the learners' errors during their learning, teachers will obtain helpful information, focus on the weak points in teaching, improve

200 teaching methods, get the best teaching results. Error analysis changes people's attitude to errors and helps people understand the process and the nature of Second Language Acquisition (SLA). For students, errors do not mean failure, but are necessary parts for students to master language rules correctly and develop language ability. Students learn through making errors, realizing them, and correcting them. 5.5.3 Causes for Errors LIN Shan-ling (2012) has generalised three broad causes for all the errors that second language learners commit. These are as follows: Inter-lingual Errors Inter-lingual error occurs when learners bring their mother-tongue and its cultural habits into the learning and practice of target language. This kind of errors is regarded as negative language transfer, and is influenced by the interference of their mother tongue. For Bengali students, the interference of Bengali causes different vocabulary and grammatical errors in English. Since learners know little about the culture and customs of target language, they tend to imitate the cultural habits of their mother tongue when practicing the target language, which leads to language errors. Intra-lingual Errors In human language learning process, learners try to generalize the language materials they have learned and discover the language rules. Intra-lingual errors result from the learners' incomplete or wrong understanding of the target language rules. Since the students' English knowledge is limited, when they try to generalize some language rules too much or too little, they are usually affected by intra-lingual interference and make errors. For example, students have learned the past forms of some verbs ("work", "play", "want") are to add "-ed" after the verbs("worked", "played", "wanted"). By generalization, they think that the past forms of all verbs' follow the same rules.They start writing "goed" for "go", "haved" for "have" and "buyed" for "buy". Other Errors In practice, learners will make errors in speaking, writing, or expressing because of their concentration, fatigue, attitude, or nervousness. For example, some learners will make such error in oral practice just because of nervousness: "He is my sister". On the

201 other hand, improper teaching or excessive emphasis on certain grammar rule will give students a wrong impression and then result in errors. For example, when explaining the passive voice, the teacher gives many example sentences: "I was asked to stand up", "She is given a gift", and "The tree was cut down". Then the students will be under the illusion that all English verbs can be used in passive voice. So in their writings, there will be the errors: "An accident was happened yesterday", and "The soup is tasted delicious".

5.5.4 Types of Error

Different Types of Language Errors exist in English. Let's bring some common denominations for error classification. For your ease in understanding the errors are divided into two broad categories—typical errors and skill-specific errors. Let's find these out.

Typical Errors

a) Performance errors and competence errors
Performance errors usually result from learners' tension, carelessness, fatigue, and distraction, which are called a slip of tongue or a slip of the pen. They do not put what they have mastered into practice correctly. This kind of errors is occasional and has no rules. The learners can find the errors and correct them by themselves. Competence errors appear, because the learners have no command of the system and rules of target language. This kind of errors will appear again and again in their learning and practice. The errors cannot be found and corrected by the students themselves and teachers should help them in right time lest these could be fossilized.

b) Global errors and local errors.
Global errors refer to the errors that break the sentence structure and interfere with the understanding of the sentence, for example: the wrong use or omission of conjunctions, reverse sentence order, and so on. Local errors refer to the errors which will affect the understanding of a clause or part of a sentence, for example: the wrong use of the ending change of a verb or a noun, and the abuse of articles or auxiliaries. But local errors do not interfere with the normal communicative behaviour.

Skill-Specific Errors

a) Errors in vocabulary
Vocabulary is the basis of English writing. Since students' vocabulary is quite limited, they cannot express themselves as a native speaker does and use limited words for 202 different purposes. They usually make errors in spelling, preposition, collocation, word choice, part of speech, and so on. Let's take some examples for this.

Example: Incorrect sentence: It only spends us 15 minutes to go to the market from our school.
Correct sentence: It only takes us 15 minutes to go to the market from our school. It is an error in word choice: different word with different sentence structure.

Example: Incorrect sentence: If we are told we can't recovery, we can choose the way of death—euthanasia.
Correct sentence: If we are told we can't recover, we can choose the way of death—euthanasia. It is an error in part of speech: "Recovery" is a noun but "recover" is a verb.

b) Errors in collocation
Collocation is the way words combine in English language to produce natural-sounding speech and writing. In English, some expressions like "receive the telephone", "open a check", "open TV", and "crowded traffic" are not proper. Instead the standard expressions should be "answer the telephone", "write out make out a check", "turn on TV", and "busy/heavy traffic". Because of the different cultural background, proper English collocation usage is a key obstacle to Indian students in their writings.

Example: Incorrect sentence: I am afraid that the price of the food is a little expensive.
Correct sentence: I am afraid that the price of the food is a little high. I am afraid that the food is a little expensive.

203 It is an inter-lingual error. When a price is talked about, the habitual expressions are "cheap" or "expensive". But in English, the words "high" or "low" are used to make a collocation with "price", and "cheap" or "expensive" usually makes a collocation with commodities.

c) Errors in grammar
The students' errors in grammar have something to do with the wrong usage of articles, tense, subject-verb agreement, singular and plural forms of nouns, non-predicate verbs, and so on.

Example: Incorrect Sentence: It was very interesting journey.
Correct Sentence: It was a very interesting journey. It is an article error: "journey" is a countable noun.

Example: Incorrect Sentence: Sandy is a pretty girl who loves music very much.
Correct Sentences: Sandy is a pretty girl who loves music very much. It is a subject-verb agreement error.

Example: Incorrect Sentence: I'll brush my tooth after eating my breakfast.
Correct sentence: I'll brush my teeth after eating my breakfast. It is a singular and plural form of noun error. When a noun is changed from a singular form to a plural form, some rules should be followed: Usually "-s" is added to a noun, which is called regular change; sometimes the spelling of the singular noun should be changed: "child—children", "foot—feet", and "tooth—teeth".

204 d) Errors in syntax Syntax errors are frequently found in Indian English. Here the mother tongue interferes with the learners' learning of English and makes their expression improper. Example: Incorrect Sentence: Because my English is very poor so I am very nervous in class. Correct Sentence: Because my English is very poor, I am very nervous in class. In Bengali, "because" and "so" can appear in one sentence, which is not a proper sentence structure in English. It is an error of conjunction repetition. Example: Incorrect Sentences: Some people are afraid of stress; others overcome it and succeed at last. Correct Sentences: Some people are afraid of stress; others overcome it and succeed at last. Some people are afraid of stress while others overcome it and succeed at last. It is an error in comma splice/run-on sentence, in which two or several independent sentences are separated with commas. e) Errors in Discourse A good writing is composed of some sentences with relevant meanings which are logically put together into a semantic unity by link words (transition words). Errors are committed by the second language learners in the following aspects: (1) improper or wrong use of link words; (2) too many simple sentences; (3) close similarity and monotony in sentence structure; (4) the sentences in the writing do not serve the topic; and (5) unclear writing structure. Example: Most of the students agree that watching TV is helpful for us—but the others don't agree that watching TV is helpful for us. (close similarity in sentence structure and lack

205 of flexibility) Example: In recent time, I was ill. I went to see a doctor. He gave me an examination. He told me that I must be in hospital for a month. (Too many simple sentences—monotony in sentence structure; lack of continuity between sentences) Example: Though our teacher should criticise us when we did not finish our homework, she was unkind to us most of the times. After these errors are classified, it is clear to find students' error mechanism. The purpose for finding, classifying, and analyzing the errors is to offer possible explanations why students make the errors and try to find the causes. With the explanations and causes, effective measures can be taken to put them right in order to meet the goal—improving students' language ability. 5.5.2 Diagnostic Test 5.5.2.1 Concept of Diagnostic Test Diagnostic testing is a form of assessment that is used to diagnose strengths and areas of need in the students. A diagnostic test is a test designed to locate specific learning deficiencies in case of specific individuals at a specific stage of learning so that specific efforts could be made to overcome those deficiencies. It helps the teacher in identifying the status of the learner at the end of a particular lesson, unit or course of learning as to what specific teaching or learning points have been properly grasped by the learner. If such a deficiency is located in several students, it becomes obvious to the teacher to reflect upon whether something went wrong with his method of teaching. After administering a diagnostic test or battery test to students, a teacher takes remedial measures to overcome the deficiencies thus discovered. Diagnostic assessment involves the gathering and careful evaluation of detailed data using students' knowledge and skills in a given learning area. The tests are not graded. The tests can determine if differentiated instruction is needed, and discover strengths, weaknesses, and misconceptions. In English Language Teaching, diagnostic test is a

206 test that helps the teacher and learners identify problems that they have with the language. For example, at the start of the course, a teacher can administer a diagnostic test to see what areas of language need to be in the syllabus. During the course also a teacher can make use of diagnostic test. Progress tests given during the course can also act as diagnostic tests as they help the teacher and learners identify what areas will be looked at next on the course. According to Wormeli (2006) when creating diagnostic tests, instructors should consider the following questions: What skills are to be assessed, Whether the assessment allows students to demonstrate mastery of those skills, If every component of the skills accounted for in the assessment, If students can respond in a different way than expected and still show mastery of the concepts, and If the assessment is a test of the process or the content. Diagnostic testing must be aligned with predetermined learning objectives and should be built into the regular classroom routine. The assessments should be relatively short, valid, and free from bias. In order to accurately use diagnostic testing, instructors must be willing to modify course content and their teaching methods based on the information they receive from the assessments. This could mean covering subjects and concepts assumed to be already mastered, or not covering concepts that were originally planned if the skills and concepts have already been mastered. Instructors should also take care to assure. Diagnostic test differs markedly from achievement test though every achievement test has some diagnostic value and vice versa. The main difference is in the way items are sampled. In an achievement test, sampling of questions is not so exhaustive to cover each and every learning point as the content is generally a large portion; whereas in a diagnostic test each learning point has several items, each cluster of such items forming a subtest. The diagnostic value of the test is obtained from the total score which is the sum of the scores on these subjects. The coverage of Subject matter is more detailed, though based on a smaller area than an achievement test. A diagnostic test thus requires a very careful analysis of the content and a detailed study of the common errors made by the students.

207 5.7.2.2 Need and Importance of Diagnostic Test The purpose of a diagnostic test in education is to assess the current state of a student's progress or ability in a particular area. Some diagnostic tests determine if a student qualifies for special education services on the basis of everything from dyslexia to speech delays or even attention deficit disorder while others indicate specific competencies on the scope and sequence for a course in which students have either demonstrated mastery or need remediation. Diagnostic testing can be a very useful tool for instructors, because it can tell them where their students are with respect to what they are planning to teach them. If diagnostic testing shows that the entire class has already mastered a concept, then the instructor modifies the lesson plan to begin with a new concept. If diagnostic testing shows that half the class has mastered the concepts and half has not, then the instructor may decide to implement differentiated instruction. Conversely, if the instructor is planning on beginning instruction with a concept but diagnostic testing shows that students have not mastered the previous topic, the instructor should begin there. By beginning instruction with where students are, additional instruction time is gained which can be used to go over concepts the class has not mastered more slowly or cover more concepts than originally anticipated. A diagnostic assessment can be used to profile students' interests and help determine their preferred learning styles of mastering language, particularly English. Diagnostic testing can also help instructors plan their instruction and develop curriculum by helping to determine whether or not classroom instruction is closely aligned with state or central high-stakes tests. Since these assessments are intended for diagnostic or predictive purposes the test here must have resemblance with these tests. Diagnostic tests should not be too large or complex and should only look to assess specific skills and concepts. For example, instructors could have their students a few spelling test or that of testing a few vocabulary item that represent what will be taught.

5.5.2.3 Types of Diagnostic Test a. Formal and informal Diagnostic Test Diagnostic testing can be both formal and informal. Formal diagnostic testing includes standardized tests that can be used to assess particular skills, giving objective data on skill levels. However, the validity of such tests can be debated, and there is some concern

208 about test bias. Additionally, standardized tests may assess more or fewer skills than those that will occur during instruction. The formal approach to diagnostic testing can be implemented within a classroom, a department, or within a school. It can also occur within a school district, state, or nation. Informal diagnostic testing approaches can provide more flexibility, such as one-on-one questioning or small-group testing; but they still must follow the principles of diagnostic testing, meaning that they must assess only what is selected to be taught in the classroom and cover all concepts and skills.

b. Conceptual(discipline-specific) and Stage-specific Diagnostic Test Discipline-specific conceptual diagnostic tests actually aim to "trick" students, or rather to reveal whether they hold common misconceptions about a subject. Indeed, answer choices on these multiple-choice exams are designed to trigger common misconceptions about the discipline, thus ensuring the student has a clear understanding of the concept. Not only do conceptual diagnostic tests identify weak areas of key understanding, they aim to neutralize the effect of good test-taking skills — meaning knowledge of a topic, not test taking, is being assessed. The Stage-specific Diagnostic Test aims at discovering the stage or grade level backwardness of students and finding a solution for it. In English take an example of reading test. Diagnostic tests for reading provide specific information about reading skills. Such tests are designed to pinpoint at what grade level children are reading based on their mastery of phonics, blending, word recognition and text comprehension. Ideally, a child entering a grade should display reading skills typical of that grade, meaning a fifth grader isn't using sound-out techniques like a first grader. When teachers discover students are reading below grade level, they typically implement interventions designed to bolster the missing skills.

5.5.2.4 Steps of a Diagnostic Test The essential steps in educational diagnosis are: (i) Identification of students who are having learning difficulties (ii) Locating the errors of learning difficulties (iii) Discovering causal factors.

5.5.2.5 Functions of

Diagnostic Test Cook (1951) suggested the following functions. (1) To direct curriculum emphasis by:

209 (i) Focusing attention on as many of the important ultimate objectives of education as possible (ii) Clarifying of educational objectives to teachers and pupils (iii) Determining elements of strength and weaknesses in the instructional programme of the school (iv) Discovering inadequacies in curriculum, content, and organisation. (2) To provide for educational guidance of pupil by: (i) Providing a basis for the preliminary grouping of pupils in each learning area (ii) Serving a basis for the preliminary grouping of pupils in each learning area (iii) Discovering special aptitude and disabilities (iv) Determining the difficulty of material pupil can read with Profit (v) Determining the level of problem solving ability in various areas (3) To stimulate the learning activities of pupils by: (i) Enabling pupils to think of their achievements in objective terms (ii) Giving pupils satisfaction for the progress they make, rather than for the relative level of achievement they made (iii) Enabling pupils to compete with their past performance record (iv) Measuring achievement objectively in terms of accepted educational standards, rather than by the subjective appraisal of the teachers (4) To direct and motivate administrative and supervisory efforts by: (i) Enabling teachers to discover the areas in which they need supervisory aid (ii) Affording the administrative and supervisory staff an over-all measure of the effectiveness of the school organization and supervisory policies. 5.5.2.6 Administration of Diagnostic Test The following points need to be kept in view: (i) The first task of the teacher is to win the confidence of the students and reassure them that test is to help them in the improvement of their learning rather than for declaring pass or fail.

210 (ii) It should be administered in a relaxed environment. (iii) Students should be seated comfortably. (iv) Students should be asked not to consult each other while taking (v) If any student is not able to follow something, he should be allowed to seek clarification from the teacher. (vi) The teacher may ensure that the students taking the test attempt all questions. (vii) Time schedule should not be enforced strictly. If any student takes a little more time, he should be allowed to do so. 5.5.2.7 Use of Diagnostic Tests The important uses of diagnostic tests are: (i) Items, units or skills, which are understood by a majority of students, can be located and teaching can be adjusted to the situation (ii) Items, units or skills which are not understood by a majority of pupil's can be located and there by special emphasis in these aspects can be attempted (iii) The causes for the difficulty in certain items can be found out, for which remedial measures can be taken (iv) Individual weakness can be found out which would serve as the baseline for individual correction work and personal guidance (v) Diagnostic test may be used for prognosis. It helps to predict the possible success in certain type of courses or vocation and therefore it helps in providing guidance and counselling (vi) Diagnostic tests can be made the basis of individualized instruction. Differentiated teaching methods, ability grouping, individual drill. Differentiated assignments etc. can be attempted on the basis of the results of diagnostic tests (vii) Diagnostic test measures 'real understanding' as opposed to superficial mastery of subject areas measured by achievement of pupils in subject areas (viii) Diagnostic tests can assist the pupil in locating one's weakness and so they can be corrected with maximum ease and economy (ix) Diagnostic: tests can indicate the effectiveness of specific methods of teaching in dealing with specific teaching situations

211 (x) Diagnosis of pupils' weakness and self-discovery can lead to motivation and interest can generate co-operation in future teaching learning situation 5.5.3 Enrichment Measures After the difficulties are diagnosed it is now essential to arrange suitable measures to sort the problems out. Let's see how it can be done. Methods and Strategy for Correcting Errors When it comes to the methods and strategy on correcting errors, three points should be paid attention to. (1) Teachers correct the errors: When teachers try to correct the errors, they should not only be aware of difference among students, but also take different strategy according to students' different English level. During the error correction, teachers should create an atmosphere of equality and pleasure in order to reduce or eliminate students' emotion barriers and stress and at the same time to protect students' self-respect (self-confidence). Teachers have to make their correction shorter so as to avoid breaking the flow of teaching in class. (2) Students correct the errors themselves: When students make errors, it is unnecessary for teachers to correct them right away. It is a proper way to give students some time to think and find the wrong points with the help of teachers' guidance so that the students can finish self-correction without hurting their self-confidence. By self-correction, it is helpful for students to have a good command of what they have learned. (3) Students correct the errors each other: It is an effective way for students to correct the errors each other, which provides students with opportunities to think and listen to and communicate with others. They begin to learn from each other. Students usually make errors in vocabulary, grammar, and discourse. Through analyzing the students' common errors with error analysis, some important suggestions can be provided. (4) Changing Attitude towards Error In traditional English teaching, there is a tendency that when a learner makes errors in putting the target language into practice, teachers will immediately point them out and correct them. In fact, it is important to treat the nature of errors differently. Teachers should encourage students to put the target language into use actively and make students not afraid of errors. Also teachers should try to avoid excessive correction to those errors that do not arouse misunderstanding and break communicative process in order to protect students' learning enthusiasm.

212 (5) Putting Different Emphasis to Different Kinds of Errors Global errors—common errors in second language acquisition and a big interference with communication—should be taken seriously. And local errors will be solved naturally with development of language learning. Other Measures Preparation of Remedial Material Preparation of remedial materials for a child is a crucial aspect of corrective instruction. Remedial materials prepared should meet the following criteria: (i) The difficulty level of the remedial material should be geared to the child's readiness and maturity in the subject or skill to be improved. A set of remedial materials should provide a wide range of difficulty, covering several grades (ii) The remedial measures should be designed to correct the pupils' individual difficulties. Through the use of observation, interview and diagnostic testing materials, the teacher would have analysed the work of the backward children in order to locate the specific retaining needs. An adequate amount of remedial materials must be provided which is designed to correct the specific difficulties identified (iii) The remedial materials should be self-directive. Children may differ widely as to the instructional materials needed to correct their difficulties (iv) The remedial measures must permit individual rates of progress (v) A method should be provided for recording individual progress. When the child has an opportunity to record his/her successes on a progress record, he/she is given an additional incentive to achieve. Corrective Instruction Corrective instruction should begin by analyzing with the child the specific strengths and needs, and showing how the instructional materials are designed to correct his / her deficiencies. Making the child aware of his/her problem and providing a method of solving them, based on individual effort, helps to establish a powerful motivating force. Instruction should begin at or slightly the learner's present level of achievement. Short term goals should be established which the learner considers reasonable and possible to attain. By means of progress charts, praise and social recognition the child's feeling of successful accomplishment should be reinforced. Corrective procedures must be modified for children of relatively inferior or superior mental ability.

213 The results of corrective instruction should be evaluated. Comparable forms of a standardized test should be administered before and after a period of concentrated instruction. The effectiveness of the programme must be evaluated for each child than in terms of class averages. Putting Emphasis on the Teaching of Basic Knowledge: We have been aware of the error mechanism in students' writings by error analysis. Teachers should attach much importance to the teaching of essential English knowledge. Vocabulary and grammar are two key factors and also main route to thinking and communicating. In order to develop students' language ability and effectively vocabulary and grammar should be the focuses in English teaching. Improving Writing Skills by Reading English: Reading is helpful to writing. A piece of good writing expresses the thoughts and emotions by means of vocabulary, grammar, and rhetoric. Proper expressions in writing are based on large information of language knowledge which can be acquired by extensive reading. On the other hand, reading will broaden students' horizons, accumulate knowledge, enhance the accuracy of language expression, and reduce, even eliminate, the influence of negative language transfer of mother tongue so as to avoid Indian English expressions in writing. Paying Attention to Western Cultures: Learning a foreign language means not only a sound grasp of pronunciation, vocabulary, and grammar, but also the understanding of its cultural background information. The difference between Indian culture and Western culture is a potential factor which will have an effect on writing. In English teaching, teachers should bring culture teaching into language teaching, and try to cultivate students' awareness of cultures, and help students sense the difference of thinking mode and cultures. At last, according to Featherstone, the following are to be kept in mind if the teacher of English wants his pupil learns best: i. Shorter units of instruction ii. More concrete association - to see, hear, feel etc iii. More motivated drill or review iv. More specific direction, purpose v. More illustration and audiovisual aids vi. More supervising and guidance vii. More time to complex work

214 viii. Personalization of experience ix. Emotional involvement in the activity as in dramatics, dancing and art x. Greater variety of pupil response in a given area of learning xi. Praise for work that shows any indication of work xii. Great variety of stimulation and material

Check Your Progrss–5 Q.1. What is an error?

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..... Q.2 What is inter-lingual error?

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..... Q.3. Write the importance of a diagnostic test in English.

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..... Q.4 Write any two suggestions of Featherstone pertaining to the improvement of language proficiency.

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..... 5.6 Let Us Sum Up Evaluation is a comprehensive term that includes the assessment of learners' ability, attitude and knowledge with the help of tools and instruments in order to take academic decisions about the learners. Evaluation is 'formative' when it is carried out during the course of instruction in order to bring improvements in the proficiency level of learners. And evaluation is 'summative' when it is taken at the end of a course. It is used for promotional purpose. Evaluation is 'diagnostic' when it tries to find out the inherent

215 learning difficulties of learners. And it becomes 'placement based' when it intends to select students for a required course of instruction. Evaluation is continuous when it happens all the time through numerous interactions of the teacher with the students. There is no specific time or place for it. An evaluation is said to be comprehensive when it tests the students in all three domains—cognitive, affective and psychomotor. Evaluation does a good number of services to all—students, teachers, parents and other community members. It is an essential part of teaching learning process. English is both a second language and foreign language in India. Teaching Indian students English needs a comprehensive ground work. At least three elements matter much to master this language in particular and any language in general. These are phonology, vocabulary and grammar. Testing the learners in these areas would decide their mastery level. A test of vocabulary measures students' knowledge of the meaning of certain words as well as the patterns and collocations in which they occur. Such a test may test their active vocabulary (the words they should be able to use in speaking and in writing) or their passive vocabulary (the words they should be able to recognize and understand when they are listening to someone or when they are reading). The ultimate goal of teaching grammar is to provide the students with knowledge of the way language is constructed so that when they listen, speak, read and write, they have no trouble applying the language that they are learning. Grammar is taught both deductively and inductively. Various types of test items are used to know the mastery grammar. Some of the popular items are error-recognition items, rearrangement items, transformation items, pairing and matching items, addition items and cloze test. Phonetics is concerned with how sounds are produced, transmitted and perceived. Phonology is concerned with how sounds function in relation to each other in a language. In other words, phonetics is about sounds of language, phonology about sound systems of language. To test the phonological awareness skill the teacher can use techniques like sound addition, sound deletion, sound manipulations, sound segmentations, recognition of words through rhyme etc. Most of the evaluation tools are designed to test the normal students. Many of these tools are not suitable to test learners having some sorts of disability. Hence these tools need adaptations and modifications. These adaptation ranges from adaptive furniture and locations to writing tools and amplification materials. The tools can be adapted specifically for specific type of disability. Error analysis is an important part of applied linguistics and an essential means of

216 foreign language teaching. How to put the theory into practice is quite significant to language teaching. The improvement of language teaching depends on learners' awareness to learning process. The process of making errors is the process of foreign language acquisition. And error analysis tries to discover and sum up some rules in language learning by analyzing learners' errors. The theory of error analysis, on the one hand, helps teachers understand the students' difficulties in learning, study the causes of their errors, and take effective measures to correct the errors. On the other hand, the theory will press teachers to adjust teaching strategy, teaching means, and develop teaching level wholly. A diagnostic test is a test designed to locate specific learning deficiencies in case of specific individuals at a specific stage of learning so that specific efforts could be made to overcome those deficiencies. After administering a diagnostic test or battery test to students, a teacher takes enrichment measures to overcome the deficiencies thus discovered. 5.7 Answer to "Check Your Progress" Check Your Progress-1 Q.1 Formative evaluation is carried out when the instruction is in progress but summative evaluation is carried out at the end of instructional process. Q.2 When an evaluation tests the three domains of learning namely, cognitive, affective and psychomotor, it is said to be comprehensive. Q.3 Evaluation helps the educational process to start, to progress and to end as per the destined goal. Check Your Progress-2 Q.1 A test in which one is asked to supply words that have been removed from a passage in order to measure one's ability to comprehend text.

Q.2 Active vocabulary is the words the students are able to use in speaking and in writing) and passive vocabulary is the words they can recognize and understand when they are listening to someone or when they are reading. Q.3 When the teaching of grammar proceeds from particular example to rules of grammar it is known as inductive teaching.

217 Q.4 Phonetics is concerned with how sounds are produced, transmitted and perceived. Phonology is concerned with how sounds function in relation to each other in a language. In other words, phonetics is about sounds of language, phonology about sound systems of language. Check Your Progress-3 Q.1

A scribe is a skilled person who has been trained to write down what a student dictates by an assistive communication device, pointing, sign language, or speech.

Q.2 Braille is a device used to help the blind learners read and write materials through a raised surface. Q.3 A sign language is a technique to teach the dumb students. The learners are taught to express themselves through scientific method of signs. Check Your Progress-4 Q.1 Sometimes due to their inability they fail to benefit from group situation. And sometimes their disability needs personal attention for taste taking. Q.2. An alternate location is essential when a student is easily distracted by other students. Q.3 The blinds and low vision students need individual reader in order to grasp the content as per their ability. Q.4

Test security involves maintaining the confidentiality of test questions and answers; it is critical in ensuring the integrity and validity of a test.

Check Your Progress-5 Q.1

An error is a form in learner's language that is inaccurate, which means it is different from the forms used by competent speakers of the target language.

Q.2 The learner brings the habits of mother tongue into target language, which is here English and thus commits a lot of mistakes known as inter-lingual errors. Q.3 A diagnostic test is designed to locate specific learning deficiencies in case of specific individuals at a specific stage of learning so that specific efforts could be made to overcome those deficiencies. Without diagnostic test the problems of learners cannot be determined. Q.4 i. Shorter units of instruction ii.

Personalization of experience

218 5.8 Unit End Exercises Q.1 Discuss the importance of evaluation for ELT. Q.2 Explain some of the major problems of learning the phonological aspect of English. Q.3 Briefly explain how the tools of evaluation can be made individualised for some target learners. Q.4 Discuss different kinds of errors committed by the second language learners in English. Q.5 Briefly explain the functions of diagnostic test. Q.6 State different strategies for correcting errors in ELT. 5.9 References Assessing Special Education Students (ASES) and

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3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA - B B-6 : INCLUSIVE EDUCATION

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7 Netaji Subhas Open University AREA - B B-6 : INCLUSIVE EDUCATION B-6 □ □ □ □ □

Inclusive Education UNIT - 1 : INTRODUCTION TO INCLUSIVE EDUCATION 9-37 UNIT - 2 : POLICIES & FRAMEWORKS FACILITATING 38-130 INCLUSIVE EDUCATION UNIT - 3 : ADAPTATIONS ACCOMMODATIONS AND 131-155 MODIFICATIONS UNIT - 4 : INCLUSIVE ACADEMIC INSTRUCTIONS 156-178 UNIT - 5 : SUPPORTS AND COLLABORATIONS FOR 179-192 INCLUSIVE EDUCATION

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 Introduction Disability is seen as a prominent developmental issue in any country, as the disabled group in a society is often become marginalized due to exclusion from the mainstream society leading to poverty. Inclusive Education approach doesn't only provide the provision of basic human rights to education but also the dignity of human being which is often being linked with the socio-economic status in the community. It is seen as a device for both access and equity in education which are also the fundamental aspirations of Education for All programme (UNESCO, 1990) and Millennium Development Goal Action Frameworks (Millennium Summit of the United Nations, 2000). Through inclusive education the learners may get a chance for not only getting into the system but also a support to complete it successfully. Inclusive education results in improved social development and academic outcomes for all learners as it provides opportunity to get exposed to the real world which leads to the development of social skills and better social interactions. It also provides platform to the non-disabled peers to adopt positive attitudes, tolerance. An important prerequisite for inclusive education is to have respect for differences, respect for different learning styles, variations in methods, open and flexible curricula and welcoming each and every learner into the common platform. Thus, the perspectives of seeing the disabled learner has been changed to differently-abled or special need learner.

11 Success of any learner is dependent on both the school and community, but, both of them may possess barriers in implementing the inclusive education policy. These barriers are both external and internal in nature. In order to facilitate inclusive education, there has to have a modification in the environmental conditions which includes the physical changes for barrier free environment in each of the school buildings with adequate facilities. Apart from that very importantly, there is a need to change the negative attitudes of the common people and to develop their sense of responsibility towards the child with special needs (CWSN). There is a need to provide proper training to the teachers dealing with the diverse needs of the learners, applying appropriate individualized pedagogy and assessment system. Barriers to access and success can be viewed in physical as well as structural sense. But more than that, it is the curriculum, the pedagogy, the examination and the schooling approach, which may also create barriers. Unless these unseen barriers are taken care of, access to all children with diverse needs would remain a far cry. The inclusive education movement, combined with technological development has come at this crucial juncture in our country. Choosing a holistic Inclusive approach to access and success in education is more likely to succeed in reaching education for all. 1.2 Objectives ●●●●●

To understand the concepts of marginalization and Inclusion: ●●●●● To understand the changing practices in education of children with disabilities in respect to segregation, integration and inclusion; ●●●●● To understand the Diversity in classroom in the context of learning Styles, linguistic and socio-cultural multiplicity; ●●●●● To understand the basic principles of inclusive education; ●●●●● To acquire knowledge about primary Barriers to Inclusive Education. 1.3 Marginalization vs. Inclusion : Meaning and Definition 1.3.1 Marginalization : Meaning and Definition 'Marginalization' is social disadvantage and relegation to the fringe of society.

12 The term has been used first in France and then widely in Europe. Academically, it is now used across the disciplines of social sciences including philosophy, education, sociology, psychology, political science and economics. Marginalization as the social exclusion is a process in which individuals or entire communities of people are systematically blocked from or denied full access to various rights, opportunities and resources that are naturally and normally available to members of a different group, and which are fundamental to social integration within that particular group (e.g., housing, employment, healthcare, civic engagement, democratic participation, and due process). The outcome of social exclusion is that affected individuals or communities are prevented from participating fully in the economic, social, and political life of the society in which they live. Definition: Marginalization is a process whereby something or someone is pushed to the edge of a social group and accorded lesser importance. This is predominantly a social phenomenon by which a minority or sub-group is excluded, and their needs or desires ignored.

Thus, marginalization leads to social exclusion. Social exclusion is a multidimensional process of progressive social rupture, detaching groups and individuals from social relations and institutions and preventing them from full participation in the normal; normatively prescribed activities of the society in which they live. It reflects the inability of our society to keep all groups and individuals within the reach of a society or to realise their full potential. 1.3.2 Inclusion: Meaning and Definition

The right of every child

to education is proclaimed in the Universal Declaration of Human Rights (1948) as well as in the UN Convention on the Rights of the Child (1990), and reaffirmed in the World Declaration on Education for All (1990).

Each Child is different with different learning needs, learning speeds and programming for education. Among these learners, some have more specialized needs than others, but the commitment to ensure their education too has been enshrined in Salamanca Conference (1994). 'Inclusive Education' is an approach that aims to realize the goals stated in these conventions, as an approach that involves homes, schools communities, employers and governments in ensuring that each and every child, regardless of his/ her individual needs or social circumstances, has equal opportunity to get a mainstream

13 education together with the children of other community. As the name implies, inclusive education seeks to ensure that no child is excluded, marginalised or segregated, that school is such a community to which everyone belongs, and that each child is learning what she is expected to learn. Definition: "

Inclusion is seen

as

a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education" (

Booth, quoted in UNESCO 2001). "Inclusive

Education

involves

changes and modifications

in content, approaches, structures and strategies, with

a common vision which covers all children

of

the

appropriate age range

and a conviction that it is the responsibility of the regular system to educate all

children" (

UNESCO, 1994). "

Inclusion,

when the position of

children with disabilities is considered as physically being in the same place and doing the same things as other students,

social acceptance, and a right to individually relevant learning"(Norwich, 1999). 1.3.3 Marginalization vs. Inclusion

Marginalization theoretically emerges at the individual or group level on four correlated dimensions–(i) insufficient

access to social rights, (ii) material deprivation, (iii) limited social participation and (iv) lack of normative integration. It is

then regarded as the combined result of personal risk factors (age, gender, race etc.), macro-societal changes

(demographic, economic and labour market developments, technological innovation, evolution of social norms etc.),

government legislation and social policy, and the actual behaviour of businesses, administrative organisations and fellow

citizens. On the other hand, inclusion is a system in which all children from a given community learn together in the

same local school setting including the children with learning difficulties, special needs or disabilities with certain

changes in the education systems. Traditional systems of education tend to increase the gap between advantaged

included students with disadvantaged excluded children. Middle and upper class children, who start out with more (in

terms of opportunity, materials), are also given more in the traditional system, thus widening the gap in education and

society between the haves and have not's. As for example, the marginalised children,

14 who start with less, are generally provided less in terms of equal educational opportunities propagating the vicious cycle of poverty and lack of opportunities. International Journal of Inclusive Education (vo1.16, Issue 12, 2012) focuses on the importance of engaging with children's voices in school settings in order to understand and deal with marginalization. Engaging with the views of children and young people is an essential part of the process of developing inclusion. It can be viewed as an approach to inclusive education, which predominantly places emphasis on the views of the learners, rather than on other organisational aspects within a school context. 1.4 Changing Practice in Education of Children with Disabilities : Segregation, integration and inclusion 1.4.1 Changing Practice in Education of Children with special needs Introduction of education of children with disabilities, in India, can be traced back to the dawn of 19th century. Special school services in the country were initiated mostly by foreign missionaries. The concept of inclusion has been finding its reference in many documents of nationalist education movements in the post independent period. The provision of better services to person with disabilities has been included in the Article 45 of the Indian Constitution. The Indian, Education Commission Report (1964-66), had recommended placement of the disabled child as far as possible in ordinary schools. The National Policy on Education (NPE, 1986) included a full chapter on Education of the handicapped and formulated guidelines for action. The NPE strongly emphasised the need for the expansion of 'integrated' education

programme. The centrally sponsored scheme of Integrated Education for Disabled Children (IEDC) was introduced in 1974

and later it was emphasised in the National Policy of Education (1986) as well as in the Programme of Action (1991). Therefore, efforts for inclusion were persistently made. Though these national documents emphasised the need for services for persons with disabilities, the actual implementation of activities for the disabled was not satisfactory in the past. 1.4.2 Segregation of Children with Special Needs 'Segregation' indicates that disabled children will only be treated separately. Some scholars believe that segregation is the best way to educate special child.

15 Segregated programs are designed and staffed by professionals that are trained to work with Child with Special Need (CWSN), which typically means they are better trained to teach special Child. Therapists are usually an integrated part of the system. However, there are downsides to segregation. Children that are segregated do not always have the challenge of learning with their peers, which can sometimes facilitate better learning and skills. Also, children that are segregated are not learning how to function in the community in hopes of becoming integrated into society. There are many educational environments that do not offer 'pure' segregated special education classes. There are programs that combine inclusion and segregation, where the child might spend part of the day in a segregated program and the other part of the day in an inclusion program or s/he might spend the day in an inclusion program and receive remedial assistance and therapy. There may be different combinations of inclusive education. 1.4.3 Integration of Children with Special Needs 'Integration' is the beginning of inclusive education. No specific year could be cited for the Introduction of inclusive vis-a-vis integrated education in India. Special schools were adopting partial integration for disabled children at the secondary level in the beginning of 20 th century itself. However, full-fledged integrated education programmes emerged only in the beginning of 1980s. Since 1980, the field has witnessed a phenomenal growth of integrated education. Integrated education emerged out of compulsion rather than as an option in India.

In the process of bringing more disabled children under the umbrella of educational services, integration was considered as the cost-effective

approach and therefore, the general education system started accepting CWSN in general schools. The implementation of integrated education programme also addressed the needs of the high risk children who were suspected to be potential dropouts and therefore, retention of such children became high. With the success of integration in the past two decades, the country is now becoming ready for inclusive education. Inclusion aims at reinforcing better educational practices in the general school system which addresses the educational needs of all children. Current Status of Integrated Education in India: The centrally sponsored scheme of integrated education, initiated in 1974, had been implemented in all the States and Union Territories of the country. More number

16 of Government, institutions was intensively involved in integrated education in both the government and non-government organisations. According to Mukhopadhyay and Mani (2000), "Across the disabilities, orthopedically disabled children are better identified than other disabilities at all levels of education. This factor also needs attention as the identification and assessment procedures yet to be developed to shift the focus on the actually deserving disabled children." The share of disabled children in general schools is still much lower than the estimated number. The present coverage in integrated education is expected to be approximately 80,000 disabled children in over 18,000 schools. Integrated education concept has come to stay in the educational system in India and its full potential is yet to be explored.

1.4.4 Inclusion of Children with Special Needs

The country has been striving hard to provide education for all children since 2002. The direct and simple approach to answer the question whether children with special needs are being adequately covered and have benefitted from Education for All (EFA) would be to match the number of children in the related age group with that of children enrolled in schools including special schools, non-formal centres and / or open learning systems. Unfortunately, the data and information are neither collected in this manner nor the services made available presently at par with other children (Mukhopadhyay and Mani, 2000). Some of the related major acts and policies are discussed below:

Inclusion through the PWD Act, 1995:

The issue of the services for children with disabilities is treated as human resources development with

the introduction

of

the Person

with Disability (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995.

As a

result, the service for children with disabilities

is no more considered a welfare activity; rather it is treated as the right of the disabled child. The main purpose of the PWD Act is to define responsibilities of the Central, State and Local Governments with regard to service for disabled persons. The Act also ensured coverage of total life to disabled individuals so as to make full contribution in accordance with their disability conditions.

Blindness, Low Vision, Leprosy-Cured, Hearing Impairment; Loco motor Disability, Mental Illness, and Mental

Retardation are the seven disability conditions covered under the Act. As per the Act, the

17 Governments shall ensure that suitable education should be provided till their age of 18. It also indicates that integrated education and special schools will have to be set up to meet the educational needs of the children with acute disabilities. Introduction of non-formal education, functional literacy schemes, provision of aids and appliances, education through open schools and universities etc., are also stressed in the Act. It also indicates that the Government should create adequate teacher training facilities to prepare teachers for special and integrated schools. Development of research on assistive devices is also envisaged in the Act. Many schemes are being evolved at the national and state levels to implement this Act. Therefore, the PWD Act 1995 is strongly encouraging inclusive education concepts wherever possible. Role of the Rehabilitation Council of India (RCI) in Inclusion: In 1932., the RCI Act was enacted in the Parliament. The Act was created by the then

Ministry of Welfare (presently known as the Ministry of Social Justice and Empowerment)

to regulate the manpower development programmes in the field of education of CWSN. Though RCI does not deal directly with the promotion of services at the school level, it has projected the need for massive manpower development for facilitating education for all disabled children, The major responsibilities of the RCI are: ●●●●● To bring standardisation of training courses for rehabilitation

professionals/ personnel dealing with people with disabilities; ●●●●● To prescribe minimum standards of education and training

institutions in the field of rehabilitation uniformity throughout the country; ●●●●●

To regulate these standards in all training institutions uniformly throughout the country; ●●●●● To recognise institutions running degree/ diploma/ certificate courses in the field of rehabilitation of

the disabled and to withdraw recognition, whenever facilities are not satisfactory; ●●●●● To recognise foreign degree/ diploma/ certificate in the field of rehabilitation awarded by institutions on reciprocal basis; ●●●●● To maintain a Central

Rehabilitation Register of persons possessing the recognised rehabilitation qualification; ●●●●●

To collect information on regular basis, on education and training in the field

18 of rehabilitation of people with disabilities from institutions in India and abroad; ●●●● To encourage continuing rehabilitation education by way of collaboration with organisations working in the field of rehabilitation of persons with disabilities. Role of Special Schools and Inclusion: Special school concept is still an accepted model of education for children with disabilities in India and it will continue to be so in the years to come. Presently there are about 3000 special schools addressing persons with different disabilities. It is estimated that there are 900 schools for hearing impaired, 400 schools for visually impaired, 1000 schools for mentally retarded and 700 for physically challenged children (by UNISED Report 1999). The exact number of special schools is not fully known as there are many NGOs who run those schools and are not yet included in the lists available. However, the responsibilities of special schools are likely to change in the future. Some of the desired changes are: i. They are expected to become resource centre to facilitate inclusive education. ii. They are in a better position to serve children with multiple disabilities. In the growing concept of inclusion the special schools have a vital role to play. Through inclusion is open to everyone, experiences in India reveal that some children may not cope with the inclusive setting. Children with additional disabilities, orphans etc., need some alternative settings and special schools may help equip themselves to serve these children.

1.5 Diversity in Classroom : Learning Styles, Linguistic and Socio-Cultural Multiplicity.

1.5.1 Diversity in Normal Classroom

Now-a-days the increasing number of learners from diverse backgrounds entering into the elementary classrooms has reinforced the importance of making our schools more inclusive. With a greater variation in the talents, and social, cultural, economic and political backgrounds of the learners the elementary class-room in India has been facing a challenge to use this diversity constructively in order to democratize the teaching-learning processes and practices, and achieve the larger goals of social justice. In this context, the agenda of 'inclusive education' has gained importance. There has been a further impetus with the enactment of the Right of Children to Free and Compulsory Education (RTE) Act, 2009. The implementation of this Act will be considered successful only if it addresses the issue of making the children of marginalized communities 'visible' within the four walls of the classroom. Many of these children, across the country come from socially disadvantaged backgrounds, such as Scheduled Caste and Scheduled Tribe communities; ethnic and religious minorities, economically weaker sections, children of these communities are enrolled in school, they face the danger of dropping out. Many of them live in extremely vulnerable socio-economic conditions and face a serious threat to their universal rights, such as a school education. Inclusive schools are designed with a vision and principles that believe in the culture of rights, social justice and equity. It believes that all children are not the same, and accepts the diversity as strength rather than a problem. It believes in certain basic pedagogy that children learn in different ways, and relates success more with the learning of life and social skills than scoring high marks in examinations. The admission policy of such schools should accept children from a diverse community rather than reject on the ground of admission test scores or other physical, social and economic factors. Inclusive schools might follow flexible curricula that would respond to these diverse needs of children. The UNESCO Framework has again highlighted the need of child-centred pedagogy for addressing the educational needs of the disadvantaged and the disabled: "The challenge confronting the inclusive school is that of developing a child-centred pedagogy capable of successfully educating all children, including those who have serious disadvantages and disabilities".

1.5.2 Diversity in Learners' Learning Style

Educators do not believe that all learners are the same. Yet, too often, educators continue to treat all learners alike while paying lip service to the principle of diversity. Teachers know that students learn in different ways; the experience in the classroom confirms this every day. In addition, well-accepted theories and extensive research illustrate and document learning differences. Most educators can talk about learning differences, whether by the name of learning styles, cognitive styles, psychological type, or multiple intelligences. Learners bring their own individual approach, talents and interests to the learning situation. The target of new inclusive schools is not that they are capable of providing

20 quality education to all children; their establishment is a crucial step in helping to change discriminatory attitudes, in creating welcoming communities and in developing an inclusive society according to their respective ability and learning style (Framework for Action on Special Needs Education; UNESCO, 1994). Traditional schools mostly offer scope for the use of only two types of intelligences - linguistic and logical- mathematical. This approach itself, creates learning barriers for a large number of children particularly those belonging to the first generation learners, the disadvantaged and the disabled. Gardner (1993), on the other hand, has identified seven types of intelligences - (i) Linguistic or Verbal, (ii) Logical Mathematical, (iii) Spatial or Visual, (iv) Musical, (v) Kinaesthetic, (vi) Interpersonal and (vii) Intra-personal. Schools encouraging the identification and application of these intelligences would be able to remove unseen and internal barriers that child learning face in traditional schools. Inclusive schools use variety of innovative practices to get children involved and participating in diverged learning processes. Some of the inclusive strategies are: ●●●● Whole class inclusive teaching; ●●●● Group/cooperative/collaborative learning; ●●●● Peer tutoring/child-to-child learning; ●●●● Activity based learning; ●●●● Team approach/problem solving; ●●●● Equity in assessment/examinations. Inclusion in Education and its evolution in school system as a process-for removing barriers to access and success is a growing phenomenon. The strategies suggested above have been tried out in many schools across the countries and have, also conceptual and pedagogical backing. However, it is yet to be shaped into a reform movement or as a replacement of the traditional school system.

1.5.3 Diversity in Learners' Linguistic ability

Language is not merely a means of communication. Language, thinking and learning are inextricably linked. When children are forced to study through a language they cannot fully understand, especially in the school level, they face a serious learning disadvantage that can stunt their cognitive development and adversely affect their self-esteem and self-confidence for life. This is especially severe in marginalised

21 socio-economic situations where there is little exposure to the school language, outside the school. This gets further exacerbated when the children's culture, along with their language, is completely excluded from the classrooms. India is pluri-lingual and pluri-ethnic country. The language situations in India are like a mosaic with a bewildering variety of speech patterns that get woven together in an 'organic pluralism'. It is usually difficult to attach language labels to the varied speech patterns that differ from place to place. There is little agreement on which languages be called 'languages' and which ones be categorised as 'dialects' and why. A significant proportion of the Indian population is multilingual- even if their repertoire of the other languages is limited; different languages are used in different domains of life; there are many 'contact' languages that are used in inter- group communication, which are often hybrids of other languages; there are constant language shifts that are taking place; in most parts of the country. Language assimilation is taking place resulting in increased homogenisation, especially in many tribal areas: there are several diglossic patterns among many communities, for example, parents using the regional language when speaking with their children, while using their ancestral language with their elders. Thus, like several other countries in South Asia, language use patterns are complex and difficult to capture and any attempt at documenting speech patterns is a complex exercise. The education system in India has not been able to respond so far to the complex cultural and linguistic diversity in the country. language-in-education policies have attempted to provide some standardised solutions, though it needs further exploration in the Indian context.

1.5.4 Diversity in Learners' Socio-Cultural Multiplicity

Another, dimension of inclusive society is tolerance for and appreciation of cultural diversity. This includes societies that celebrate multiplicity and diverse expressions of identities. In the process of celebrating diversity there is a scope for recognition and affirmation of the differences between and among members of a society, which enables the society to move away from labelling, categorizing, and classifying people, towards more inclusive policies. Also, enabling a diversity of opinions provides the checks and balances crucial for the development of a society, while allowing for the greatest amount of diverse opinions to enter into every discourse. We also know that an individual learner's culture, family background, and socio-

22 economic level affect her/his learning. The context in which someone grows and develops has an important impact on learning. These beliefs, principles and theories have an important impact on the opportunities for success for every student in our schools. The cultural clash often causes students to struggle in school, and yet their individual strengths, if valued, respected, and promoted, would bring them success and increase their self-confidence. We know that culture and learning are connected in important ways. Early life experiences and the values of a person's culture affect both the expectations and the processes of learning. This is important because we need all the information we can get to help every learner succeed in school, and because a deep understanding of the learning process should provide a framework for curriculum and instructional decisions. Education plays a critical role in this area, as it can provide opportunities to learn the history and culture of one's own and others, which might cultivate the understanding and appreciation of other communities, cultures and religions. Particularly for young people, education provides the opportunity to instil such values of respect and appreciation of socio-cultural multiplicity in achieving the broader goal of democracy. 1.6

Principles of Inclusive Education: Access, Equity, Relevance, Participation and Empowerment 1.6.1

Concept of Inclusive Education

Inclusion is seen as

a process of addressing and

responding to the

diversity of needs of all learners through increasing participation in learning,

cultures and communities,

and reducing exclusion within and from education.

It involves changes and modifications in content, approaches, structures and strategies, with

a common vision which covers all children of

the

appropriate age range

and a conviction that it is the responsibility of the regular system to educate all

children.

Inclusion

education

is concerned with providing appropriate responses to the broad spectrum of learning needs in formal, informal and non-formal educational settings, rather than being a marginal issue on how some learners can be integrated in mainstream education. It is an approach that looks into how to transform education systems and other learning environments in order to respond to the diversity of learners. It aims towards enabling teachers and learners both to feel comfortable with 23 diversity and to see it as a challenge and enrichment of the learning environment, rather than a problem.

Inclusion emphasizes providing opportunities for equal participation of persons with disabilities (physical, social and/ or emotional) whenever possible into general education, but leaves open the possibility of personal choice and options for special assistance and facilities for those who need it. In particular, four key elements have tended to feature strongly in the conceptualisation of inclusion

in education. Those

are as follows: i. Inclusion is a 'process'. That is to say, inclusion

in education

has to be seen as a never-ending search to find better ways of responding to diversity. It is

about learning how to live with difference and learning how to learn from difference. In this way differences come to be seen more positively as a stimulus for fostering learning, amongst

all children and adults. ii. It

is concerned with the 'identification and removal of barriers'. Consequently, it involves collecting, collating and

evaluating information from a wide variety of sources in order to plan for improvements in policy and practice. It is about using evidence of various kinds to stimulate creativity and problem-solving

of all learners. iii. It

is about the presence, participation and achievement of 'all students'.

Here 'presence' is concerned with where children are educated, and how reliably and punctually they attend;

'participation' relates to the quality of their experiences whilst they are there and, therefore, must incorporate the views of the learners themselves;

and '

achievement' is about the outcomes of learning across the curriculum, not merely test or examination results.

iv. It

involves a particular emphasis on those groups of learners who may be at risk of marginalization, exclusion or underachievement'.

This indicates the moral responsibility to ensure that those groups that are statistically most 'at risk' are carefully monitored, and that,

where

necessary, steps are taken to ensure their presence, participation and achievement in the education system. 1.6.2

Principles of Inclusive Education The Social Good Summit (UN Foundations, 2014) defined that the aim of social integration is to create an inclusive society, in which every individual, each with rights and responsibilities, has an active role to play. But what makes some societies

24 more inclusive than others? What are the critical elements for creating and maintaining an inclusive society in practical terms? An inclusive society is based on the fundamental value

of human rights. If All human beings are born free and equal in dignity and

rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood." It

is a society in which all members, regardless of their backgrounds, are able to motivate and to participate in civic, social, economic and political activities. For this to happen, legal, regulatory and policy frameworks must be inclusive, and uphold and promote just and inclusive processes in all areas of implementation, so that equal access to basic education, public space, facilities and information are ensured, and diversity and cultural pluralism are respected and

accommodated. As the pre-requisite, respect for all human rights, freedoms, and the rule of law, both at national and international levels, are fundamental. Every member of a society, no matter what his/her economic resources, political

status, or social standing, must be treated equally under the law. Legal instruments ensure the guiding principles that will guarantee equity, justice and equal opportunities for all citizens. Violators of human rights should be brought to justice.

The judiciary which serves to protect just societies must be impartial, accountable and inclusive. Maintaining the security of all individuals and their living environment is paramount in creating a feeling of inclusion and an atmosphere of

participation in society. The major principles of Inclusive Education are given below: 1.6.2.1 Access: In order to encourage all-inclusive participation, there must be universal access to public infrastructure and facilities (such as,

education, community centres, recreational facilities, public libraries, resource centres, with internet facilities, well maintained public schools, clinics, water supplies, health and sanitations). These are the basic services which will create, when partly or fully put into place, conditions for people to have a sense of belonging by not suffering the painful consequence of being unable to afford them. As long as both the advantaged and disadvantaged have equal access to or benefit from these public facilities and services, they will all feel less burdened by their differences in socio-economic status, thus alleviating a possible sense of exclusion or frustration. It is important to note though, that access alone does not necessarily ensure use of public facilities, as unequal relations within communities and households may inhibit the use of facilities by vulnerable groups.

25 Addressing the unequal power relations is therefore a necessary step to increase participation. Similarly, equal access to public information plays an important role in creating an inclusive society, as it will make popular participation possible with well-informed members of society. Information that pertains to the society, such as what a community owns, generates or benefits from, should be made available to all. Collective participation, through accepted representations of all classes and backgrounds, in the planning, implementation and evaluation of community activities should be sought after. Publication or information sharing and increasing the accessibility of the community's activities will eliminate doubts and suspicions which could otherwise create a sense of exclusion. The mass media can be used as an effective tool to educate and enlighten members of society.

1.6.2.2 Equity: Equity in the distribution of wealth and resources is another critical element of inclusive society. How the resources are allocated and utilized will significantly affect the orientation of a society, either towards a more integrated, inclusive society, or an exclusive, polarized, and disintegrated one. Therefore, socio-economic policies should be geared up towards managing equitable distribution and equal opportunities. Inclusive policies, instructions and programs that are sensitive to and cater to the less advantaged and vulnerable need to be put in place in all areas/ sectors, including public health, and effectively implemented. There is a need for a strong monitoring and evaluation tools to demonstrate whether inclusiveness was actually achieved, as well as highlighted the areas for improvement.

1.6.2.3 Relevance: Inclusion in education is concerned with the quality of education of all learners. Hence, its relevance should be in terms of:

- Learners should have a voice in decisions that affect them;
- In assessment - choosing different ways of showing what they know, understand and can do, being involved in discussions about assessment information and how it can support future learning;

26 ●●●●● In the learning process -having different ways of accessing information, making it meaningful and expressing themselves; ●●●●● In planning their learning, taking personal factors into account; ●●●●● In the provision of support to overcome barriers to learning that does not stigmatise them or separate them from their peers; ●●●●● In curriculum - having a say in relevant, meaningful, personalised outcomes; ●●●●● In evaluating the learning outcomes to ensure educational achievement and well-being. ●●●●● All learners are entitled to be active participants in the life of the school and community; ●●●●● All learners should have a sense of belonging and feel secure in the school environment; ●●●●● Learners should have opportunities for collaboration and co-operative learning, with flexible peer groups to develop social and communication skills; ●●●●● Learners should take a full part in extracurricular and out-of-school activities; In an inclusive set up, all teachers should have positive attitudes and towards learners of diverged ability and socio-cultural backgrounds. They should see diversity as strength and stimulus for their own learning.

1.6.2.4 Participation: Social participation is understood as the act of engaging in society's activities. It refers to the possibility to influence decisions and have access to decision-making processes. Social participation creates mutual trust among individuals, which forms the basis for shared responsibilities towards the community and society. Participation is most significant as it denotes an active involvement in the process, not merely having access to society's activities, but engaging in them, and building and maintaining a social network. Participation also creates a sense of responsibility towards others, a community or an institution, and influences decisions or enables individuals to have access to the decision-making processes. Therefore, resources to fully participate in all aspects of societal activities are the ultimate step for successful social inclusion. It is not only because of lack of

27 financial resources that people are unable to participate, or stop participating, but also because of conditions, such as insufficient time or energy, spatial distance, lack of recognition, lack of respect, physical conditions or constraints. These elements all need to be taken into consideration.

1.6.2.5 Empowerment: According to a recent report for the World Bank Disability Group (2011), "Education is widely seen as a means to develop human capital, to improve economic performance and to enhance individual capabilities and,

chokes in order to enjoy freedoms of citizenship." Within this context, therefore, empowerment refers - "Acquiring the awareness and skills necessary to take charge of one's own life chances. It is about facilitating the ability of individuals (and groups) to make their own decisions and, to a greater extent than hitherto, to shape their own destinies." Some educational theorists tie the concept to Freire's (1970) notion of "the collective struggle for a life without oppression and exploitation" and the expression of students' and teachers' 'voices' which can be emancipatory in different levels. This is the understanding of empowerment embedded in these guidelines. Social transformation requires self-formation. Curriculum can play an instrumental role in fostering tolerance and promoting human rights. It is the means by which respect for the dignity of persons and awareness of responsibilities as national and global citizens are instilled in children. Such knowledge can be a powerful tool for transcending cultural, religious and other diversities and empowering teachers, students and all members of society. Furthermore, education is an important vehicle through which economically and socially marginalized adults and children can be empowered to change their life chances, and obtain the means to participate more fully in their communities. According to the World Bank, "programs that expand the access of excluded groups to education have led to important shifts in mind-set among community members and government leaders regarding the contributions that those groups can make to society." This is where change processes and empowerment go hand in hand to move towards inclusion for all learners.

28 Traditional Approach vs. Inclusive Approach: A comparison between the traditional and inclusive approaches in education is given below:

Traditional Approach	Inclusive Approach
1. Education for some	1. Education for all
2. Static	2. Flexible
3. Collective teaching	3. Individualistic teaching
4. learning in segregated areas	4. learning in integrated areas
5. Emphasis on subject-oriented teaching	5. Emphasis on child-centred learning
6. Diagnostic/ prescriptive	6. holistic
7. Opportunities limited by exclusion	7. Equalisation of opportunities for all
8. Disability View	8. Curricular view
9. Labels children disability wise	9. Planning is made on ability levels and opposes all kinds of labelling of children.

Barriers to Inclusive Education: Attitudinal, Physical and Instructional 1.7.1 Barriers to Inclusive Education

The discussion on inclusive education started with proposition of the 'social model of disability', which proposes systemic barriers, negative attitudes and exclusion by society (deliberately or inadvertently) as the ultimate factors defining disability. This shift in the idea came when it was realized that children in special schools were seen as geographically and socially segregated from their peers and failure of meaningfully integrating students in mainstream schools (integration). Inclusive education is not only limited to mainstreaming the learners with special needs but also concerned with identifying and overcoming all barriers to effective/continuous and quality participation in education. While we cannot neglect the importance of inclusive education, it remains unanswered why the practice of inclusive education is presenting some problems. It appears that it is both at the level of Government policy, but rather at the level of implementation. While the policy states that all children should go to school - and

29 Governments are enforcing this rule - in many cases quality learning is not taking place, which is contradictory to the ethos of inclusive education. The reasons for the non-implementation of the inclusive education in India, is because of various barriers which according to Johan (2002) are both external and as well as internal. The external barriers are confronted before coming to and getting enrolled in schools, which includes physical location of schools, non-availability of school, social stigmatization or economic conditions of the learners. The internal barriers are mostly psychological barriers like self-concept, confidence etc. which are sometimes imposed by the external factors and first step to remove the internal barriers is to remove the external barriers. The following are some of the external barriers:

1.7.1.1 Attitudinal: It has been noted that disabled students suffer from physical bullying, or emotional bullying. These negative attitudes results in social discrimination and thus, leads to isolation, which produces barriers to inclusion. Regarding disabled children some regions still maintain established beliefs that educating the disabled is pointless. It is sad to note here that these barriers are caused by our society, which is more serious to any particular medical impairment. The isolation which results from exclusion closes the doors of real learning. The negative attitudes often develop due to lack of knowledge. Along with information about disability or condition, their requirements must be provided to peers, school staff and teachers as well. Increasing interactions between learners with special needs and community through organization of fairs, meetings, discussions etc. can play very important role to counsel the parents of these learners, especially in rural areas about the importance of providing education for developing self-reliant individuals. There is also a need to shift in perspectives and values so that diversity is appreciated and teachers are 'given skills to provide all children, including those with different learning needs with quality education. Also, at the policy level, it should be mandatory for all to educate about disability, so that a responsive individuals who respects disability could be developed.

1.7.1.2 Physical : Along with the attitudinal barriers which are faced by the learners on the daily basis, another important barrier, is the physical barriers, which includes school buildings, playgrounds, washrooms, library, laboratory etc. Apart from this, the majority of schools are physically inaccessible to many learners because of poor buildings, particularly in, rural areas. Since most schools are not equipped to respond to special needs poses blockage for learners in physically getting into school, many of the students require a personal assistant for such basic activities as taking personal care or remedial education efforts. Most school buildings don't respond to the requirement of these learners properly. For example, if there is a ramp, sometimes it is too steep, often the doors were too heavy for the student to open unaided which impedes the access. Hence, it is important for implementing the inclusive education in schools, it is important to overcome such physical barriers. Along with basic changes in the architectural designs such as widening doorways, removing unnecessary doors, installing proper ramps, technology could be used in the form of motion sensors to open doors, flush toilets and automatic door buttons for easier access through doors. Voice recognition technology can also used for activating many of the above-mentioned barriers. Since, there is an inadequacy of resources available to meet the basic needs in education, it is estimated that for achieving the inclusive education goal will require additional financial support from the Governments.

1.7.1.3 Instructional : The instructional barriers refer to the inadequacy of teaching and administrative practices carried out in ordinary schools that were chosen or are being chosen to become inclusive. The instructional barriers can be addressed by practicing the following principles: (i) Singularity - each student is unique; in this sense, the school needs to set individualized goals along with the student and/or her/his family; (ii) Multiple Intelligences - the teacher, when teaching the content of their respective discipline, needs to stimulate and use each student's entire brain; (iii) Learning style - the teacher, when planning their lessons, needs to focus on each student's learning peculiarities; (iv) learning evaluation the school needs to adopt the system based on selfhood (to compare the assessment of each student with other assessments of the same student, not of other students), on continuity (all-classes serve as evidence of learning) and on inclusiveness (assessments should help to include and not to exclude the student); (v) Coherence - the whole school needs to adopt inclusive attitudes: teachers and staff must undergo periodic training on inclusive education.

31 1.8 "Check Your Progress" 1 - 5 Check Your Progress - 1 1. Why is disability considered as a developmental issue of a society?

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2. Explain the significance of inclusive education.

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3. Define the concept of marginalization.

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4. Give an operational definition of inclusion.

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5. What are the important outcomes of inclusion of a society?

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32 Check Your Progress - 2 1. What do you mean by segregation?

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2. How the EFA programme is related with inclusive education?

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3. Explain the significance of PWD Act, 1995.

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4. State the major roles being undertaken by the RCI in developing inclusion in education.

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5. What do you mean by special school?

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33 Check Your Progress - 3 1. What do you mean by diversity in classroom?

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..... 2. State the significance of diversity in learners' learning style.

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..... 3. Explain some major characteristics of diversity in learners' linguistic ability.

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..... 4. What is meant by socio-cultural multiplicity in the classroom?

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..... Check Your Progress - 4 1. Explain the concept of 'inclusive education'.

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34 2. What are the basic principles of inclusive education?

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..... 3. How access is related with inclusive education?

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..... 4. State the importance of equity in inclusion.

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..... 5. Explain the significance of relevance in inclusive education.

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..... 6. How is participation related with social inclusion?

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35 7. Why is empowerment considered as a basic principle of inclusive education?

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..... Check Your Progress - 5 1. What do you mean by barriers to inclusive education?

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..... 2. Explain the attitudinal barriers to inclusion.

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..... 3. Discuss the physical barriers to inclusive education.

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..... 4. What ts meant by instructional barriers to inclusive education?

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36 1.9 Let us Sum Up For Implementing the inclusive education successfully, it is important that teachers must have positive. attitudes towards learners with diverged needs. But, because of lack of knowledge, education, uderstanding, or effort the teachers give inapropriate substitute work to the learners, which eventually leads to learners dissatisfaction and poor quality of learning. Another important feature of the schools is high teacher- student ratios (average 1:45) and where it is expected that learners of diverse abilities have to be taught together. At the first place, there is a scarcity of trained teachers to deal with the diversity and secondly, it is very wrong to assume to deal with 45 learners with diversity. Hence, it is important to reduce the teacher-learner's ratio in the classroom, which is only possible if we have more schools with trained teachers to deal with the diversity of learners. At present, training to teachers is fragmented, uncoordinated and inadequate taking place in a segregated manner, i.e. one for special children and another for students with general capabilities; both of them are preparing teachers for the segregated schools. However, there is also an effort by SCERT, DIETs in providing ongoing training programme, which are not adequate because of various reasons.

Therefore, it is important that an inclusive teacher education programme must be designed which can foster proper skills among teachers. 1.10 References Booth, Tony (1996). A Perspective of Inclusion from England. Cambridge Journal of Education, 26(1), 87-99. Ed.C1L (2001). A Report on National Level Workshop on Towards Inclusive Schools in DPEP, JP Naik Cente, Pune. Evans, Peter, (2000). Including Students-with Disabilities in Mainstream School in Savolainen, H, Kokkala, H. & Alasuotari, H (Fds). Meeting Special and Diverse Educational Educational Needs: Making Inclusive Education a Reality. Ministry of Foreign Affairs of Finland, Helsinki. Friere, P (1970). Pedagogy of the Oppressed Continuum, New York. Mani MNG (2000). Inclusive Education. Ramakrishna Mission Vidyalaya, Coimbatore. Nanda, B P & Ghosh, Sanat K. (2008). Bishesh Sikhshar Itihas. Rabindra Bharati University, Kolkata.

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38 Unit - 2 □□□□□ Policies &

Frameworks Facilitating

Inclusive Education Structure 2.1 Introduction 2.2 Objectives 2.3 International Declarations 2.3.1

Universal Declaration of Human Rights 2.3.2 Word Declaration for Education for All (1990) 2.4 International Conventions:

2.4.1 Convention against Discrimination (1990) 2.4.2

Convention on Rights of Child (1989) 2.4.3

United Nations Convention of Rights of Persons with Disabilities (

UNCRPD) 2006 2.5

International Framework 2.5.1 Salamanca framework 2.5.2 Bwako Millennium Framework of Action 2002 2.6

National Commissions & Policies 2.6.1 Kothari Commission (1964) 2.6.2 National Education Policy 1968 2.6.3 National

Policy on Education 1986 2.6.4 Revised National Policy on Education 1992 2.6.5 National Curriculum Framework 2005

2.6.6

National Policy for Persons with Disabilities (2006)

39 2.7 National Acts & Programmes 2.7.1 IEDC (1974) 2.7.2 RCI Act (1992) 2.7.3 PWD Act (1995) 2.7.4

The National Act (1999) 2.7.5 The Sarva Shiksha Mission (2000) 2.7.6 Right to Education Act (2006) 2.7.7 Rashtriya

Madhyamik Shiksha Abhiyan (RMSA) (2009) 2.7.8 Inclusive Education for Disabled at Secondary stage (IEDSS) 2013 2.8 Let

us Sum Up 2.9 "Check Your Progress" 2.10 Reference 2.1 Introduction The emphasis on Human Rights Education began

in 1995 with the beginning of the UN Decade for Human Rights Education. In 1953 with the UNESCO Associated Schools

Program served as an "initial attempt to teach human rights in formal school settings". The first formal request for the

need to educate students about human rights came about in UNESCO's 1974 article Recommendation. It was

concerning about Education for International Understanding, Cooperation and Peace, and Education Relating to Human

Rights and Fundamental Freedoms. The participants of the International Congress on the Teaching of Human Rights

eventually met in 1978 to form a specific definition of what would be required application of the education in formal

curricula. The aims at which the Congress agreed upon including the encouragement of tolerant attitudes with focus on

respect, providing knowledge of human rights in the context of national and international dimensions as well as their

implementations finally the develop the awareness of human the congress wanted to rights translating into reality

whether social or political on national and international levels.

40 Human Rights Education became an official central concern internationally after the World Conference on Human

Rights in 1993. This conference brought the issue of formal education to the top of many countries priority lists which

was brought to the attention of the United Nations. It was two years later that the United Nations approved the Decade

for Human Rights Education, which reformed the aims of application once again. Since the development of the UN

Decade, the incorporation of human rights education into formal school curricula has been developed and diversified

with the assistance of nongovernmental organizations, intergovernmental organizations, and individuals dedicated to

spreading the topic through formal education. Today the most influential document has been used to determine what

qualifies as human rights and how to implement these ideas and rights into everyday's life in the Universal Declaration.

This declaration was adopted by the General Assembly in 1948, making December 10th annual Human Rights Day ever

since. To this day the 30 article compilation is seen

as "a common standard of achievement for all peoples and all nations" 2.2

Objectives ✓✓✓✓✓ To gain an understanding regarding International declaration of inclusive Education ✓✓✓✓✓ To know

about various International Conventions on Inclusive Education ✓✓✓✓✓ To understand different International

Frameworks pertaining to Inclusive education ✓✓✓✓✓ To delineate national Commission & policies. ✓✓✓✓✓ To

comprehend the various act and programmes reflecting inclusive 2.3 International Declarations: 2.3.1

Universal Declaration of Human Rights The Universal Declaration of Human Rights (1948)

was drafted by

the

UN Commission on Human Rights in 1947 and 1948.

The Declaration was adopted by the United Nations General Assembly on 10th December 1948.

41

Amongst other human rights, this declaration enunciates certain fundamental human rights of every human being which are of special interest in the study of the ethics of circumcision. They are the rights to security of person, to freedom from torture and other cruel and unusual treatment, and to privacy. Motherhood and childhood have a right to special protection. Preamble Whereas

recognition

of the inherent dignity and of the equal and unalienable rights of all members of the human family is the foundation of freedom, justice and peace in the world.

Whereas disregard and contempt for human rights have resulted in barbarous acts which have outraged the conscience of mankind, and the advent of a world in which human beings shall enjoy freedom of speech and belief and freedom from fear and want has been proclaimed as the highest aspiration of the common people, Whereas it is essential, if a man is not to be compelled to have recourse, as a last resort, to rebellion against tyranny and oppression, that human rights should be protected by the rule of law, Whereas it is essential to promote the development of friendly relations between nations, Whereas

the peoples of the United Nations have in the Charter reaffirmed their faith in fundamental human rights, in the dignity and worth of the human being and

in the equal rights of men and women

and have determined to promote social progress and better standards of life in larger freedom,

Whereas Member States have pledged themselves to achieve, in cooperation with the United Nations, the promotion of universal respect for and observance of human rights and fundamental freedoms,

Whereas a common understanding of these rights and freedoms is of the greatest importance for the full realization of this pledge, Now, therefore, The General Assembly proclaims this Universal Declaration of Human Rights as a common standard of achievement for all peoples and all nations.

The every individual and every organ of society should keep this Declaration constantly in mind. The teaching and education promote the respect for these rights and freedoms by progressive measures in national and international to secure their universal and

42 effective recognition and observance. Both among the peoples of Member States themselves and among the peoples of territories are under the jurisdiction. Article 1 All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood. Article 2

Everyone is entitled to all the

rights and freedoms set forth

in this Declaration,

without distinction of any kind,

such as

race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.

Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any /other limitation of sovereignty. Article 3 Everyone has the right to life, liberty and security of person.

Article 5

No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.

Article 6 Everyone has the right to

recognition everywhere as a person before the law. Article 7 All are equal before the law and are entitled without any discrimination to equal protection of the law. All are entitled to equal protection against any discrimination in violation of this Declaration and against any incitement to such discrimination. Article 8 Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted him by the constitution or by law.

Article 12 No one shall be subjected to arbitrary interference with his privacy, family,

43 home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks.

Article 18 Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance. Article 25 2. Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection. Article

28 Everyone is entitled to a social and international order in which the rights and freedoms set forth in this Declaration can be fully realized. Article 29 2. In the exercise of his rights and freedoms, everyone shall be subject only to such limitations as are determined by law solely for the purpose of securing due recognition and respect for the rights and freedoms of others and of meeting the just requirements of morality, public order and the general welfare in a democratic society. 3. These rights and freedoms may in no case be exercised contrary to the purposes and principles of the United Nations. Article 30 Nothing in this Declaration may be interpreted as implying for any State, group or person any right to engage in any activity or to perform any act aimed at the destruction of any of the rights and freedoms set forth herein.

2.3.2 Word Declaration for Education for All (1990) Over sixty years ago education was declared as a basic human right for every person, and enshrined

in the Universal Declaration on Human Rights in 1948. Since then, it has been reaffirmed in

the International Covenant on Economic, Social and Cultural Rights (1966),

the Conventional

on the Elimination of

Discrimination Against Women (1979) and the Convention on the Rights of the Child (1989)

among many other international human rights instruments.

44 In 1990, over 150 governments adopted the World Declaration on Education for All at Jomtien, Thailand to boost the efforts towards delivering the right to education. Ten years later, the World Education Forum in Dakar, Senegal reaffirmed this commitment and adopted the six goals of Education For All (EFA) that run to 2015: Goal 1:

Expanding and improving comprehensive early childhood care and education, especially for the most disadvantaged and vulnerable children. Goal 2: All children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities have access to free, quality and compulsory primary education by 2015. Goal 3: Ensuring the learning needs of all young people and adults

who

are met through equitable access to appropriate learning and life skills programmes Goal 4: Achieving a 50 per cent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults. Goal 5: Eliminating gender disparities in primary and secondary education by 2005, and

achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality Goal 6: Improving every aspect of the quality of education, and ensuring their

excellence so that recognised and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills 180

countries signed up to make these goals happen, committing to putting legal frameworks, policies and finance .

Everyone has a right to get education in four corner that are available, accessible, acceptable and adaptable. The richest countries pledged to help make Education for All a reality by committing to principles of international cooperation towards those countries with fewer financial resources. Commitment towards the right to education was also reflected in the UN Millennium Development Goals, set in 2000 with a deadline for achievement by 2015. There are eight Millennium Development Goals (MDGs) of which two are focussed on education: Ensure that all boys and girls complete primary schooling by 2015 Eliminate gender disparities in primary education by 2005 and at all levels by 2015 But the progress has been painfully slow. In the period immediately after the

45 setting of both the MDGs and the six EFA goals, investments were made by governments committed to achieving these goals. Education budgets, both foreign and domestic increased, enabling the abolition of tuition fees for primary school in several countries and the development of improved national educational plans. Averagely 8.9% of domestic budget is going to education in low income countries - rising to an average of over 10% in sub-Saharan Africa - States are still falling behind. ●●●●● Enrolment in primary school may have increased since 2000, but this has slowed towards the end of the 2000-2010 periods; worse, completion rates remain low, with 10 million children dropping out of primary school every year in sub-Saharan Africa alone. ●●●●● Millions of children who complete the education of primary schools do so with poor performance than expected levels of reading, writing and numeracy they receive poor quality of education when they are in schools and - where pupil-teacher ratio is quite unnatural in the very poorest areas. ●●●●● Women and girls remain at a huge disadvantage: although gender parity in primary enrolment is within reach, girls are still less likely to progress to secondary education - in the vast majority of African countries, this chance is less than 50% - and women make up almost two-thirds of the 796 million adults without basic skills. ●●●●● Another 1.8 million teachers are needed to achieve universal primary education by 2015. 2.4 International Conventions: 2.4.1 Convention against Discrimination (1990) The General Conference of the United Nations Educational, Scientific and Cultural Organization, meeting in Paris from 14th November to 15th December 1960, at its eleventh session, Recalling that the Universal Declaration

of Human Rights asserts the principle of non-discrimination and proclaims that every person has the right to education, Considering that discrimination in education is a violation of rights enunciated in that Declaration, Considering that, under the terms of its Constitution, the United Nations Educational, Scientific and Cultural Organization has the purpose 46 of instituting collaboration among the nations with a view to furthering for all universal respect for human rights and equality of educational opportunity. Recognizing that, consequently, the United Nations Educational, Scientific and Cultural Organization, while respecting the diversity of national educational systems, has the duty not only to prescribe any form of discrimination in education but also to promote equality of opportunity and treatment for all in education, Having before It proposals concerning the different aspects of discrimination in education, constituting item 17.1.4 of the agenda of the session, Having decided at its tenth session that this question should be made the subject of an international convention as well as of recommendations to Member States, Adopts this Convention on the fourteenth day of December 1960. Article 1 1. For the purposes of this Convention, the term 'discrimination' includes any distinction, exclusion, limitation or preference which, being based on

race, colour, sex, language, religion, political or other opinion, national or social origin, economic condition or birth,

has the

purpose or effect of nullifying or impairing equality of treatment in education

and in particular: (a) Of depriving any person or group of persons of access to education of any type or at any level; (b) Of limiting any person or group of persons to education of an inferior standard; (c) Subject to the provisions of Article 2 of this Convention, of establishing or maintaining separate educational systems or institutions for persons or groups of persons; or (d) Of inflicting on any person or group of persons conditions which are in- compatible with the dignity of man. 2. For the purposes of this Convention, the term 'education' refers to all types and levels of education, and includes access to education, the standard and quality of education, and the conditions under which it is given. Article 2 When permitted in a State, the following situations shall not be deemed to constitute discrimination, within the meaning of Article 1 of this Convention:

47 (a)

The establishment or maintenance of separate educational systems or institutions for pupils of the two sexes offering equivalent access to education,

provide a teaching staff with qualifications of the same standard as well as school premises and equipment of the same quality, and afford the opportunity to take the same or equivalent courses of study; (b) The establishment or maintenance, for religious or linguistic reasons, of separate educational systems or institutions offering an education

which is in keeping with the wishes of the pupil's parents or legal guardians, if participation in such systems or attendance at such institutions is optional and if the education provide to make like such standards as may be laid down or approved by the competent authorities, in particular for education of the same level; (c)

The establishment or maintenance of private educational institutions, if the object of the institutions is not to

secure the exclusion of any group but to provide educational facilities in addition to those provided by the public authorities, if the institutions are conducted in accordance with that object, and if the education provided conforms with such standards as may be laid down or approved by the competent authorities, in particular for education of the same level. Article 3 In order to eliminate and prevent discrimination within the meaning of this Convention, the States Parties thereto undertake: (a) To abrogate any statutory provisions and any administrative instructions and to discontinue any administrative practices which involve discrimination in education; (b) To ensure, by legislation where necessary, that there is no discrimination in the admission of pupils to educational institutions; (c) Not to allow any differences of treatment by the public authorities between nationals, except on the basis of merit or need, in the matter of school fees and the grant of scholarships or other forms of assistance to pupils and necessary permits and facilities for the pursuit of studies in foreign countries ; (d) Not to allow, in any form of assistance granted by the public authorities to educational institutions, any restrictions or preference based solely on the ground that pupils belong to a particular group; 48 (e) To give foreign nationals resident within their territory the same access to education as that given to their own nationals. Article 4 The States Parties to this Convention undertake furthermore to formulate, develop and apply a national policy which, by methods appropriate to the circumstances and to national usage, will tend to promote equality of opportunity and of treatment in the matter of education and in particular: (a) To make primary education free and compulsory; make secondary education in its different forms generally available and accessible to all; make higher education equally accessible to all on the basis of individual capacity; assure compliance by all with the obligation to attend school prescribed by law; (b) To ensure that the standards of education are equivalent in all public educational institutions of the same level, and that the conditions relating to the quality of the education provided are also equivalent; (c) To encourage and intensify by appropriate methods the education of persons who have not received any primary education or who have not completed the entire primary education course and the continuation of their education on the basis of individual capacity; (d) To provide training for the teaching profession without discrimination. Article 5 1. The States Parties to this Convention agree that: (a) Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms; it shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace; (b) It is essential to respect the liberty of parents and, where applicable, of legal guardians, firstly to choose for their children institutions other than those maintained by the public authorities but conforming to such minimum educational standards as may be laid down or approved by the competent authorities and, secondly, to ensure in a manner consistent with the procedures followed in the State for the application of its legislation, the religious and moral education of the children in conformity with their own convictions; and

49 no person or group of persons should be compelled to receive religious instruction inconsistent with his or their convictions; (c) It is essential to recognize the right of members of national minorities to carry on their own educational activities, including the maintenance of schools and, depending on the educational policy of each State, the use or the teaching of their own language, provided however: (i) That this right is not exercised in a manner which prevents the members of these minorities from understanding the culture and language of the community as a whole and from participating in its activities, or which prejudices national sovereignty; (ii) That the standard of education is not lower than the general standard laid down or approved by the competent authorities; and (iii) That attendance at such schools is optional. 2. The States Parties to this Convention undertake to take all necessary measures to ensure the application of the principles enunciated in paragraph 1 of this Article. Article 6 In the application of this Convention, the States Parties to it undertake to pay the greatest attention to any recommendations hereafter adopted by the General Conference of the United Nations Educational, Scientific and Cultural Organization defining the measures to be taken against the different forms of discrimination in education and for the purpose of ensuring equality of opportunity and treatment in education. Article 7 The States Parties to this Convention shall in their periodic reports submitted to the General Conference of the United Nations Educational, Scientific and Cultural Organization on dates and in a manner to be determined by it, give information on the legislative and administrative provisions which they have adopted and other action which they have taken for the application of this Convention, including that taken for the formulation and the development of the national policy defined in Article 4 as well as the results achieved and the obstacles encountered in the application of that policy. 50 Article 8 Any dispute which may arise between any two or more States Parties to this Convention concerning the interpretation or application of this Convention, which is not settled by negotiation shall at the request of the parties to the dispute be referred, failing other means of settling the dispute, to the International Court of Justice for decision. Article 9 Reservations to this Convention shall not be permitted. Article 10 This Convention shall not have the effect of diminishing the rights which individuals or groups may enjoy by virtue of agreements concluded between two or more States, where such rights are not contrary to the letter or spirit of this Convention. Article 11 This Convention is drawn up in English, French, Russian and Spanish, the four texts being equally authoritative. Article 12 1. This Convention shall be subject to ratification or acceptance by States Members of the United Nations Educational, Scientific and Cultural Organization in accordance with their respective constitutional procedures. 2. The instruments of ratification or acceptance shall be deposited with the Director-General of the United Nations Educational, Scientific and Cultural Organization. Article 13 1. This Convention shall be open to accession by all States not Members of the United Nations Educational, Scientific and Cultural Organization which are invited to do so by the Executive Board of the Organization. 2. Accession shall be effected by the deposit of an instrument of accession with the Director-General of the United Nations Educational, Scientific and Cultural Organization. Article 14 This Convention shall enter into force, three months after the date of the deposit of the third instrument of ratification, acceptance or accession, but only with respect to

51 those States which have deposited their respective instruments on or before that date. It shall enter into force with respect to any other State three months after the deposit of its instrument of ratification, acceptance or accession. Article 15 The States Parties to this Convention recognize that the Convention is applicable not only to their metropolitan territory but also to all non-self-governing, trust, colonial and other territories for the international relations of which they are responsible; they undertake to consult, if necessary, the governments or other competent authorities of these territories on or before ratification, acceptance or accession with a view to securing the application of the Convention to those territories, and to notify the Director-General of the United Nations Educational, Scientific and Cultural Organization of the territories to which it is accordingly applied, the notification to take effect three months after the date of its receipt. Article 16 1. Each State Party to this Convention may denounce the Convention on its own behalf or on behalf of any territory for whose international relations it is responsible. 2. The denunciation shall be notified by an instrument in writing, deposited with the Director-General of the United Nations Educational, Scientific and Cultural Organization. 3. The denunciation shall take effect twelve months after the receipt of the instrument of denunciation. Article 17 The Director-General of the United Nations Educational, Scientific and Cultural Organization shall inform the States Members of the Organization, the States not members of the Organization which are referred to in Article 13, as well as the United Nations, of the deposit of all the instruments of ratification, acceptance and accession provided for in Articles 12 and 13, and of the notifications and denunciations provided for in Articles 15 and 16 respectively. Article 18 1. This Convention may be revised by the General Conference of the United Nations Educational, Scientific and Cultural Organization. Any such revision

52 shall, however, bind only the States which shall become Parties to the revising convention. 2. If the General Conference should adopt a new convention revising this Convention in whole or in part, then, unless the new convention otherwise provides, this Convention shall cease to be open to ratification, acceptance or accession as from the date on which the new revising convention enters into force. Article 19 In conformity with Article 102 of the Charter of the United Nations, this Convention shall be registered with the Secretariat of the United Nations at the request of the Director-General of the United Nations Educational, Scientific and Cultural Organization. Done in Paris, this fifteenth day of December 1960, in two authentic copies bearing the signatures of the President of the eleventh session of the General Conference and of the Director-General of the United Nations Educational, Scientific and Cultural Organization, which shall be deposited in the archives of the United Nations Educational, Scientific and Cultural Organization, and certified true copies of which shall be delivered to all the States referred to in Articles 12 and 13 as well as to the United Nations.

2.4.2 Convention on Rights of Child (1989) The General Assembly, Recalling its previous resolutions, especially resolutions 33/166 of 20th December 1978 and 43/112 of 8th December 1988, and those of the Commission on Human Rights and the Economic and Social Council related to the question of a convention on the rights of the child, Taking note, in particular, of Commission on Human Rights resolution 1989/57 of 8th March 1989, by which the Commission decided to transmit the draft convention on the rights of the child, through the Economic and Social Council, to the General Assembly, and Economic and Social Council resolution 1989/79 of 24th May 1989, Reaffirming that children's rights require special protection and call for continuous improvement of the situation of children all over the world, as well as for their development and education in conditions of peace and security, Profoundly concerned that the situation of children in many parts of the world remains critical as a result of inadequate social conditions, natural disasters, armed 53 conflicts, exploitation, illiteracy, hunger and disability, and convinced that urgent and effective national and international action is called for, Mindful of the important role of the United Nations Children's Fund and of that of the United Nations in promoting the well-being of children and their development, Convinced that an international convention on the rights of the child, as a standard-setting accomplishment of the United Nations in the field of human rights, would make a positive contribution to protecting children's rights and ensuring their well-being, Bearing in mind that 1989 marks the thirtieth anniversary of

the Declaration of the Rights of the Child and the tenth anniversary of the International Year of the Child, 1.

Expresses its appreciation to the Commission on Human Rights for having concluded the elaboration

of

the draft convention on the rights of the child; 2. Adopts and opens for signature, ratification and accession the Convention on the Rights of the Child contained in

the annex to the present resolution; 3. Calls upon all Member States to consider signing and ratifying or acceding to the Convention as a matter of priority and expresses the hope that it will come into force at an early date; 4. Requests the Secretary-General to provide all the facilities and assistance necessary for dissemination of information on the Convention; 5. Invites United Nations agencies and organizations, as well as intergovernmental and non-governmental organizations, to intensify their efforts with a view to disseminating information on the Convention and to promoting its understanding; 6. Requests the Secretary-General to submit to the General Assembly at its forty-fifth session a report on the status of the Convention on the Rights of the Child; 7.

Decides to consider the report of the Secretary-General at its forty-fifth session under an item entitled "

Implementation

of

the

Convention

on the Rights

of the Child".

54 2.4.3

United Nations Convention

of

Rights

of

Persons

with Disabilities (

UNCRPD) 2006

The

Convention on the Rights of

Persons with

Disabilities

is

an international

human rightstreaty of

the United Nations intended

to protect the rights and dignity of persons with disabilities.

Parties to the

Convention

are required

to

promote, protect, and ensure the full enjoyment of human rights by persons with disabilities and

ensure that they enjoy full equality under the law. The Convention has served as the major catalyst in the global

movement

from viewing

persons

with disabilities as objects of charity, medical treatment and social protection towards viewing them as full and equal

members of society,

with human rights.

It is also the only UN human rights instrument with an explicit sustainable development dimension. The Convention was the first human rights treaty of the third millennium.

The text was adopted by the United Nations General Assembly on 13 December 2006,

and

opened for signature on 30 March 2007.

Following ratification by the 20th party, it came into force on 3 May 2008. As of February 2016, it has 160 signatories and 162 parties, including 161 states and the European Union (which ratified it on 23 December 2010 to the extent responsibilities of the member states were transferred to the European Union). In December 2012, a vote in the United States Senate fell six votes short of the two-thirds majority required for ratification.[4] The Convention is monitored by the Committee on the Rights of Persons with Disabilities.

History 1981 to 1992 was the UN "Decade of Disabled Persons". In 1987, a global meeting of experts to review progress recommended that the UN General Assembly should draft an international convention on the elimination of discrimination against persons with disabilities. Draft convention outlines were proposed by Italy and subsequently Sweden, but no consensus was reached. Many government representatives argued that existing human rights documents were sufficient. Instead, non-compulsory "Standard Rules on the Equalization of Opportunities for Persons with Disabilities" were adopted by the General Assembly in 1993. In 2000, leaders of five international disability NGOs issued a declaration, calling on all governments to support a Convention. In 2001, the General Assembly, following a proposal by Mexico, established an Ad Hoc Committee to consider proposals for a comprehensive and integral convention to promote and protect the rights and dignity of persons with disabilities, based on a holistic approach.[5]

Disability rights organizations, including the International Disability Alliance as coordinator of an ad hoc International Disability 55 Caucus, participated actively in the drafting process, in particular seeking a role for disabled people and their organizations in the implementation and monitoring of what became the Convention. Mexico initiated negotiations, with active support from GRULAC (the Latin American regional group). When support for a Convention was foundering in 2002 due to WEOG opposition, New Zealand played a pivotal role in achieving cross- regional momentum. Acting as facilitator from 2002-03, New Zealand eventually assumed the formal role of Chair of Ad Hoc Committee and led negotiations to a consensus agreement in August 2006, working closely with other Bureau members Jordan, Costa Rica, the Czech Republic, and South Africa, as well as Korea and Mexico.

The Convention became one of the most quickly supported human rights instruments in history, with strong support from all regional groups. 160

States have signed the Convention upon its opening in 2007 and 126 States ratified the Convention within its first five years. In recognition of its role in creating the Convention, as well as the quality of New Zealand's landmark national Disability Strategy, Governor- General of New Zealand Anand Satyanand received the 2008 World Disability Award on behalf of the nation. Summary

The Convention follows the civil law tradition, with a preamble, in which the principle that "all human rights are universal, indivisible, interdependent and interrelated" of Vienna Declaration and Programme of Action is cited, followed by 50 articles. Unlike many UN covenants and conventions, it is not formally divided into parts. Article 1 defines the purpose of the Convention:

to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity

Articles 2 and 3 provide definitions and general principles including communication, reasonable accommodation and universal design. Articles 4-32 define the rights of persons with disabilities and the obligations of states parties towards them. Many of these mirror rights affirmed in other UN conventions such as the International Covenant on Civil and Political Rights, International Covenant on Economic, Social and Cultural Rights or the Convention Against Torture, but with specific obligations ensuring that they can be fully realised

56 by persons with disabilities. Rights specific to this convention include the rights to accessibility including the information technology, the rights to live independently and be included in the community (Article 19), to personal mobility (article 20), habilitation and rehabilitation (Article 26), and to participation in political and public life, and cultural life, recreation and sport (Articles 29 and 30). In addition, parties to the Convention must raise awareness of the human rights of persons with disabilities (Article 8), and ensure access to roads, buildings, and information (Article 9). Articles 33-39 govern reporting and monitoring of the convention by national human rights institutions (Article 33) and Committee on the Rights of Persons with Disabilities (Article 34). Articles 40-50 govern ratification, entry into force, and amendment of the Convention. Article 49 also requires that the Convention be available in accessible formats.

Core provisions Guiding principles of the Convention

There are eight guiding principles that underlie the Convention: 1.

Respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons 2.

Non-discrimination 3.

Full and

effective participation and inclusion in society 4.

Respect for difference and acceptance of

persons with

disabilities

as part of human diversity and humanity 5. Equality of opportunity 6. Accessibility 7. Equality between men and women 8.

Respect for

the

evolving capacities of children with disabilities

and respect for the right of children with disabilities to preserve their

identities

Definition of disability The Convention

adopts a social model of disability, and defines disability

as

57

including

those who have

long-term physical, mental, intellectual or sensory impairments which in interaction with

various

barriers may hinder their

full and effective participation in society on an equal basis

with

others.

Principle of "reasonable accommodation" The Convention defines "reasonable accommodation" to be "

necessary and appropriate modification and adjustments not imposing a disproportionate or undue burden, where

needed in a particular case, to ensure to persons with disabilities

the enjoyment or exercise

on an equal basis with others of all human rights and fundamental freedoms"

at the

Article 2 and demands this all aspects of life including inclusive education. Prevention of discrimination The Article 8 of

Convention stresses the awareness raising to foster respect for the rights and dignity against discrimination: 1.

To raise awareness throughout society, including at the family level, regarding persons with disabilities, and to foster

respect for the rights and dignity of persons with disabilities. 2. To combat stereotypes, prejudices and harmful practices

relating to persons with disabilities, including those based on sex and age, in all areas of life. 3. To promote awareness of

the capacities and contributions of persons with disabilities. 4.

Initiating and maintaining effective public awareness campaigns designed: (i) to nurture receptiveness to the rights of persons with disabilities. (ii) to promote positive perceptions and greater social awareness towards persons with disabilities. (iii) to promote recognition of the skills, merits and abilities of persons with disabilities, and of their contributions to workplace and the labour market. 5. Encouraging all organs of the mass media to portray persons with disabilities in a manner consistent with the purpose of the present Convention. 6. Promoting awareness-training programmes regarding persons with disabilities and the rights of persons with disabilities. Accessibility The Convention stresses that persons with disabilities should be able to live independently and participate fully in all aspects of life. To this end, States Parties should take appropriate measures to ensure that persons with disabilities have access, to the physical environment, to transportation, to information and communications technology, and to other facilities and services open or provided to the public. accessibility can be grouped into three main groups. 1. physical accessibility 2. service accessibility 3. accessibility to communication and information. Situations of risk and humanitarian emergency Article 11 of the Convention affirms that States Parties shall take, in accordance with their obligations under international law, including international humanitarian law and international human rights law, all necessary measures to ensure the protection and safety of persons with disabilities in situations of armed conflict, humanitarian emergencies and the occurrence of natural disaster. Recognition before the law and legal capacity Article 12 of the Convention affirms the equal recognition before law and legal capacity of the persons with disabilities. States Parties should: 1. reaffirm that persons with disabilities have the right to recognition everywhere as a person before the law. 2. recognize that persons with disabilities enjoy legal capacity on an equal basis with others in all aspects of life. 3. take appropriate measures to provide access by persons with disabilities to the support they may require in exercising their legal capacity. 4. ensure that all measures that relate to the exercise of legal capacity provide for appropriate and effective safeguards to prevent abuse in accordance with international human rights law. Such safeguards shall ensure that measures relating to the exercise of legal capacity respect the rights, will and preferences of the person, are free of conflict of interest and undue influence, are proportional and tailored to the person's circumstance, apply for the shortest time possible and are subject to regular review by a competent, independent and impartial authority or judicial body. The safeguards shall be proportional to the degree to which such measures affect the person's rights and interests. 59 Access to justice Article 13 of the Convention affirms the effective access to justice for persons with disabilities, stating that: 1. States parties shall ensure effective access to justice for persons with disabilities on an equal basis with others, including through the provision of procedural and age-appropriate accommodations, in order to facilitate their effective role as a direct and indirect participants, including as witnesses, in all legal proceeding, including at investigative and other preliminary stages. 2. In order to help to ensure effective access to justice for persons with disabilities, states Parties shall promote appropriate training for those working in the field of administration of justice, including police and prison staff. This Article together with the Article 12 are cited by the "Handbook on prisoners with special needs"[7] by United Nations Office on Drugs and Crime. Right to education The Convention states that persons with disabilities should be guaranteed the right to inclusive education at all levels, regardless of age, without discrimination and on the basis of equal opportunity. States Parties should ensure that: 1. children with disabilities are not excluded from free and compulsory primary education, or from secondary education; 2. adults with disabilities have access to general tertiary education, vocational training, adult education and lifelong learning; 3. persons with disabilities receive the necessary support, within the general education system, to facilitate their effective education;

and 4. effective individualized support measures are put in place to maximize academic and social development. States Parties should take appropriate measures, such as: 1. endorsing the learning of Braille, alternative script, augmentative and alternative modes, means and formats of communication and orientation and mobility skills, and facilitating peer support and mentoring; 2. supporting the learning of sign language and promoting the linguistic identity of the deaf community; 3. advocating that education of persons, particularly children, who are blind or deaf, is delivered in the most appropriate languages and means of communication for the individual; and 4. employing teachers, including teachers with disabilities, who are qualified in sign language and/or Braille, and to train education professionals and staff about disability awareness, use of augmentative and alternative modes and formats of communication, and educational techniques and materials to support persons with disabilities. Right to health Article 25 specifies that "persons with disabilities have the right to the enjoyment of the highest attainable standard of health without discrimination on the basis of disability." [8]

Protecting the integrity of the person Article 17 of the Convention states that every person with disabilities has a right to respect for his or her physical and mental integrity on an equal basis with others. Respect for the family Article 23 of the Convention prohibits compulsory sterilization of disabled persons [9] and guarantees their right to adopt children. Habilitation and rehabilitation Article 26 of the Convention affirms that "States Parties shall take effective and appropriate measures, including through peer support, to enable persons with disabilities to attain and maintain maximum independence, full physical, mental, social and vocational ability, and full inclusion and participation in all aspects of life. To that end, States Parties shall organize, strengthen and extend comprehensive habilitation and rehabilitation services and programmes, particularly in the areas of health, employment, education and social services, in such a way that these services and programmes: 1. Begin at the earliest possible stage, and are based on the multidisciplinary assessment of individual needs and strengths; 2. Support participation and inclusion in the community and all aspects of society, 61 are voluntary, and are available to persons with disabilities as close as possible to their own communities, including in rural areas. 3. States Parties shall promote the development of initial and continuing training for professionals and staff working in habilitation and rehabilitation service. 4. States Parties shall promote the availability, knowledge and use of assistive devices and technologies, designed for persons with disabilities, as they relate to habilitation and rehabilitation.

Participation rights
The Convention on the Right of Persons with Disabilities recognised that "that disability results from the interaction between persons with impairments and attitudinal and environmental barriers that hinders their full and effective participation in

society on an equal basis with others"

and that "persons with disabilities

continue to face barriers in their participation as equal members of society." The Convention makes participation of the disabled one of its principles, stating "The principles of the present Convention shall be:...

Full and effective participation and inclusion in society", subsequently enshrining the right of disabled to participate fully and equally in the community,

education, all aspect of life (in the context of habilitation and rehabilitation), political and public life, cultural life, leisure and sports.[10] States Parties should take appropriate measure such as: 1. To enables persons with disabilities to have the opportunity to develop and utilize their creative, artistic and intellectual potential, not only for their own benefit, but also for the enrichment of society. 2. In accordance with international law, to ensure that law protecting intellectual property rights do not constitute an unreasonable or discriminatory barrier to access by persons with disabilities to cultural materials. 3. So that persons with disabilities should be entitled, on an equal basis with others, to recognition and support of their specific cultural and linguistic identity, including sign languages and deaf culture. Work and employment Article 27 requires

that

States Parties recognize

the right of persons with disabilities to

work, on an equal basis

of

others; this includes the right to the opportunity to gain a living by

work freely chosen or accepted in a labour market and work

62 environment that is open, inclusive and accessible to persons with disabilities.

And that

States Parties shall safeguard and promote the realization of the right to work,

including for those who acquire a disability during the course of employment,

by taking appropriate steps, including through legislation, to inter alia: 1. Prohibit discrimination on the basis of disability with regard to all matters concerning all forms of employment, continuance of employment, career advancement and safe and healthy working conditions; 2. Protect the rights of

persons with disabilities, on an equal basis with others, to

just and favourable conditions of work, including equal opportunities and equal remuneration for work of equal value,

safe and healthy working conditions, including protection from harassment, and the redress of grievances; 3. Ensure that

persons with disabilities are able to exercise their labour and trade union rights on an equal basis with others; 4. Enable

persons with disabilities to have effective access to general technical and vocational guidance programmes, placement

services and vocational and continuing training; 5. Promote employment opportunities and career advancement for

persons with disabilities in the labour market, as well as assistance in finding, obtaining, maintaining and returning to

employment; 6. Promote opportunities for self-employment, entrepreneurship, the development of cooperative and

starting one's own business. 7.

Ensure that reasonable accommodation is provided to persons with disabilities

in the workplace. 8. Promote

the acquisition by persons with disabilities of work experience in the open labour market. 9.

Promote vocational and professional rehabilitation, job retention and return- to-work programmes

for

persons with disabilities. States Parties shall ensure that persons with disabilities are

not held in slavery or in servitude, and are protected, on an equal basis with others, from forces or compulsory labour.

Adequate standard of living and social protection Article 28 requires

that

States Parties recognize the right of persons with

63 disabilities to

an adequate standard of living for themselves and their families, including adequate food, clothing and housing, and to

the continuous improvement of living conditions, and shall take appropriate steps to safeguard and promote the

realization of this rights without discrimination

on the basis of disability.

States

Parties recognize the right of persons with disabilities to

social protection and to the enjoyment of that rights without discrimination on the basis of

disability, and shall take appropriate steps to safeguard and promote the realization of the rights, including measures; 1.

To ensure equal access by persons with disabilities to clean water service, and

to ensure access to appropriate and affordable service, device and other assistance for disability-related

needs. 2. To ensure access by

persons with disabilities, in particular women and girls with disabilities

and older persons with disabilities, to social protection programmes and poverty reduction programmes. 3. To ensure

access by persons with disabilities and their families living in situations of poverty to assistance from the State with

disability-related expenses, including adequate training, counselling, financial assistance and respite care. 4. To ensure

access by persons with disabilities to public housing programmes. 5. To ensure equal access by persons with disabilities

to retirement benefits and programmes. Right to vote Article 29 requires that all Contracting States protect "the right of

persons with disabilities to vote by secret ballot in elections and public referendums". According to this provision, each

Contracting State should provide for voting equipment which would enable disabled voters to vote independently and

secretly. Some democracies, e.g., the US, Japan, Netherlands, Slovenia, Albania or India allow disabled voters to use

electronic voting machines or electronic aides which help disabled voters to fill the paper ballot. In others, among them

Azerbaijan, Kosovo, Canada, Ghana, United Kingdom, and most of African and Asian countries, visually impaired voters

can use ballots in Braille or paper ballot templates. Many of these and also some other democracies, Chile for example,

use adjustable desks so that voters on wheelchairs can approach them. Some democracies only allow another person to

cast a ballot for

64 the blind or disabled voter. Such arrangement, however, does not assure secrecy of the ballot. Article 29 also requires

that Contracting States ensure "that voting procedures, facilities and materials are appropriate, accessible and easy to

understand and use." In some democracies, i.e. Sweden and the US, all the polling places already are fully accessible for

disabled voters. Reservations A number of parties have made reservations and interpretative declarations to their

application of the Convention. Australia does not consider itself bound to stop forcibly medicating those labeled mentally

ill when it is considered a last resort. El Salvador accepts the Convention to the extent that it is compatible with its

constitution. Malta interprets the right to health in Article 25 of the Convention as not implying any right to abortion. It

also reserves the right to continue to apply its own election laws around accessibility and assistance. Mauritius does not

consider itself bound by the Article 11 obligation to take all necessary measures to protect people with disabilities during

natural disasters, armed conflict or humanitarian emergencies, unless permitted by domestic legislation. The Netherlands

interprets the right to life in Article 10 within the framework of its domestic laws. It also interprets Article 25(f), which bars

the discriminatory denial of health care, as permitting a person to refuse medical treatment, including food or fluids.

Poland interprets Articles 23 and 25 as not conferring any right to abortion. The United Kingdom has reservations relating

to the right to education, immigration, service in the armed forces and an aspect of social security law. 2.5 International

Framework: 2.5.1

Salamanca framework More than 300 participants representing 92 governments and 25 international organizations met

in Salamanca in 1994 to further

the objective of Education for All

65 by considering

the fundamental policy shifts required to promote

the approach of inclusive education, namely enabling schools to

serve all children, particularly those with special educational needs.

Organized by the Government of Spain

in co-operation with UNESCO,

the Conference brought together senior education officials, administrators, policy-makers and specialists, as well as

representatives of the United Nations and the Specialized Agencies, other international governmental organizations,

non-governmental organizations and donor agencies.

The Conference adopted

the Salamanca Statement on Principles, Policy and Practice in Special Needs Education and a Framework for Action.

These documents are informed by the principle of inclusion, by recognition of the need to work towards "schools for all" - institutions which include everybody, celebrate differences, support learning, and respond to individual needs. As such, they constitute an important contribution to the agenda for achieving Education for All and for making schools educationally more effective. This

Framework

for Action on Special Needs Education was adopted by

the World Conference on Special Needs Education

organized by the Government of Spain in co-operation with UNESCO

and held in Salamanca from 7 to 10 June 1994. Its purpose is to inform policy and guide action by governments,

international organizations, national aid agencies, nongovernmental organizations and other bodies

in implementing

the Salamanca Statement on Principles, Policy and Practice in Special Needs Education.

The Framework draws extensively upon the national experience of the participating countries as well as upon

resolutions, recommendations and publications of the United Nations system and other intergovernmental

organizations, especially

the

Standard Rules on the Equalization of Opportunities for Persons with Disabilities'.

It also takes account of the proposals, guidelines and recommendations arising from the five regional seminars held to prepare the World

Conference.

The right of every child to an education is proclaimed in

the Universal Declaration of Human Rights and was forcefully

reaffirmed by the World Declaration on Education for All.

Every person with a disability has a right to express their wishes with regard to their education, as far as this can be

ascertained. Parents have an inherent right to be consulted on the form of education best suited to the needs,

circumstances and aspiration so far their children. The guiding principle that informs this Framework is that

Schools should

accommodate all children regardless of their physical, intellectual, social, emotional, linguistic or other conditions. This should

include disabled and gifted children, street and working children, children

from

remote or nomadic populations,

children from

66 linguistic, ethnic or cultural minorities and children from other disadvantaged or marginalized areas or groups.

These conditions create a range of different challenges to school systems. In the context of this Framework,

the term 'special educational needs' refers to all those children and youth whose needs arise from

disabilities or learning difficulties. Many children experience learning difficulties and thus have special educational needs at

some time during their schooling. Schools have to find ways of successfully educating all children, including those who

have serious disadvantages and disabilities. There is an emerging consensus that children and youth with special

educational needs should be included in the educational arrangements for the majority of children. This has led to the

concept of the inclusive school. The challenge confronting the inclusive school is that of developing a child-centered pedagogy capable of successfully educating all children, including those who have serious disadvantages and disabilities.

The merit of such schools is not only that they are capable of providing quality education to all children; their

establishments a crucial step in helping to change discriminatory attitudes, in creating welcoming communities and in

developing an inclusive society. A change in social perspective is imperative. For far too long, the problems of people with

disabilities have been compounded by a disabling society that has focused upon their impairments rather than their potential.

Special needs education incorporates the proven principles of sound pedagogy from which all children may benefit. It must accordingly

be adapted to the needs of the child rather than the child fitted to

preordained assumptions regarding the pace and nature of the learning process. A child-centred pedagogy is beneficial to all students and, as a consequence, society as a whole. Experience has demonstrated that it can substantially reduce the drop-out and repetition that are so much a part of many education systems while ensuring higher average levels of achievement. A child-centred pedagogy can help to avoid the waste of resources and the shattering of hope that is all too frequently a consequence of poor quality instruction and a 'one size fits all' mentality towards education. Child-centred schools are, moreover, the training ground for a people-oriented society that respects both the differences and the dignity of all human beings.

This Framework for Action comprises the following sections: I. New thinking in special needs education II. Guidelines for action at the national level A. Policy and organization B. School factors

67 C. Recruitment and training of educational personnel D. External support services E. Priority areas F. Community perspectives G. Resource requirements III. Guidelines for action at the regional and international level. 2.5.2

Biwako Millennium Framework of Action 2002 In May 2002, ESCAP adopted the resolution "

Promoting

an inclusive, barrier-free and rights-based society for people with disabilities

in

the Asian and Pacific

regions in

the 21st century". The resolution also proclaimed

the extension of the Asian and Pacific Decade of Disabled Persons 1993-2002,

for another decade, 2003- 2012. In October 2002, Governments

at the

High-level Intergovernmental Meeting to Conclude

the Asian and Pacific Decade of Disabled Persons 1993-2002,

adopted

the "

Biwako Millennium

Framework for Action

towards

an Inclusive, Barrier-free and Rights-based Society for Persons with Disabilities

in

Asia and the Pacific"

as the

regional policy guideline for

the new decade. The "Biwako Millennium Framework" outlines issues, action plans and strategies

towards an inclusive, barrier-free and rights-based society for persons with disabilities.

To achieve the goal, the

framework identifies seven priority areas

for action, in which critical issues, targets with specific timeframe and actions

are specified. In all, 21 targets and 17 strategies supporting the achievement of all the targets are identified.

The new decade (2003-2012) will ensure the paradigm

shift from a charity-based approach to a rights-based approach

to protect the

civil, cultural, economic, political and social rights of persons with disabilities.

To pursue the targets and strategies, consultations with and involvement of civil societies, inter alia, self-help

organizations and concerned NGOs are essential. The following summarizes the seven priority areas for action, the

targets, strategies, timeframe and supporting/monitoring mechanisms. (1)

Self-help organizations of persons with disabilities and related family and parent associations. (2)

Women with disabilities. (3) Early detection, early intervention and education.

68 (4) Training and employment, including self-employment. (5) Access to build environment and public transport. (6)

Access to information and communications,

including information, communication and assertive technologies. (7) Poverty alleviation through social security and livelihood programmes. (8)

Highlights of item (5): Access to built environment and public transport.

Inaccessibility to the built environment, including public transport systems, is still the major barrier for persons with disabilities.

This problem will only be exacerbated, as the number of older people with disabilities increases in the region. Universal design approaches benefit all people in society, including older persons, pregnant women and parents with young children. Its economic benefits have been legitimized, yet substantive initiatives at policy level have not been taken. Three targets are set to improve the situation: The Government should

adopt and enforce accessibility standards for planning of public facilities, infrastructure and transport, including those in rural/ agricultural contexts. Existing public transport systems and all new

and renovated public transport systems should be made accessible as soon as practicable. All international and regional funding agencies for infrastructure development should include universal and inclusive design concepts in their loan/grant award criteria. 2.6

National Commissions & Policies 2.6.1.

Kothari Commission (1964) Indian Education Commission (1964-1966), popularly known as Kothari Commission, was an ad hoc commission set up by the Government of India to examine all aspects of the educational sector in India, to evolve a general pattern of education and to advise guidelines and policies for the development of education in India.

It was formed

on 14 July 1964 under the chairmanship of Daulat Singh Kothari, then chairman of the University Grants Commission. The terms of reference of the commission was to formulate the general principles and guidelines for the development of education from primary level to the highest and advise the government on a standardized national pattern of education in India. However, the medical and legal studies were excluded from the purview of the commission. The tenure of the

commission was from 1964 to 1966 and the report was submitted by the commission on 29 June 1966. The four main themes of the commission were: 1. Increase in Productivity 2. Promoting social and National Integration 3.

Education and Modernization 4. Developing social, moral and spiritual values Main recommendations One of the main recommendations of the commission was the standardization of educational system on 10+2+3 pattern, across the country. It advised that the pre-primary education which had different names such as kindergarten, Montessori and pre-basic should be renamed as pre-primary and the primary education (renamed as lower primary) to be up to the 4th standard. It further classified the schooling as upper primary or higher primary and high school (up to standard X). The undergraduate education was identified as XI and XII standards under the name, higher secondary or pre university. The graduate studies were recommended to be standardized as a three-year course. The educational system up to master's degree was categorized as first (primary education), second (secondary education up to XII) and third levels of education (higher studies). The commission recommended that a common public education system should be introduced and the it should be vocationalized in general and special streams by introducing work experience as a part of education. It further stressed on the need to make work experience and social/national service as an integral part of education.

Specializations of subjects were advised to be started from higher secondary levels. The days of instruction were recommended to be increased to 234 for schools and 216 for colleges and the working hours to be fixed at not less than 1000 hours per academic year, preferably higher at 1100 or 1200 hours. It also advised for reduction of national holidays. Linking of colleges to a number of schools in the neighbourhood, utilization of school facilities 8 hours a day all through the year, establishment of book banks, identification of talents and provision of scholarships, setting up of day study and residential facilities and opportunities for students to earn while studying were some of the other recommendations of the commission. It also emphasized on free education up to and including lower secondary level of education.

70 Commission laid stress on women education and advised setting up of state and central level committees for overseeing women education. It suggested establishing schools and hostels for women and urged to identify ways to find job opportunities for women in the educational sector.[9] Focusing on equalization of opportunities to all irrespective of caste, religion and gender and to achieve social and national integration, the schools were advised to provide education to backward classes on a priority basis and the minimum level of enrolment at a secondary school were advised to be not less than 360 every year. Two sets of curricula were prescribed, one at state level and one at the national level and the schools were recommended to experiment with the curriculum. It also proposed that three or four text books to be prescribed for each subject and moral and religious education be made a part of the curriculum. The curriculum prescribed by the commission was: Lower primary level (1 to 4) ●●●●● One language (regional) ●●●●● Mathematical studies ●●●●● Environmental studies ●●●●● Creative studies ●●●●● Health studies ●●●●● Work experience Higher primary level (5 to 8) ●●●●● Two languages (one regional and one national) and preferably a third language ●●●●● Mathematical studies ●●●●● Science studies ●●●●● Social studies ●●●●● Art ●●●●● Physical education ●●●●● Work experience ●●●●● Moral studies Lower secondary level (IX and X) ●●●●● Three languages ●●●●● Mathematical studies

71 ●●●●● Science studies ●●●●● Social studies ●●●●● Art ●●●●● Physical education ●●●●● Work experience ●●●●● Moral studies Higher secondary level (XI and XII) ●●●●● Two languages (one modern Indian language and one classical or foreign language) ●●●●● Any three subjects from (a) one additional language, (b) History (c) Economics (d) Logic (e) geography (f) psychology (g) sociology (h) art (i) physics (j) chemistry (k) mathematics (l) biology (m) geology (n) home science ●●●●● Art ●●●●● Physical education ●●●●● Work experience ●●●●● Moral studies It also recommended the establishment of guidance and counselling centres and a new approach in the evaluation of student performances. The commission suggested the neighbourhood school system without social or religious segregation and a school complex system integrating primary and secondary levels of education. It put forward the suggestion that state and national boards of examination be set up and state level evaluation machinery be put in place. The commission recommended the establishment of Indian Education Service, along the lines of Indian Administrative Service, to bring in professional management to education sector. It proposed standardization and revision of the pay scales of the teaching, non-teaching and administrative staff and prescribed minimum pay levels based on their locations. It also advised standardization of pay scales working under different managements such as government, private and local bodies. The minimum scale was suggested to be in the ratio of 1:2:3 for teachers in the primary, secondary and higher levels of educational sector. Another proposal was for the establishment of a machinery for continuous on job training of the teaching staff and for efforts to raise the status of the teachers to attract talents into the profession. It urged laws to 72 be passed to legalize the educational standards and the educational expenditure to be raised from the then level of 2.9 percent of the GDP to 6 percent, to be achieved by the fiscal year, 1985-86. A significant suggestion was the issuance of a National Policy on Education by the Government of India which should serve as a guideline for the state and local bodies in the design and implementation of their educational plans. 2.6.2

National Education Policy 1968 The National Policy on Education (NPE) is a policy formulated by the Government of India to promote education amongst India's people. The policy covers elementary education to colleges in both rural and urban India. The first NPE was promulgated in 1968 by the government of Prime Minister Indira Gandhi, and the second by Prime Minister Rajiv Gandhi in 1986.

Since the nation's independence in 1947, the Indian government sponsored a variety of programmes to address the problems of illiteracy in both rural and urban India. Maulana Abul Kalam Azad, India's first Minister of Education, envisaged strong central government control over education throughout the country, with a uniform educational system. The Union government established the University Education Commission (1948-1949) and the Secondary Education Commission (1952-1953) to develop proposals to modernize India's education system. The Resolution on Scientific Policy was adopted by the government of Jawaharlal Nehru, India's first Prime Minister. The Nehru government sponsored the development of high-quality scientific education institutions such as the Indian Institutes of Technology. In 1961, the Union government formed the National Council of Educational Research and Training (NCERT) as an autonomous organisation that would advise both the Union and state governments on formulating and implementing education policies. Based on the report and recommendations of the Education Commission (1964- 1966), the government of Prime Minister Indira Gandhi announced the first National Policy on Education in 1968, which called for a "radical restructuring" and equalize educational opportunities in order to achieve national integration and greater cultural and economic development. The policy called for fulfilling

compulsory education for all children up to the age of 14, as stipulated by the Constitution of India, and the better training and qualification of teachers. The policy called for focus on learning of regional languages, outlining the "three language formula" to be implemented in secondary education - the instruction of the English language, the official language of the state where the school was based, and Hindi, the national language.

Language education was seen as essential to reduce the gulf between the intelligentsia and the masses. Although the decision to adopt Hindi as the national language had proven controversial, the policy called for use and learning of Hindi to be encouraged uniformly to promote a common language for all Indians. The policy also encouraged the teaching of the ancient Sanskrit language, which was considered an essential part of India's culture and heritage. The NPE of 1968 called for education spending to increase to six percent of the national income.

As of 2013, the NPE 1968 has moved location on the national website. 2.6.3 National Policy on Education 1986 Having announced that a new policy was in development in January, 1985, the government of Prime Minister Rajiv Gandhi introduced a new National Policy on Education in May, 1986. The new policy called for "special emphasis on the removal of disparities and to equalise educational opportunity," especially for Indian women, Scheduled Tribes (ST) and the Scheduled Caste (SC) communities. To achieve these, the policy called for expanding scholarships, adult education, recruiting more teachers from the SCs, incentives for poor families to send their children to school regularly, development of new institutions and providing housing and services. The NPE called for a "child-centred approach" in primary education, and launched "Operation Blackboard" to improve primary schools nationwide. The policy expanded the Open University system with the Indira Gandhi National Open University, which had been created in 1985. The policy also called for the creation of the "rural university" model, based on the philosophy of Indian leader Mahatma Gandhi, to promote economic and social development at the grassroots level in rural India. 2.6.4

Revised National Policy on Education 1992 The 1986 National Policy on Education was modified in 1992 by the P.V. NarasimhaRao government. In 2005, Prime Minister Manmohan Singh adopted a new policy based on the "Common Minimum Programme" of his United Progressive Alliance (UPA) government. Programme of Action (PoA), 1992 under the National Policy on Education (NPE), 1986 envisaged conduct of a common entrance examination on all India basis for admission to professional and technical programmes in the country. For admission to Engineering and Architecture/Planning programmes, Government of India vide Resolution dated 18 October 2001 has laid down a Three - Exam Scheme (JEE and AIEEE at the National Level and the State Level Engineering Entrance Examinations (SLEEE) for State Level Institutions - with an option to join AIEEE). This takes care of varying admission standards in these programmes and

74 helps in maintenance of professional standards. This also solves problems of overlaps and reduces physical, mental and financial burden on students and their parents due to multiplicity of entrance examinations.

The National

Policy on Education-1986 was modified in 1992. It is a comprehensive frame work to guide the development of education in the country. The principles included in the NPE-1968 are also included in the new policy with some modifications. Modifications and Additions ●●●● The new education policy will give emphasis on retention of children in the schools at primary level. The cause of the drop out of the children from the school should be strategically handled by making plans. The network of Non- Formal education in the country to be introduced and also the education should be made compulsory up to the age of 14. ●●●● Greater attention should be given to the backward classes, physically challenged and minority child for their development in education. ●●●● Major emphasis will be laid on women's education to overcome the poor rate of illiteracy among female. They will be given priority in various educational institutes and special provisions will be made available for them in vocational, technical and professional education. ●●●● Institutions will be provided with resources like infrastructure, computers, libraries. Accommodation for students will be made available especially for girls students. Teachers will have the rights to teach, learn and research. ●●●● The Central Advisory Board of Education will play an important role in reviewing educational development and also to determine the changes required to improve the education in the country. ●●●● State government may establish State Advisory Board of Education to look after the state's progress in education. ●●●● Non-government organizations will be encouraged to facilitate the education in the country. At the same time steps will be taken to prevent establishment of institutions for commercialization of education. 2.6.5

National Curriculum Framework 2005 The National Curriculum Framework (NCF 2005) is one of four National Curriculum Frameworks published in 1975, 1988, 2000 and 2005 by the National Council of Educational Research and Training

NCERT

in India.

75 The Framework

provides the framework for making syllabi, textbooks and teaching practices within the school education programmes in India.

The NCF 2005 document draws its policy basis from earlier government reports on education as Learning Without Burden and

National Policy of Education 1986-1992 and focus group discussion. After wide ranging deliberations 21 National Focus Group Position Papers have been developed under the aegis of NCF-2005. The state of art position papers provided inputs for formulation of NCF-2005. The document and its offshoot textbooks have come under different forms of reviews in the press. Its draft document came under the criticism from the Central Advisory Board of Education (CABE). In February 2008 the director Krishna Kumar in an interview also discussed the challenges that

are faced by the document. The approach and recommendations of NCF-2005 are for the entire educational system. A number of its recommendations, for example, focus on rural schools. The syllabus and textbooks based on it are being used by all the CBSE schools, but NCF-based material is also being used in many State schools.

NCF 2005 has been translated into 22 languages and has influenced the syllabi in 17 States. The NCERT gave a grant of Rs.10 lakh

to each State to promote NCF in the language of the State and to compare its current syllabus with the syllabus proposed,

so that

a plan for future reforms could be made.

Several States have taken up this challenge. This exercise is being carried out with the involvement of State Councils for Educational Research and Training [SCERT] and District Institutes of Education and Training [DIET].

Main Features of the NCF 2005 The document is divided into 5 areas: Perspective of NCF The NCF was framed considering the articulated ideas in the past such as ●●●●● To shift learning from rote method. ●●●●● To ensure overall development of children. ●●●●● To integrate examination into classroom learning and make it more flexible. ●●●●● to nurture identify of caring concerns within the democratic policy of India. ●●●●● nurturing an over-riding identity informed by caring concerns within the democratic polity of the country.

76 NCF focused on ●●●● Learning without burden to make learning a joyful experience and move away from textbooks to be a basis for examination and to remove stress from children. It recommended major changes in the design of syllabus. ●●●● To develop a sense of self-reliance and dignity of the individual this would form the basis of social relationship and would develop a sense of nonviolence and oneness across the society. ●●●● To develop a child centered approach and to promote universal enrolment and retention up to the age of 14. ●●●● To inculcate the feeling of oneness, democracy and unity in the students the curriculum is enabled to strengthen our national identity and to enable the new generation reevaluate. ●●●● J. P. Naik has described equality, quality and quantity as the exclusive triangle for Indian education. ●●●● With respect to social context NCF 2005 has ensured that irrespective of caste, creed, religion and sex all are provided with a standard curriculum. Learning and knowledge Learning should be an enjoyable act where children should feel that they are valued and their voices are heard. The curriculum structure and school should be designed to make school a satisfactory place for students to feel secure and valued. The curriculum should focus on holistic development of the students to enhance physical and mental development in individuals and as well as with the peer interactions. In order to bring about the overall development of the students, adequate nutrition, physical exercise and other psychosocial needs are addressed hence participation in yoga and sports in required. Learning should be made enjoyable and should relate to real life experiences learning should involve concepts and deeper understanding. Adolescence is a vulnerable age for students and the curriculum should prepare the students and provide support for social and emotional support that will inculcate positive behavior and provide skills essential to cope with situations that they encounter in their lives, peers pressure and gender stereotype. Inclusive education to be given priority and flexibility to follow a curriculum to suit the needs of every student irrespective of students having disabilities. Constructive learning has to be part of the curriculum. Situations and opportunities 77 have to be created for students to provide students with challenges, encourage creativity and active participation for students. Students have to be encouraged to interact with peers, teachers and older people which would open up many more rich learning opportunities. The foundation should be laid strong and firm. primary, upper primary and middle school should provide the space for children to explore and develop rational thinking that they would imbibe in them and have sufficient knowledge on concepts, language, knowledge, investigation and validation procedures. Curricular area, School stages and assessment Language - Three language formula system to be followed. medium of communication should be the home language. [10] The First language to be studied must be the mother tongue or the regional language. The Second language - In Hindi speaking States, the second language will be some other modern Indian language or English, and - In non-Hindi speaking States, the second language will be Hindi or English. The Third language - In Hindi speaking States, the third language will be English or a modern Indian language not studied as the second language, and - In non-Hindi speaking States, the third language will be English or a modern Indian language not studied as the second language. Mathematics - The emphasis for learning mathematics is that all students can learn and need to learn mathematics. Pedagogy and learning environment have to be made favourable for students to develop interest in basic skills and include variety of mathematics models by pedagogy which devotes a greater percentage of instructional time to problem solving and active learning. Computers - Introduction of computers in schools is to move from a predetermined set of outcomes and skill sets to one that enables students to develop 16 explanatory reasoning and other higher-order skills. o Enable students to access sources of knowledge, interpret them, and create knowledge rather than be passive users. o Promote flexible models of curriculum transaction. o Promote individual learning styles. o Encourage use of flexible curriculum content, at least in primary education, and flexible models of evaluation. Science - Pedagogy of learning sciences should be designed to address the aims of learning science is to learn the facts and principles of science and its applications, consistent with the stage of cognitive development. To acquire skills and understand the methods and processes that lead to generation and validation of scientific knowledge. To develop a historical and developmental perspective of science and to

78 enable her to view science as a social enterprise. To relate to the, local as well as global, and appreciate the issues at the interface of science, technology and society. To acquire the requisite theoretical knowledge and practical technological skills to enter the world of work. To nurture the natural curiosity, aesthetic sense and creativity in science and technology. To imbibe the values of honesty, integrity, cooperation, concern for life and preservation of environment and to cultivate 'scientific temper'- objectivity, critical thinking and freedom from fear and prejudice. Social Sciences - Social science a subject is included in schools to assist students to explore their interests and aptitudes in order to choose appropriate university courses and/or careers. To encourage them to explore higher levels of knowledge in different disciplines. To promote problem-solving abilities and creative thinking in the citizens of tomorrow, to introduce students to different ways of collecting and processing data and information in specific disciplines, and help them arrive at conclusions, and to generate new insights and knowledge in the process. Art education - The objectives of including art education in schools is to bring about the complete development of the students personality and mental health, to appreciate cultural heritage and develop respect for each other's work and connect to environment. Health and Physical education - To provide theoretical and practical inputs to provide an integrated and holistic understanding of health, disease, accidents and physical fitness among children. To provide skills for dealing with psycho-social issues in the school, home and the community. To help children grow as responsible citizens by inculcating in them certain social and moral values through games, sports, N.C.C., Red Cross, Scouts & Guides, etc. Study of Peace - Skills that are developed as part of curriculum activity such as to listening with patience and endurance, purity of mind to develop concentration, aptitude for cooperation and teamwork, to reach out to get answers (curiosity and rational inquiry), acceptance of discipline, and a positive attitude to study/work are the trademarks of a good student which in turn are also the skills of a peace-oriented person. Thus the curriculum also inculcates peace and democracy into students. Work and Education - Work related education is made as an integral component of the school curriculum, in the form of - work experience, work education, SUPW, craft education, life oriented education, pre vocational education and generic education. Work based education aims at involving children in a variety of production or service oriented activities, to develop skills, positive attitudes and values through work and also to develop work related competencies.

79 School and Classroom Environment Physical environment has to be maintained favorable to students in terms of infrastructure, adequate light and ventilation, student teacher ratio, hygiene and safe environment. Schools should also treat students with equality, justice respect, dignity and right of the students. Give equal opportunities for all students to participate in all activities without any bias. Policy of inclusion has to be part of the school where differently abled and children from marginalized section get equal opportunities. The schools should also be well equipped with libraries, laboratories and educational technology laboratories. Systemic Reforms The NCF has aimed at bringing about reforms in the education system to bring about a curriculum that is learner centric, has a flexible process, provide learner autonomy, teacher plays a role of a facilitator, supports and encourages learning, involves active participation of learners, develops multidisciplinary curriculum, focuses on education, brings about multiple and divergent exposure, multifarious, continuous appraisal in educational system. 2.6.6

National Policy for Persons with Disabilities (2006) The Government of India formulated the National Policy for Persons with Disabilities in February 2006 which deals with Physical, Educational & Economic Rehabilitation of persons with disabilities. In addition the policy also focuses upon rehabilitation of women and children with disabilities, barrier free environment, social security, research etc.

The

National Policy recognizes

that Persons with Disabilities are valuable human resource for the country and seeks to create an environment that provides those equal opportunities, protection of their rights and full participation in society. Focus of the policy

The focus of the policy is on

the following 1. Prevention of Disabilities - Since disability, in a large number of cases, is preventable; the policy lays a strong emphasis on prevention of disabilities. It calls for programme for prevention of diseases, which result in disability and the creation of awareness regarding measures to be taken for prevention of disabilities during the period of pregnancy and thereafter to be intensified and their coverage expanded. 2. Rehabilitation Measures - Rehabilitation measures can be classified into

80 three distinct groups: i. Physical rehabilitation, which includes early detection and intervention, counseling & medical interventions and provision of aids & appliances. It will also include the development of rehabilitation professionals. ii.

Educational rehabilitation including vocational education and

iii. Economic rehabilitation for a dignified life in society. 2.7

National Acts & Programmes: 2.7.1. IEDC 1974 Integrated Education for Disabled Children (IEDC), In the 1970s, the government launched the Centrally Sponsored Scheme of

IEDC. The

scheme aimed

to provide educational opportunities to learners with disability in regular schools and to facilitate their achievement and retention. Under the scheme,

hundred

percent financial assistance is

provided for setting up resource centres, surveys and assessment of

children with disability, purchase and production of instruction materials and training and orientation of teachers. The scheme is currently being revised to reflect the paradigm shift towards inclusive education.

The right of every child to an education is proclaimed in the Universal Declaration of Human Rights and was strongly reaffirmed by the World Declaration on Education for All. 2.7.2.

RCI Act (1992) The Rehabilitation Council of India (RCI) is the apex government body, set up under

an Act of Parliament, to regulate training programmes and courses targeted at disabled, disadvantaged, and special education requirement communities. It is the only statutory council in India that is required to maintain the Central

Rehabilitation Register which mainly documents details of all qualified professionals who operate and deliver training and educational programmes for the targeted communities. In the year 2000, the

Rehabilitation Council of India (Amendment) Act, 2000, was introduced and notified consequently by the government of India. The amendment brought definitions and discussions provided within the earlier Rehabilitation Council of India Act,

1992, under the ambit of a larger act, namely,

An Act to provide for the

constitution of Rehabilitation Council of India

for

81 regulating the training of rehabilitation professionals and the maintenance of a Central Rehabilitation Register and for matters connected therewith or incidental thereto. 2.7.3

The

Persons with Disabilities Act, 1995 (Equal Opportunities, Protection of Rights and Full Participation)

Act, 1995.

This is

an act to give

effect to the proclamation

and equality of the people with disability in the Asian & Pacific region.

Disability: - means a) Blindness b) Low vision c) Leprosy cured d) Hearing impairment e) Locomotor disability f) Mental

Retardation g) Mental illness (j) "employer" means, - (i) In relation to a Government, the authority notified by the Head of the Department in this behalf or where no such authority is notified, the Head of the Department; and (ii) in relation to an

establishment, the Chief Executive Officer of that establishment; (k) "establishment" means a corporation established by or under a Central, Provincial or State Act, or an authority or

a body owned or controlled or aided by the Government

or a local authority or a Government company as defined in section 617 of the Companies Act, 1956 (1 of 1956) and

includes Departments of a Government; (l) "

hearing impairment" means loss of sixty decibels or more in the better ear in the conversational range of frequencies; (

m) "institution for persons with disabilities" means an institution for the reception,

82 care, protection, education, training, rehabilitation or any other service of persons with disabilities; (n) "

leprosy cured person" means any person who has been cured of leprosy but is suffering from- (i) loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity; (ii) manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity; (

iii)

Extreme physical deformity as well as advanced age which prevents him from undertaking any gainful occupation, and the expression "leprosy cured" shall be construed accordingly; (

o) "loco motor disability" means disability of the bones, joints or muscles leading to substantial restriction of the movement of the limbs or any form of cerebral palsy; (

p) "medical authority" means any hospital or institution specified for the purposes of this Act by notification by the appropriate Government; (q) "

mental illness" means any mental disorder other than mental retardation; (r) "

mental retardation" means

a condition of arrested or incomplete development of mind of a person which is specially characterized by sub normality of intelligence; (

s) "

notification" means a notification published in the Official Gazette; (t) "person with disability" means a person suffering from

not less than forty per cent of any disability as certified by a medical authority; (u) "

person with low vision" means a person with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device; (

v) "prescribed" means prescribed by rules made under this Act; (w) "

rehabilitation" refers to a process aimed at enabling persons with disabilities to reach and maintain their optimal physical, sensory, intellectual, psychiatric or social functional levels;

83 (

x) "Special Employment Exchange" means any office or place established and maintained by the Government for the collection and furnishing of information, either by keeping of registers or otherwise, respecting- (i) persons who seek to engage employees from amongst the persons suffering from disabilities; (ii) persons with disability who seek employment; (iii) vacancies to which person with disability seeking employment may be appointed; (y) "State Co-ordination Committee" means the State Co-ordination Committee constituted under sub-section (1) of section 13; (z) "State Executive Committee" means the State Executive Committee constituted under sub-section (l) of section 19.

CHAPTER II The Central Co-ordination Committee 3. Central Co-ordination Committee. - (1) The Central Government shall by notification constitute a body to be known as the Central Co-ordination Committee to exercise the powers conferred on, and to perform the functions assigned to it, under this Act. CHAPTER III The State Co-ordination Committee 13. State Co-ordination Committee. - (1) Every State Government shall, by notification, constitute a body to be known as the State Co-ordination Committee to exercise the powers conferred on, and to perform the function assigned to it, under this Act. CHAPTER IV Prevention And Early Detection Of Disabilities 25. Appropriate Governments and local authorities to take certain steps for the prevention of occurrence of disabilities. - Within the limits of their economic capacity and development, the appropriate Governments and the

84 local authorities, with a view to preventing the occurrence of disabilities, shall- (a) undertake or cause to be undertaken surveys, investigations and research concerning the cause of occurrence of disabilities; (b) promote various methods of preventing disabilities; (c) screen all the children at least once in a year for the purpose of identifying "at-risk" cases; (d) provide

facilities for training to the staff at the primary health

centres; (e) sponsor or cause to be sponsored awareness campaigns and disseminate or cause to be disseminated information for general hygiene, health and sanitation; (f) take measures for pre-natal, parental and post-natal care of mother and child; (g) educate the public through the pre-schools, schools, primary health centres, village level workers and anganwadi workers; (h) create awareness amongst the masses through television, radio and other mass media on the causes of disabilities and the preventive measures to be adopted. CHAPTER V Education 26. Appropriate Governments and local authorities to provide children with disabilities free education, etc. - The appropriate Governments and the local authorities shall- (a)

ensure

that every child

with a disability has access to free education in an appropriate environment till he attains the age of eighteen years; (

b) endeavor

to promote the integration of students with disabilities in

the

normal schools; (

c)

promote

setting up of special schools in Government and private

sector for those in need of special education,

in such a manner

that children with disabilities living in any part of the country have access to such schools;

85 (

d) endeavor to equip the special schools for children with disabilities with vocational training facilities. 27.

Appropriate Governments and local authorities to make schemes and programmes for non-formal education, etc. (a)

Conducting part-time classes in respect of children with disabilities who having completed education up to class fifth and could not continue their studies on a whole-time basis; (

b)

Conducting special part-time classes for providing functional literacy for children in the age group of sixteen and above;

(c) Imparting non-formal education by utilizing the available manpower in rural areas after giving them appropriate orientation; (

d)

Imparting education through open schools or open universities; (e) Conducting class and discussions through interactive electronic or other media; (f) Providing every child with disability free of cost special books and equipment needed for his education. 28.

The appropriate Governments shall initiate or cause to be initiated research by official and nongovernmental agencies for the purpose of designing and developing new assistive devices, teaching aids, special teaching materials or such other items as are necessary to give a child with disability equal opportunities in education. 29. The appropriate Governments shall set up adequate number of teachers' training institutions and assist the national institutes and other voluntary organizations to develop teachers' training programmes specializing in disabilities so that requisite trained manpower is available for special schools and integrated schools for children with disabilities. 30. Without prejudice to the foregoing provisions, (be appropriate Governments shall by notification prepare a comprehensive education scheme which shall make Provision for- (a)

Transport facilities to the children with disabilities or in the

alternative financial incentives to parents or guardians to enable their

children

with disabilities to attend schools.

86 (

b)

The removal of architectural barriers from schools, colleges or other institution, imparting vocational and professional training; (

c)

The

supply of books, uniforms and other materials to children with disabilities attending school. (

d) The

grant of scholarship to

students with disabilities. (e)

Setting up of appropriate fora for the redressal of grievances of parent, regarding the placement of their children with disabilities; (f) Suitable modification in the examination system

to eliminate purely mathematical questions for the benefit of blind students and students with low vision; (

g) Restructuring of curriculum for the benefit of children with disabilities; (h) restructuring the curriculum for benefit of students with hearing impairment to facilitate them to take only one language as part of their curriculum. 31.

All educational institutions shall provide or cause to be provided a manuaensis to blind students and students with or low

vision. CHAPTER VI: Employment 32. Appropriate Governments shall-- (a) Identify posts, in the establishments, which can be reserved for the persons with disability; (b) At periodical intervals not exceeding three years, review the list of

posts identified and up-date the list taking into consideration the developments in technology. 33. Every appropriate

Government shall appoint in every establishment such percentage of vacancies not less than three per cent. for persons or class of persons with disability of which one per cent. Each shall be reserved for persons suffering from-

(i) Blindness or low vision; (ii) Bearing impairment;

87 (iii) Loco motor disability or cerebral palsy, in the posts identified for each disability: Provided that the appropriate

Government may, having regard to the type of work carried on in any department or establishment, by notification subject to such conditions, if any, as may be specified in such notification, exempt any establishment from the provisions

of this section. 34. (1) The appropriate Government may, by notification. Require that from such date as May he specified.

By notification. The employer in every establishment shall furnish such information or return as may be prescribed in relation to vacancies appointed for person, with disability that have occurred or are about to occur in that establishment

to such Special Employment Exchange as may be prescribed and the establishment shall thereupon comply with such requisition. (2) The form in which and the intervals of time for which information or returns shall be furnished and the

particulars, they shall contain shall be such as may be prescribed. 35. Any person authorized by the Special Employment Exchange in writing, shall have access to any relevant record or document in the possession of any establishment, and

may enter at any reasonable time and premises where he believes such record or document to be, and inspect or take copies of relevant records or documents or ask any question necessary for obtaining any information. 36. Where in any

recruitment year any vacancy under section 33, cannot be filled up due to non-availability of a suitable person with disability or, for any other sufficient reason, such vacancy shall be carried forward in the succeeding recruitment year and

if ;r the succeeding recruitment year also suitable person with disability is not available, it may first be filled by interchange among the three categories and only when there is no person with disability available for the post in that Year,

the employer shall fill up the vacancy by appointment of a person, other than a person with disability: Provided that if the nature of vacancies in an establishment is such that a given category of person cannot be employed, the vacancies may

be interchanged among the three categories with the prior approval of the appropriate Government.

88 37. (1) Every employer shall maintain such record in relation to the person. With disability employed in his

establishment in such form and in such manner as may be prescribed by the appropriate Government. (2) The records maintained under sub-section (1) shall be open to inspection at all reasonable hours by such persons as may be

authorized in this behalf by general or special order by the appropriate Government. 38. (1) The appropriate Governments and local authorities shall by notification formulate schemes for ensuring employment of persons with

disabilities, and such schemes may provide for- (a) The training and welfare of persons with disabilities; (b) The relaxation of upper age limit; (c) Regulating the employment; (d)

Health and safety measures and creation of a non-handicapping environment in places where persons with disabilities are employed; (

e) The manner in which and the person by whom the cost of operating the schemes is to be defrayed; and (f)

Constituting the authority responsible for the administration of the scheme. 39.

All Government educational institutions and other educational institutions receiving aid from the Government, shall reserve not less than three per cent seat for persons with disabilities. 40.

The appropriate Governments and local authorities shall reserve not less than three per cent. in all poverty alleviation schemes for the benefit

of persons with disabilities. 41. The appropriate Governments and the local authorities shall, within the limits of their economic capacity and development, provide incentives to employers both in public and private sectors to ensure that at least five per cent. of their work force is composed of persons with disabilities. CHAPTER VII: Affirmative Action 42. The appropriate Governments shall by notification make schemes to provide aids and appliances to persons with disabilities. 43. The appropriate Governments and local authorities shall by notification frame 89 schemes in favor of persons with disabilities, for the preferential allotment of land at concession] rates for- (a) House; (b) Setting up business; (c) Setting up of special recreation centers; (d) Establishment of special schools; (e) Establishment of research centers; (f) Establishment of factories by entrepreneurs with disabilities CHAPTER VIII: Non-discrimination 44. Establishments in the transport sector shall, within the limits of their economic capacity and development for the benefit of persons with disabilities. 45. The appropriate Governments and the local authorities shall, within the limits of their economic capacity and development. 46. The appropriate Governments and the local authorities shall, within the limits of their economic capacity and development. 47. (1) No establishment shall dispense with or reduce in rank, an employee who acquires a disability during his service. (2) No promotion shall be denied to a person merely on the ground of his disability: CHAPTER IX: Research And Manpower Development 48. The appropriate Governments and local authorities shall promote and sponsor research, inter alia, in the following areas- (a) Prevention of disability; (b) Rehabilitation including community based rehabilitation; (c) Development of assistive devices including their psychosocial aspects; (d) Job identification; (e) On site modifications in offices and factories. 90 49. The appropriate Governments shall provide financial assistance to universities, other institutions of higher learning, professional bodies and non-governmental research-. units or institutions, for undertaking research for special education. rehabilitation and manpower development. CHAPTER X: Recognition of Institutions For Persons with Disabilities 50. The State Government shall appoint any authority, as it deems fit to be a competent authority for the purposes of this Act. 51. Save as otherwise provided under this Act, no person shall establish or maintain any institution for persons with disabilities except under and in accordance with a certificate of registration issued in this behalf by the competent authority: 52. (1) Every application for a certificate of registration shall be made to the competent authority in such form and in such manner as may be prescribed by the State Government. (2) On receipt of an application under sub-section (1), the competent authority shall make such enquiries as it may deem fit and where it is satisfied that the applicant has complied with the requirements of this Act and the rules made thereunder it shall grant a certificate of registration to the applicant and where it is not so satisfied the competent authority shall. by order. refuse to grant the certificate applied for: Provided that before making any order refusing to grant a certificate the competent authority shall give to the applicant a reasonable opportunity of being heard and every order of refusal to grant a certificate shall be communicated to the applicant in such manner as may be prescribed by the State Government. (3) No certificate of registration shall be granted under sub-section (2) unless the institution with respect to which an application has been made is in a position to provide such facilities and maintain such standards as may be prescribed by the State Government. (4) A certificate of registration granted under this section, -

91 (a) Shall, unless revoked under section 53, remain in force for such period as may, be prescribed by, the State Government. (b) May be renewed from time to time for a like period; and (c) Shall be in such form and shall be subject to such conditions as may be Prescribed by the State Government (5) An application for renewal of a certificate of registration shall be made not less than sixty days before the period of validity. (6) The certificate of registration shall be displayed by the institution in a conspicuous place. 53. (1) the competent authority may, if it has reasonable cause to believe that the Holder of the certificate of registration granted under sub-section (2) of section 52 has - (a) Made a statement in relation to any application for the issue of renewal of the certificate which is incorrect or false in material particulars; or (b) Committed or has caused to be committed any breach of rules or any conditions subject to which the certificate was granted, it may after making such inquiry, as it deems fit, by order, revoke the certificate: Provided that no such order shall be made until an opportunity is given to the holder of the certificate to show cause as to why the certificate should not be revoked. (2) Where a certificate in respect of an institution has been revoked under sub-section (1), such institution shall cease to function from the date of such revocation. Provided that where an appeal lies under section 54 against the order of revocation, such institution shall cease to function- (a) Where no appeal has been preferred immediately on the expiry of the period prescribed for the filing of such appeal, or (b) Where such appeal has been preferred, but the order of revocation has been upheld, from the date of the order of appeal. (3) On the revocation of a certificate in respect of an institution, the competent authority may direct that any person with disability who is an inmate of such institution on the date of such revocation, shall be-

92 (a) Restored to the custody of her or his parent, spouse or lawful guardian, as the case may be, or (b) Transferred to any other institution specified by the competent authority. (4) Every institution, which holds a certificate of registration, which is revoked, under this section shall, immediately after such revocation. Surrender such certificate to the Competent authority. 54. (1) Any person aggrieved by the order of the competent authority, refusing to grant a certificate or revoking a certificate may, within such period as may be prescribed by the State Government, prefer an appeal to that Government against such refusal or revocation. (2) The order of the State Government on such appeal shall be final. 55. Nothing contained in this Chapter shall apply, to an institution for persons with disabilities established or maintained by the Central Government or State Government. CHAPTER XI: Institution For Persons With Severe Disabilities 56. The appropriate Government may establish and maintain institutions for persons with severe disabilities at such places as it thinks fit. (2) Where, the appropriate Government is of opinion that any institution other than an institution. Established under sub-section (1), is fit for the rehabilitation of the persons with severe disabilities, the Government may recognize such institution as an institution for persons with severe disabilities for the purposes of this Act: Provided that no institution shall be recognized under this section unless such institution has complied with the requirements of this Act and the rules made there under. (3) Every institution established under sub-section (1) shall be maintained in such manner and satisfy such conditions as may be prescribed b), the appropriate Government. (4) For the purposes of this section "person with severe disability" means a person with eighty percent. or more of one or more disabilities.

93 CHAPTER XII: The Chief Commissioner And Commissioners For Persons WITH DISABILITIES 57. (1) The Central Government may, by notification appoint a Chief Commissioner for persons with disabilities for the purposes of this Act. (2) A person shall not be qualified for appointment as the Chief Commissioner unless he has special knowledge or practical experience in respect of matters relating to rehabilitation. (3)

The salary and allowances payable to and other terms and conditions of service (including pension, gratuity and other retirement benefits of the Chief Commissioner shall be such as may be prescribed by the Central Government. (4) The Central Government shall determine the nature and categories of officers and other employees required to assist the Chief Commissioner in the discharge of his functions and provide the Chief Commissioner with such officers and other employees as it thinks fit. (5) The officers and employees provided to the Chief Commissioner shall discharge their functions under the general superintendence of the Chief Commissioner. (6) The salaries and allowances and other conditions of service of officers and employees provided to the Chief Commissioner shall be such as may be prescribed by the Central Government. 58. The Chief commissioner shall --- (a) Coordinate the work of the Commissioners; (b) Monitor the utilization of funds disbursed by the Central Government; (c) Take steps to safeguard the rights and facilities made available to Persons with disabilities; (d) Submit reports to the Central Government on the implementation of the Act at such intervals as that Government may prescribe. 59. Without prejudice to the provisions of section 58 the Chief Commissioner

94 may of his own motion or on the application of any aggrieved person or otherwise look into complaints with respect to matters relating to - (a) Deprivation of rights of persons with Disabilities. (b) Non-implementation of laws, rules, byelaws, regulations. Executive orders, guidelines or instructions made or issued by the appropriate Governments and the local authorities for the welfare and protection of rights of persons with disabilities. And take up the matter with the appropriate authorities. 60. (1) Every State Government may, by notification appoint a Commissioner for persons with disabilities for the purpose of this Act. (2) A person shall not be qualified for appointment as a Commissioner unless he has special knowledge or practical experience in respect of matters relating to rehabilitation. (3) The salary and allowances payable to and other terms and conditions of service (including pension gratuity and other retirement benefits) of the Commissioner shall be such as may be prescribed by the State Government. (4) The State Government shall determine the nature and categories of officers and other employees required to assist the Commissioner in the discharge of his functions and provide the Commissioner with such officers and other employees as it thinks fit. (5) The officers and employees provided to the Commissioner shall discharge their functions under the general superintendence of the Commissioner. (6) The salaries and allowances and other conditions of service of officers and employees provided to the Commissioner shall be such as may be prescribed by the State Government. 61. The Commissioner within the State shall- (a) Coordinate with the departments of the State Government for the programmes and schemes, for the benefit of persons with disabilities; (b) Monitor the utilization of funds disbursed by the State Government; (c) Take steps to safeguard the rights and facilities made available to persons with disabilities. (d) Submit reports to the State Government on the implementation of the Act 95 at such intervals as that Government may prescribe and forward a copy thereof to the Chief Commissioner. 62. Without prejudice to the provisions of section 61 the Commissioner may of his own motion or on the application of any aggrieved person or otherwise look into complaints with respect to matters relating to— (a) Deprivation of rights of persons with disabilities; (b) Non-implementation of laws, rules, bye-laws, regulations, executive orders, guidelines or instructions made or issued by the appropriate Governments and the local authorities for the welfare and protection of rights of persons with disabilities, and take up the matter with the appropriate authorities. 63. The Chief Commissioner and the Commissioners shall, for the purpose of discharging their functions under this Act, have the same powers as are vested in a court under the Code of Civil Procedure, 1908 while trying a suit, in respect of the following matters, namely: - (a) Summoning and enforcing the attendance of witnesses; (b) Requiring the discovery and production of any documents; (c) Requisitioning any public record or copy thereof from any court or office; (d) Receiving evidence on affidavits; and (e) Issuing commissions for the examination of witnesses or documents. 62. Without prejudice to the provisions of section 61 the Commissioner may of his own motion or on the application of any aggrieved person or otherwise look into complaints with respect to matters relating to--- (a) Deprivation of rights of persons with disabilities; (b) Non-implementation of laws, rules, bye-laws, regulations, executive orders, guidelines or instructions made or issued by the appropriate Governments and the local authorities for the welfare and protection of rights of persons with disabilities, and take up the matter with the appropriate authorities. 63. The Chief Commissioner and the Commissioners shall, for the purpose of discharging their functions under this Act, have the same powers as are vested in a court under the Code of Civil Procedure, 1908 while trying a suit, in respect of the following matters, namely: - 96 (a) Summoning and enforcing the attendance of witnesses; (b) Requiring the discovery and production of any documents; (c) Requisitioning any public record or copy thereof from any court or office; (d) Receiving evidence on affidavits; and (e) Issuing commissions for the examination of witnesses or documents. (2) Every proceeding before the Chief Commissioner and Commissioners shall be a judicial proceeding within the meaning directions 193 and 228 of the Indian Penal Code and the Chief Commissioner, the Commissioner, the competent authority, shall be deemed to be a civil court for the purposes of section 195 and Chapter XXVI of the Code of Criminal Procedure, 1973. 64. (1) The Chief Commissioner shall prepare in such form and at such time for each financial year as may be prescribed by the Central Government an annual report giving a full account of his activities during the previous financial year and forward a copy thereof to the Central Government. (2) The Central Government shall cause the annual report to be laid before each House of

Parliament along with the recommendations explaining the action taken or proposed to be taken on the recommendation made therein in so far as they relate to the Central Government and the reasons for non-acceptance, if any, of any such recommendation or part. 65. (1) The Commissioner shall prepare in such form and at such time for each financial year as may be prescribed by the State Government an annual report giving a full account of his activities during the previous financial year and forward a copy thereof to the State Government. The State Government shall cause the annual report to be laid before each State Legislature along with the recommendations explaining the action taken or proposed to be taken on the recommendation made therein in so far as they relate to the State Government and the reasons for non-acceptance, if any, of any such recommendation or part.

97 CHAPTER XIII: Social Security 66. The appropriate Governments and the local authorities shall within the limits of their economic capacity and development undertake or cause to be undertaken rehabilitation of all persons with disabilities. 67. The appropriate Government shall by notification frame an insurance scheme for the benefit of its employees with disabilities. 68. The appropriate Governments shall within the limits of their economic capacity and development shall by notification frame a scheme for payment of an unemployment allowance to persons with disabilities registered with the Special Employment Exchange for more than two years and who could not be placed in any gainful occupation. CHAPTER XIV: Miscellaneous 69. Whoever fraudulently avails or attempts to avail, any benefit meant for persons with disabilities, shall be punishable with imprisonment for a term which may extend to two years or with fine which may extend to twenty thousand rupees or with both. 70.

The Chief Commissioner, the Commissioners and other officers and staff provided to them shall be deemed to be public servants within the meaning of section 21 of the Indian Penal Code. 71.

No suit, prosecution or other legal proceeding shall lie against the Central Government, the State Governments or the local authority or any officer of the

Government in respect of anything which is done in good faith or intended to be done in pursuance of this Act and any rules or orders made thereunder. 72. The provisions of this Act, or the rules made there under shall be in addition to, and not in derogation of any other law for the time being in force or any rules, order or any instructions issued there under, enacted or issued for the benefit of persons with disabilities. 73. The appropriate Government may, by notification, make rules for carrying out the provisions of this Act. Conclusion - The main purpose of this act is to define responsibilities of 98 Central Governments and State Governments with regard to services for disabled persons. It recommends making changes in assessment and curriculum and removing architecture barriers to support inclusion. It also recommends providing free books, uniform, etc. (Source from K. L. MOHANPURIA., Secy. to the Govt. of India) 2.7.4. The National Trust Act, (1999)

An Act to provide for the constitution of a body at the national level for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities and for matters connected therewith or incidental thereto.

Be it enacted by Parliament in the Fiftieth Year of the Republic of India as follows: CHAPTER 1 Preliminary 1. This Act may be called

the

National Trust for Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities

Act, 1999 2.

It extends to the whole of India except the State of Jammu and Kashmir. In this Act, unless the context otherwise requires, - a. "

autism" means a condition of uneven skill development primarily affecting the communication and social abilities of a person, marked by repetitive and ritualistic

behavior; b. "Board" means Board of trustees constituted under section 3; c. "

cerebral palsy" means a group of non-progressive condition of a person characterized by abnormal motor control posture resulting from brain insult or injuries occurring in the pre-natal, perinatal or infant period of development. "

Chairperson" means the Chairperson of the Board appointed under clause (a) sub-section (4) of section 3; e. "Chief Executive" Officer" means the Chief Executive Officer appointed under sub-section (1) of section 8; f. "Member" means a Member of the Board and includes the Chairperson;

99 g. "

Mental retardation" means

a condition of arrested or incomplete development of mind of person, which is specially characterized by sub-normality of intelligence;

h. "

Multiple disabilities" means a combination of two or more disabilities as defined in clause (i) of section 2

of

the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995;

i. "Notification" means notification published in the Official Gazette; j. "

Persons"

with disability" means a person suffering from any of the conditions relating to autism, cerebral palsy, mental retardation or a combination of any two or more of such conditions and include a person suffering from severe multiple disability; k.

"Prescribed" means prescribed by rules made under this Act; l. "Professional" means a person who is having special expertise in a field, which would promote the welfare of persons with disability; m. "Registered organization" means an association of persons with disability or an association of parents of persons with disability or a voluntary, as the case may be, registered under section 12; n. "Regulation" means the regulations made by the Board under this Act; o. "

Severe disability" means disability with eighty percent or more of one or more of multiple disabilities;

p. "

Trust" means

the

National Trust for Welfare of Persons with Autism, Cerebral Palsy Mental Retardation and Multiple Disability

constituted under sub section (1) of section 3. CHAPTER 2

The

National Trust For Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disability

With effect from such date as the Central Government may, by notification, appointment, there shall be constituted, for the purpose of this Act, a body by

the name

of

the

National Trust for Welfare of persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities

which shall be a body corporate by the name aforesaid, having perpetual succession and a common seal, with power, subject

100 to the provision of this Act, to acquire, hold and dispose of property, both movable and immovable, and both movable and immovable, and contract, and shall, by the said name, sue or be sued. CHAPTER 3 Objects

of the Trusts

The objects of the trust

shall

be: ●●●●●

to enable and empower persons with disability to live as independently and as fully as possible within and as close to the community to which they belong;

a.

to strengthen facilities to provide support

to persons with disability to live within their own families; b. to extend support to registered organization to provide need based services

during

the

period of crises in the family of persons with disability ; c. to deal with problems of persons with disability who do not have family support; d. to promote measures for the care and protraction of persons with disability in the event of death of their parent or guardian; e. to evolve procedure for the

appointment of guardians and trustees for persons with disability requiring such protection; f.

to facilitate

the realization of equal opportunities, protection of right and full participation of persons with disability; and

g.

to do any other act

which is incidental to the

aforesaid

object. CHAPTER 4 Powers and Duties of The Board shall:- ●●●● receive from the Central Government a one-time contribution of rupees one hundred crores for a corpus, the income where of

shall be utilized to provide for adequate standard of living for persons with disability; a. receive bequest of movable property any person for the benefit of the person with disability in general and for furtherance of the objectives of the Trust in particular:

101 Provide that it shall be obligatory on the part of the Board to make arrangement for adequate standard of living for the beneficiary named in the bequest, if any and to utilize the property bequeathed for any other purpose for which the bequest has been made: Provide further that the Board shall not be under any obligation to utilize the entire amount mentioned in the bequest for the exclusive benefit of the persons with disability named as beneficiary in the bequest; b. receive from the Central Government such sums as may be considered necessary in each financial year for providing financial assistance to registered organization for carrying out any approved Programme. For the purpose of sub-section (1), the expression "approved Programme" means

c.

any Programme which promote independent living in the community for persons with disability by creating a conducive environment in the community; ii. counseling and training of family members of persons with disability; iii. setting up of adult training units, individual and group homes; d. any programme which promotes respite care, foster family care or day care service for persons with disability; e. Setting up residential hostels and residential homes for persons with disability; f. Development of self-help group persons with disability to pursue the realization of their rights; g. setting up of local committee to grant approval for guardianship and h. such other programmes which promote the objective of the Trust. While earmarking funds for the purpose of clause (c) of sub-section (2), preference shall be given to woman with disability or to persons with severe disability and to senior citizen with disability. Explanation:- For the purpose of this sub-section, the expression;- "Persons with severe disability" shall have the same meaning as is assigned to it under sub-section (4)

of section 56

of

the

persons with Disabilities (Equal Opportunities, Protection of Right and Full Participation) Act, 1995;"

Senior citizen' means a person

who is above the age of sixty-five years or more.

102 CHAPTER 5 Procedure for Registration 0. Any association of person with disability, or any association of parents of persons with disability or a voluntary organization whose main object is promotion of welfare of persons with disability may make an application for registration to the Board. 1. An application for registration shall be made in such form and manner and at such place as the Board may by regulation provide and shall contain such particulars and accompanied with such documents and such fees may be provided in the regulation. 2.

On receipt of application for registration, the Board may make such inquiries as it thinks fit in respect of genuineness of the application and correctness of any particulars thereon. 3. Upon receipt of such application the Board shall either grant registration to the applicant or reject such application for reasons to be recorded in writing Provided that where registration has been refused to the application,

the said applicant may again make an application for registration after removing defects, if any in its previous application.

CHAPTER 6 Local level Committees 0. The Board shall constitute a local level committee for such area as may be specified by it from time to time. 1. A local committee shall consist of an officer of the civil service of the Union or of the State, not below the rank of a District Magistrate or a District Commissioner of a district; a. a representative of a registered organization; and

b.
a person with
disability as defined in clause (t)
of section 2

of

the

persons

with disabilities (Equal Opportunities, Protection of rights and Full Participation) Act, 1995

103 2.

A local level committee shall continue to work for a period of three years from the date of its constitution or till such time it is reconstituted by the Board 3. A local level committee shall meet at least once in every three months or at such interval as may be necessary. 0. A parent of a person with disability or his relative may make

as

application to the local level committee for appointment of any person of his choice to act as a guardian of the persons with disability. 1. Any registered organization may make an application in the prescribed form to the local level committee for appointment of a guardian for a person with disability: Provide that no such application shall be entertained by the local level committee, unless the consent of the guardian of the disabled person is also obtained. 2. While considering the application for appointment of a guardian, the local level committee shall consider: - whether the person with disability needs a guardian; the purpose for which the guardianship is required for person with disability. 3. The local level committee shall receive, process and decide applications received under sub-section (1)

and (2), in such manner as may be determined by regulation: Provide that while making recommendation for the appointment of a guardian, the local level committee shall provide for the obligation which are to be fulfilled by the guardian. 4. The local committee shall send to the Board the particulars received by it and orders passed there on

at such interval as may be determined by regulations. Every person appointed as a guardian of a person with disability under this chapter shall, wherever required, either have the care of such person of disability and his property or be responsible for the maintenance of the person with disability. 0. Every person appointed as a guardian under section 14 shall, within a period of six months from the date of his appointment, deliver to the authority which appointed him, an inventory of immovable property belonging to the person with disability and all assets and other movable property received on behalf of the person with disability, together with a statement of all claims due to and all debts and liabilities due by such person with disability.

104 1. Every guardian shall also furnish to the said appointing authority within a period of three months at the close of every financial year, an account of the property and assets in his charge, the sums received and disbursed on account of the person with disability and the balance remaining with him. 0. Whenever a parent or a relative of a person with disability or a registered organization find that the guardian is :- abusing or neglecting a person with disability; or a misappropriating or neglecting the property, it may in accordance with the prescribed procedure apply to the committee for the removal of such guardian. 1. Upon receiving such application the committee may, if it is satisfied that there is a ground for removal and for reasons to be recorded in writing, remove such guardian and appoint a new guardian in his place or if such a guardian is not available make such other arrangement as may be necessary for the care and protection of person with disability. 2. Any person removed under sub-section (2) shall be bound to deliver the charge of all property of the person with disability to the new guardian, and to account for all moneys received or disbursed by him. Explanation,- For the Purpose of this chapter, the expression "relative" includes any person related to the person with disability by blood, marriage or adoption. CHAPTER 7 Accountability and Monitoring 0. The books and documents in the possession of the Board shall be open to inspection by any registered organization 1. Any registered organization can submit a written requisition to the Board for the access of any book or document maintained by the Board. 2. The Board shall frame such regulations as it thinks necessary for allowing the access of any books or document to a registered organization. The Board shall determine by regulations the procedure for evaluating the pre-funding status of registered organizations seeking financial assistance from it and such regulations may also provide for the guidelines for monitoring and evaluating the activities of the registered organizations who are receiving financial assistance from the Trust.

105 0. The Board shall in each year hold an annual general meeting of registered organizations, and not more than six months shall elapse between the date of one annual general meeting and that of the next. 1. A notice of the annual general meeting along with a statement of accounts and records of its activities during the preceding year shall be sent by the Board to every registered organization at such time as may be determined by regulations. 2. The quorum for such meeting shall be such number of persons of the registered organization as may be determined by regulation. CHAPTER 8 Finance, Accounts and Audit The Central Government may, after due appropriation made by Parliament by law in his behalf, make to the Trust a one-time contribution of rupees one hundred crores or a corpus, the income whereof may be utilized for the objects of the Trust under this Act. There shall be constituted a fund to be called the

National Trust for Welfare of persons with Autism, Cerebral Palsy, Mental Retardation and Multiple disabilities

Fund and there shall be credited thereto- all money received from the Central Government;

- a. all moneys received by the trust by way of grants, gifts, donation, benefaction, bequests or transfers;
- b. all moneys received by the Trust in any other manner or from any other source. 1. All moneys belonging to the fund shall be deposited in such banks or invested in such manner as the Board may, subject to approval of the Central Government, decide. 2. The funds shall be applied towards meeting the administrative and other expenses of the Trust including expenses incurred in the exercise of its powers and performance of duties by the Board in relation to any of its activities under section 10 or for any thing relating thereto.

The Board shall prepare, in such form and at such time in each financial year as may be prescribed, the budget for the next financial year showing the estimated receipt and expenditure of the Trust and shall forward the same to the Central Government,

106 0. The Board shall maintain proper accounts and other relevant records and prepare an annual statement of accounts of the Trust including the income and expenditure accounts in such form as the Central Government may prescribe and in accordance with such general direction as may be issued by that Government in constitution with the Comptroller and Auditor-General of India. 1. The accounts of the Trust shall be audited by the Comptroller and Auditor General of India at such intervals as may be specified by him and any expenditure incurred by him in connection with such audit shall be payable by the Board of the Comptroller and Auditor-General of India. 2. The Comptroller and Auditor-General of India and by other person appointed by him in connection with the audit of the accounts of the Trust shall have the same rights, privileges and authority in connection with such audit as the Comptroller and Auditor-General of India generally has in connection with the audit of the Government accounts, and in particular, shall have the right to demand

and

production of books of accounts, connected vouchers and other documents and papers and to inspect any of the offices of the Trust. 3. The accounts of the Trust as certified by the Comptroller, and Auditor-General of India or any other person appointed by him in this behalf, together with the audit report thereon, shall be forwarded annually to the Central Government, and that Government shall cause the same to be laid before each House of Parliament. The Board shall prepare every year, in such form within such time as may be prescribed an annual report giving a true and full accounts of its activities during the previous year and copies thereof shall be forward to the Central Government and that Government shall cause the same to be laid before each House of Parliament. All orders and decisions of the Board and instrument issued in the name of the Trust shall be authenticated by the signature of the Chairperson, the Chief Executive Officer or any other officer authorized by the Chairperson, in this behalf. The Board shall furnish to the Central Government such reports, returns and other information as that Government may require time to time. CHAPTER 9

Miscellaneous 0. Without prejudice to the foregoing provisions of this Act, the Board shall, in exercise of its power or the performance of its duties under this Act, be bound

107 by such direction on questions of policy as the Central Government may give in writing it from time to time: Provided that the Board shall, as far as practicable, be given an opportunity to express its views before any direction is given under this sub-section. 1. The decision of the Central Government whether a question is one of policy or not shall be final. If the Central Government on the complaint of a registered organization or otherwise has reason to believe that the Board is unable to perform or has persistently made default in the performance of the duties imposed on it, the Central Government may issue notice to the Board asking why it should not be superseded: Provide that no order superseding the Board shall be made by the Central Government, unless a notice affording reasonable opportunity to the Board has been given in writing that why it should not be superseded. 1. The Central Government after recording reasons in writing and by issuing a notification in the Official Gazette supersede the Board for a period of not more than six months: provided that on the expiration of the period of super session Central Government may reconstitute the Board, in accordance with section 3. 2. Upon the publication of the notification under sub-section (2), all the members of the Board shall, notwithstanding that their term of office had not expired as on the date of supersession, vacate their office as such members;

a. all the powers and duties which may, by or under the provision of this Act, be exercised or performed by or on behalf of the trust shall, during the period of supersession, be exercised and performed by such person as the Central Government may direct. 3. On the expiration of the period of super session specified in the notification issued under sub-section (2), the Central Government may extend the period of super session for such further period as it may consider necessary so that the total period of supersession does not exceed more than six months; or a. reconstitute the Board in the manner provided in section 3. Notwithstanding anything contained in the Income-tax Act, 1961, or any other law for the time being in force relating to tax on income. profit organs, the Trust shall not be liable to pay income-tax or any other tax in respect of its income, profits or gains derived. No suit, prosecution or other legal proceeding shall lie against the Central Government or the Trust or any member of the Board or Chief

108 Executive officer or any officer or other employee of the Trust or any other person authorized by the Board to perform duties under this. Act for any loss or damage caused or likely to be caused by anything which is done in good faith. Explanation:- For the purpose of this section, the expression "good faith" shall have the same meaning as is assigned to it in the Indian Penal Code.

All Members, Chief Executive Officer, other officers and employees of the Trust shall be deemed, when acting or purporting to act in pursuance of any of the provisions of this Act, to be public servant within the meaning of section 21 of the Indian Penal Code. The Board may, by general or special order in writing, delegate to the Chairperson or any members or any officer of the Trust or any other person subject to such conditions and limitations, if any, as may be specified in the order such of its powers under this Act, (except the power to make regulations under section 35) as it may deem necessary. The Central Government may, by notification in the Official Gazette, make rules for carrying out the provisions of this Act. 1. In particular, and without prejudice to the generality of the foregoing powers, such rules may provide for all or any of the following matters, namely:- the procedure in accordance with which the person representing registered organization shall be elected under clause (b) of sub-section (4) of section 3; a. the condition of service of the Chairperson and Members under sub-section (2) of section 4; b. the rules procedure in the transaction of business at meeting of the Board under sub-section (2) of section 14; c. the powers and duties of Chief Executive Officer under subsection (1) of section 8; d. the form in which an application for guardianship may be made by a registered organization under sub-section (2) of section 23; e. the procedure in accordance with which a guardian may be removed under section 17; f. the form in which, and the time within which, the budget of the trust shall be forwarded to the Central Government under section 23; g. the form in which the annual statement of accounts shall be maintained under sub-section (1) of section 24; h. the form in which, and the time within which, the annual reports shall be prepared and forwarded under section 25; i. any other matter which is required to be, or may be, prescribed. The Board may, with the previous approval of the

Central Government, by notification in the Official Gazette, make regulations consistent with this Act and rules generally to carry out the purpose of this Act. In particular, and without prejudice to the generality of the foregoing power, such regulation may provide for all or any of the following matters, namely:- ●●●● the manner and purpose for which a person may be associated under sub-section (5) of section 3; a. the time and place at which the Board shall meet under subsection (6) of section 4; b. the terms and conditions of service of, Chief Executive Officer, other officer and employees of the Trust under sub-section (3) of section 8; c. the form manner in which the application shall be made for registration under sub-section (2) of section 12 and the particulars which such application shall contain under that sub-section; d. the manner in which application for guardianship shall be received, proceed and decided by the local level committee under sub-section (4) of section 114; e. the particulars of application and orders passed thereon by the local level committee under sub-section (5) of section 14; f. the procedure for evaluating the pre-funding status of the registered organization and framing of guidelines for monitoring and evaluating the activities of such registered organization under section 19; g. the time within which notice for annual general meeting shall be sent and quorum for such meeting under sub-section (2) and (3)

of section 20; and h.

any other matter which is required to be, or may be provided by

regulation. 2.7.5. The Sarva Shiksha Mission 2000 It pledges that the "SSM

will ensure

that every child with special needs irrespective of the kind, categories and degree of disability

is

provided

education in appropriate environment."

Sarva Shiksha Abhiyan or

SSA, is an Indian Government programme

aimed at the universalisation of elementary education "in a time bound manner",

as mandated by the 86th Amendment to the Constitution of India making free and compulsory education to children

between the ages of 6 to 14 (

estimated to be 205 million

110 children in 2001) a fundamental right. The programme was pioneered by former Indian Prime Minister Atal Bihari Vajpayee. History As an intervention programme, SSA has been operational since 2000-2001. However, its roots go back to 1993-1994, when the District Primary Education Programme (DPEP) was launched, with an aim of achieving the objective of universal primary education. DPEP, over several phases, covered 272 districts in 18 states of the country. The expenditure on the programme was shared by the Central Government (85%) and the State Governments. The Central share was funded by a number of external agencies, including the World Bank, DFID and UNICEF. By 2001, more than US\$1500 million had been committed to the programme, and 50 million children covered in its ambit. In an impact assessment of Phase I of DPEP, the authors concluded that its net impact on minority children was impressive, while there was little evidence of any impact on the enrolment of girls. Nevertheless, they concluded that the investment in DPEP was not a waste, because it introduced a new approach to primary school interventions in India. The Right to Education Act (RTE) came into force on 1 April 2010. Some educationists and policy makers believe that, with the passing of this act, SSA has acquired the necessary legal force for its implementation. Features Sarva Shiksha Abhiyan (SSA) is a programme for Universal Elementary Education. This programme is also an attempt to provide an opportunity for improving human capabilities to all children through provision of community -owned quality education in a mission mode.

It is

a response to the demand for quality basic education all over the country.

Main

features 1.

Programme with a clear time frame for universal elementary education. 2. A

response

to the demand for quality basic education all over the country. 3.

An opportunity for promoting social justice through

basic education. 4.

A

expression of political will for universal elementary education across the country. 5.

A partnership between the central, state and

the local government.

111 6. An opportunity for states to develop their own vision of

elementary education. 7. An effort at effective involving the Panchyati Raj Institutions, school management Committees, village and urban slum

level Education Committees,

parent'

s

Teachers' Associations, Mother-Teacher Associations, Tribal Autonomous councils and other grassroots level structures in the management of elementary schools.

Aims 1.

To provide useful and elementary education for all children in the 6-14 age group. 2. To bridge social, regional and gender gaps with the active participation of community in the management of schools. 3.

To allow children to learn about and master their natural environment in order to develop their potential both spiritually and materially. 4. To inculcate value-based learning

this

allows children an opportunity to work for each other's well being rather than to permit mere selfish pursuits. 5. To

realize the importance of Early Childhood Care and education and looks at the 0-14 age as a continuum.

Objectives 1.

All children in school. Education Guarantee Centre, Alternate School, 'Back- to-School' camp by 2003. 2. All children complete five years of primary schooling by 2007. 3. All children complete of elementary schooling by 2010. 4. Focus on elementary education of satisfactory quality with emphasis on education for life. 5. Bridge all gender and social category gaps at primary stage by 2007 and at elementary education level by 2010. 6. Universal retention by 2010.

Aspects 1. It provides a wide convergent frame work for implementation of Elementary Education schemes.

112 2. It is also a programme with budget provision for strengthening vital areas to achieve universalisation of elementary education. 2.7.6 Right to

Education Act (2006) Right to Education

Act

Every child between the ages of 6 to 14 years has the right to free and compulsory education.

This is stated as per the 86th Constitution Amendment Act via Article 21A. The Right to Education Act seeks to give effect to this amendment. The government schools shall provide free education to all the children and the schools will be managed by School Management Committees (SMC). Private schools shall admit at least 25% of the children in their schools without any fee. The National Commission for Elementary Education shall be constituted to monitor all aspects of elementary education including quality.

Main Features of Right to Education (RTE) Act, 2009 ●●●●●

Free and compulsory education to all children of India in the 6 to 14 age group. ●●●●● No child shall be held back, expelled or required to pass a board examination until the completion of elementary education. ●●●●●

If a child above 6 years of age has not been admitted in any school or could not complete his or her elementary education, then he or she shall be admitted in a class appropriate to his or her age. However, if a case may be where a child is directly admitted in the class appropriate to his or her age, then, in order to be at par with others, he or she shall have a right to receive special training within such time limits as may be prescribed. Provided further that a child so admitted to elementary education shall be entitled to free education till the completion of elementary education even after 14 years. ●●●●● Proof of age for admission: For the purpose of admission to elementary education, the age of a child shall be determined on the basis of the birth certificate issued in accordance with the Provisions of Birth, Deaths and Marriages Registration Act 1856, or on the basis of such other document as may be prescribed. No child shall be denied admission in a school for lack of age proof

113 ●●●●● A child who completes elementary education shall be awarded a certificate. ●●●●● Call need to be taken for a fixed student-teacher ratio. ●●●●● Twenty-five per cent reservation for economically disadvantaged communities in admission to Class I in all private schools is to be done. ●●●●● Improvement in the quality of education is important. ●●●●● School teachers will need adequate professional degree within five years or else will lose job. ●●●●● School infrastructure (where there is a problem) need to be improved in every 3 years, else recognition will be cancelled. ●●●●● Financial burden will be shared between the state and the central government. '

Free and Compulsory Elementary Education' All children

between the ages of 6 and 14 shall have the right to free and compulsory elementary education at a neighbourhood school.

There is

no direct (school fees) or indirect cost (uniforms, textbooks, mid-day meals, transportation) to

be borne by the child or the parents to obtain elementary education.

The government will provide schooling free-of-cost until a child's elementary education is completed.

The role envisaged for the community and parents to ensure

RTE

The

Right of Children to Free and Compulsory Education (

RTE) Act 2009

insists upon schools to constitute School Management Committees (SMCs) comprising local authority officials, parents, guardians and teachers. The SMCs shall form School Development Plans and monitor the utilization of government grants and the whole school environment. RTE also mandates the inclusion of 50 per cent women and parents of children from disadvantaged groups in SMCs. Such community participation will be crucial to ensuring a child friendly "whole school" environment through separate toilet facilities for girls and boys and adequate attention to health, water, sanitation and hygiene issues. RTE promote Child-Friendly Schools All schools must comply with infrastructure and teacher norms for an effective

114 learning environment. Two trained teachers will be provided for every sixty students at the primary level. Teachers are required to attend school regularly and punctually, complete curriculum instruction, assess learning abilities and hold regular parent-teacher meetings. The number of teachers shall be based on the number of students rather than by grade. The state shall ensure adequate support to teachers leading to improved learning outcomes of children. The community and civil society will have an important role to play in collaboration with the SMCs to ensure school quality with equity. The state will provide the policy framework and create an enabling environment to ensure RTE becomes a reality for every child. RTE be financed and implemented in India Central and state governments shall share financial responsibility for RTE. The central government shall prepare estimates of expenditures. State governments will be provided a percentage of these costs.

RTE provides a ripe platform to reach the unreached, with specific provisions for disadvantaged groups, such as child labourers, migrant children, children with special needs, or those who have a "disadvantage owing to social, cultural economical, geographical, linguistic, gender or such other factor." RTE focuses on the quality of teaching and learning, which requires accelerated efforts and substantial reforms: 1. Creative and sustained initiatives are crucial to train more than one million new and untrained teachers within the next five years and to reinforce the skills of in-service teachers to ensure child-friendly education. 2. Families and communities also have a large role to play to ensure child-friendly education for each and every one of the estimated 190 million girls and boys in India who should be in elementary school today. 3. Disparities must be eliminated to assure quality with equity. Investing in preschool is a key strategy in meeting goals. 4. Bringing eight million out-of-school children into classes at the age appropriate level with the support to stay in school and succeed poses a major challenge necessitating flexible, innovative approaches.

115 Right to Education Bill In 2002, education was made a fundamental right in the 86th amendment to the Constitution. Six years after an amendment was made in the Indian Constitution, the union cabinet cleared the Right to Education Bill. Key provisions of the Bill include: 25% reservation in private schools for disadvantaged children from the neighbourhood, at the entry level. The government will reimburse expenditure incurred by schools; no donation or capitation fee on admission; and no interviewing the child or parents as part of the screening process. The Bill also prohibits physical punishment, expulsion or detention of a child and deployment of teachers for non-educational purposes other than census or election duty and disaster relief. Running a school without recognition will attract penal action. The Right to Education Bill is the enabling legislation to notify the 86th constitutional amendment that gives every child between the age of six and 14 the right to free and compulsory education. 25%

quota for poor The Supreme Court upheld the constitutional validity of Right of Children to Free and Compulsory Education Act, 2009, on April 12, 2012 and directed every school, including privately-run ones, to give immediately free education to students from socially and economically backward classes from class-I till they reach the age of 14 years. The court threw out the challenge by private unaided schools to Section 12(1)(c) of the Act that says every recognized school imparting elementary education, even if it is an unaided school not receiving any kind of aid or grant to meet its expenses, is obliged to admit disadvantaged boys and girls from their neighbourhood. School Admissions According to RTE Norms A series of measures have been taken by the NCPCR to ensure that school admission procedures all over the country are in accordance with

the

Right of Children to Free and Compulsory Education (RTE) Act, 2009.

This was necessitated by the

fact that schools in some states were carrying out a screening procedure for admission of children in the elementary stage of education prohibited by the Act. In April, the NCPCR wrote to the chief secretaries of all the states asking them to issue Government Orders to ensure that school admission procedures were in accordance with the RTE

116 Act. This was prompted by the Directorate of Education, Government of National Capital Territory of Delhi (GNCTD), issuing a notice in March inviting applications for admission to Class VI in the RajkiyaPratibhaVikasVidyalayas run by the Directorate. The NCPCR's intervention in April came in response to an admission notice that had been issued by the GNCTD's Directorate of Education in all leading newspapers as well as in the Directorate's website, inviting students to purchase application forms costing Rs 25 each and thereafter sit for an entrance exam. Since the RTE Act prohibits any kind of screening procedure and permits admissions into any school through random selection only, the notice was clearly in contravention of the Act. As the nodal body monitoring the implementation of the RTE Act, the Commission wrote to the Principal Secretary, Education, GNCTD, asking the admission notice be withdrawn and a notice in Conformity with the provisions of the RTE be issued instead. It also requested that Government Orders (GO) be issued to all schools in the GNCTD within a week regarding the provisions of the Act so that the schools made the required changes in their procedures and modes of functioning. As the Directorate did not comply with this request, it was summoned by the Commission in June and given time till July to re-conduct the admission in accordance with RTE procedures. To ensure that the RTE Act was not similarly contravened in other states, the NCPCR has in its letter to the chief secretaries said that the GO they issue to schools on the matter must specify that: 1. Admission procedures be made in accordance with the RTE Act 2. 25 per cent reservation is ensured for weaker sections in all 'specified category' schools and private unaided schools, and reservation norms for government aided schools are to be followed Further, private schools recognized by the government must also be mapped out and issued notice regarding provisions in the Act as well as the procedures by which children in the neighbourhood could claim admission to the schools. Also, the task of finalizing State Rules on the RTE Act must be completed at the earliest. In response to queries regarding Navodaya Schools which have been designated as 'specified category' schools in the RTE Act, the NCPCR clarified that the provisions of Section 13 of RTE Act applied to all schools without exception.

117 The relevant provision of Section 13 of the Act is: No school or person shall, while admitting a child, collect any capitation fee and subject the child or his or her parents or guardians to any screening procedure. Any school or person, if in contravention of the provisions of sub-section (1): 1. Receives capitation fee, shall be punishable with fine which may extend to ten times the capitation fee charged 2. Subjects a child to screening procedure shall be punishable with fine which may extend to Rs 25,000 for the first contravention and Rs 50,000 for each subsequent contravention. No Screening for Admission to Navodaya Schools

The National Commission for Protection of Child Rights (NCPCR) has written to the

commissioner, Navodaya Schools, as well as the state education secretaries against any kind of screening for admission of children to elementary education (Classes 1 to eight). The NCPCR intervened to check violation of RTE provisions after it got reports of Navodaya schools screening students in Delhi and other states.

Quoting Section 13 of the RTE Act 2009, the NCPCR has pointed out that while admitting a child to school, the Act prohibits schools or persons from collecting capitation fees or subjecting the child or the parents and guardians to any screening procedure.

Any school or person receiving capitation fees, it has pointed out, could be punished with a fine which could be ten times the capitation fee charged. Subjecting a child to screening could lead to a fine of Rs 25,000 for the first contravention and Rs 50,000 for each subsequent contravention. Section 13 applies to all schools even the Navodaya schools which have been designated special category schools in the RTE Act. Screening procedures being conducted by Navodaya Schools are a violation of the RTE Act, it clarified. NCPCR has also requested state governments to issue orders to all schools regarding the provisions of the Act so that the required changes in their procedures and modes of functioning are made within a week. Eligibility for Teachers The following persons shall be eligible for appearing in the TET: 1. A person who has acquired the academic and professional qualifications specified in the NCTE Notification dated 23rd August 2010. 2. A person who is pursuing any of the teacher education courses (recognized

118 by the NCTE or the RCI, as the case may be) specified in the NCTE Notification dated 23rd August 2010. 3. The eligibility condition for appearing in TET may be relaxed in respect of a State/UT which has been granted relaxation under sub-section (2) of section 23 of the RTE Act. The relaxation will be specified in the Notification issued by the Central Government under that sub-section. Each child to get free uniform, books under RTE Each child from class I to class VIII in the country will be provided free textbooks and uniforms, if a roadmap prepared by the Centre to implement the Right To Education Act (RTE) is accepted by the states. 2.7.7. Rashtriya Madhyamik Shiksha Abhiyan (RMSA)2009 Rashtriya Madhyamik Shiksha Abhiyan (

RMSA) (English: "National Mission for Secondary Education")

is a centrally sponsored scheme of the Ministry of Human Resource Development, Government of India, for the development of secondary education in public schools throughout India. It was launched in March 2009. The implementation of

the scheme has started from 2009-2010 to provide conditions for an efficient growth, development and equity for all. The scheme includes a multidimensional research, technical consulting, various implementations and funding support. The principal objectives are to enhance quality of secondary education and increase the total enrollment rate from 52% (as of 2005-2006) to 75% in five years, i.e. from 2009-2014. It aims to provide universal education for all children between 15-16 years of age.

The funding from the central ministry is provided through state governments, which establish separate implementing agencies.

Objectives

The objectives of Rashtriya Madhyamik Shiksha Abhiyan

can be summarised as follows:[3] 1. To improve

quality of education imparted at secondary level through making all secondary schools conform to prescribed norms. 2.

To remove gender, socio-economic and disability barriers. 3. Universal access to secondary level education by 2017,

i.e., by the end of the XII Five Year Plan. 4. Universal retention

by 2020.

119 Action plans RMSA is planned to promote secondary education by establishing in every target school the following infrastructure: 1.

Additional class rooms 2. Laboratories 3. Libraries 4. Art and crafts room 5. Toilet blocks 6. Drinking water provisions 7.

Residential hostels for teachers in remote areas

In addition it aims to provide additional teachers to reduce student-teacher to 30:1, focus on science, mathematics and English education, in-service training of teachers, science laboratories, ICT-enabled education, curriculum reforms, and teaching-learning reforms.

Planning for secondary education Background ●●●●●

Since the initiation of the National Policy on Education (NPE), 1986, there has been no major changes in the structure and organization of the secondary and higher secondary school systems under the Ninth Plan period. ●●●●●

The focus in this plan was on minimising the various disparities, to renew the curricula giving importance to vocationalisation and employment-oriented courses. It also give importance to expanding and diversifying the open learning system, teacher training and ICT. Free education and hostel facilities for girls and integrated education for the disabled children was also brought into highlight, etc. Participation of private sector ●●●●●

There was an increased participation of the private sector including non- governmental organisations (NGOs). Currently, these private sectors manage around 51% of the secondary schools and 58% of the higher secondary schools. ●●●●● Opportunities were provided for those children who were not able to enroll themselves in formal education systems through national and state open schools by utilising contact-centres and multi-media packages.

120 ●●●●● It highly emphasized on the content, process and the quality of education especially the environment education, science, mathematics and computer literacy with the financial help from the central government. ●●●●● After the revised NPE policy, 1992, new initiatives like revision of curriculum, resource centres for value education and National Centre for Computer-aided Education etc. have been taken up. ●●●●● The appeal lacks in the vocationalisation of education due to the lack of manpower demand and academic restraints etc. Hence, by 2000, only 10% of the students opt for the vocational streams against 25%.

Planning for children with special needs (CWSN) ●●●●● With the enactment of the Persons with Disabilities Act, 1995, the education for the CWSN received an impetus. This act entrusts certain governments and authorities for the provision of free access for these children towards education, allotted lands for certain purposes, non-discrimination in transports, financial incentive for them to undertake research etc. ●●●●● This scheme has also taken up programmes for the attitudinal changes and capacity building among teachers for the sake of these children.[7]

Four major heads ●●●●●

Quality improvement: In school, there was promotion of the science laboratories, environmental education, promotion of yoga, as well as centrally sponsored schemes of population education project, international mathematics and science olympiads. The state governments provide in-service training for the teachers and provide infrastructure and research inputs. ●●●● Information communication technologies (ICT): ICT comprises the centrally sponsored schemes like computer education and literacy in schools (CLASS) and educational technology (ET) which familiarizes the student with Information technology (IT). Due to the rise in IT demand in today's world, a major importance is given on it.

Components of a merged scheme ICT in school include a) funding support towards computer education plans; b) strengthening and reorientation of the staffs of SIETS - state institutes of education and training; c) there is digitalisation of SIETs audio and video cassettes with the partnership of NGOs; and d) management of internet-based education by SIETs.

121 ●●●●

Access and equity: RMSA not only emphasizes on providing secondary education for the special focus groups that include scheduled tribe and scheduled caste groups, minority girls and CWSN children, but it also give importance on removing the existing disparities in socio-economic and gender background in the secondary level of education. They are termed as the vulnerable/ disadvantaged group. Certain strategies were implemented to provide free access towards secondary education and they are given as following steps: 1.

Identification of the disadvantaged groups: For this purpose, educational indicators like gross enrollment ratio (GER), net enrollment ratio (NER), drop-out rate, retention rate, gender parity index (GPI), gender gap, etc. were analysed. 2. Need assessment: This is the critical step to prepare for the equity plan where the factors affecting the education of this group of children were evaluated with the involvement of the community members, teachers, civil society, etc. 3. Strategising for the addressing gaps: Since there are multiple interwoven factors that cause the un-equitable condition in this scenario, the strategy was called to have a set of multi-dimensional activities. 4. Project-based proposal: Development of a project-based strategy enables the RMSA to call for an evidence-based and outcome-oriented strategy. ●●●●

Integrated education for disabled children (IEDC): Inclusive education have been highlighted to bring about expansion in terms of meeting/catering to the needs of the mentally and physically disadvantaged children. This schemes continues to be a separate centrally sponsored scheme. It includes several components for convergence with integrated child development services for early interventions, Sarva Shiksha Abhiyan (SSA) for the particular group at the elementary level, and special schools.

Funding method The Ministry of

Human Resource Development directly provides funds to the state governments. Each state government then release the funds to the approved implementing agencies or institutions. During the XI Five Year Plan the central government provided 75% of the total fund for each state, while 25% was borne by

122 the state as matching share. However, in the remote northeastern states and Sikkim the matching share was waived to 10%. [6][9]

Achievements The major achievements of RMSA as of 2015-2016 report are: 1. New school: 11,577 new secondary schools were approved out of which, 10082 are functional. 2. Strengthening of schools: 337,731 have been approved in terms of infrastructure development under this scheme. The details is as follows: ●●●● Additional classroom: Out of 52750 approved, 20,839 were completed and 16,774 are under progress. ●●●● Science laboratory: Out of 25,948 approved, 10,107 were completed and 8532 are under progress. ●●●● Computer room: Out of 21,864 approved, 6920 were completed and 6297 are under progress. ●●●● Library room: Out of 27,428 approved, 10,133 were completed and 8929 are under progress. ●●●● Art/Craft room: Out of 31,453 approved, 12,062 were completed and 9686 are under progress. ●●●● Drinking water: Out of 12,327 approved, 7096 were completed and 2507 are under progress. ●●●● Teacher quarters: Out of 5408 approved, 623 were completed and 509 are under progress. ●●●● Major repair: Out of 2975 approved, 1313 were completed and 271 are under progress.

Rise of RMSA Due to the impact of the programmes undertaken for the universalisation of elementary education, there is a rise in the demand of education at the secondary level. Despite the increase in the number of secondary schools, the spread of the secondary education throughout the country remains uneven. There are regional disparities, differences in the socio-economic background and in Union Territories. There was narrowing of this significant gender gaps in existing condition. In the

123 Tenth Plan, the key was focussed on a quality education at all levels and to pursuit excellence accordingly. 2.7.8.

Inclusive Education for Disabled at Secondary stage (

IEDSS) 2013

The Scheme of Inclusive Education for Disabled at Secondary Stage (IEDSS)

has been launched from the year 2009-10.

This Scheme

replaces the earlier scheme of Integrated Education for Disabled Children (IEDC)

and

provides

assistance for the inclusive education of the disabled children in classes IX-XII. This scheme now subsumed under RashtriyaMadhyamikShikshaAbhiyan (RMSA) from 2013. The

States/ UTs are also in the process of subsuming under RMSA as RMSA subsumed Scheme.

Aims To enabled all students with disabilities,

to pursue further four years of secondary schooling after completing eight years of elementary schooling in an inclusive and enabling environment. Objectives The scheme covers all children studying at the secondary stage

in Government, local body and Government-aided schools, with one or more disabilities as defined under the Persons with Disabilities Act (1995) and the National Trust Act (1999)

in the class IX to XII, namely

blindness, low vision, leprosy cured, hearing impairment, locomotory disabilities,

mental retardation, mental illness, autism,

and cerebral palsy and may eventually cover speech impairment, learning disabilities, etc.

Girls with

the disabilities receive special focus to help them gain access to secondary schools, as also to information and guidance for developing their potential. Setting up of Model inclusive schools in every State is envisaged under the scheme.

Components ●●●●● Student-oriented components, such as medical and educational assessment, books and stationery, uniforms, transport allowance, reader allowance, stipend for girls, support services, assistive devices, boarding the

lodging facility, therapeutic services, teaching learning materials, etc. ●●●●●

Other components include appointment of special education teachers, allowances for general teachers

for teaching such children, teacher training, orientation of school administrators, establishment of resource room, providing barrier free environment, etc.

124 Implementing Agency The School Education Department of the State Governments/Union Territory (UT) Administrations are the implementing agencies. They may

involve NGOs having experience in the field of education of the disabled in the

implementation of the scheme. Financial Assistance Central assistance for all items covered in the scheme is on 100 percent basis.

The State governments are only required to make provisions for scholarship of Rs. 600/- per disabled child per annum. 2.8

Let us Sum Up International Level 1.

Universal Declaration of Human Rights (1948):

It proclaimed the right of every child to and education. 2.

UN Convention on the Rights of the Child (1989):

It states that education is the right of every child. 3.

UN Declaration on Education for all (Jometien Declaration) - 1990:

It emphasizes education for all including children with disabilities. It states, "

the learning needs of the

disabled demand special attention, steps need to be taken to provide equal access to education to every category of disabled person as an integrated part of education

systems. 4.

UN Declaration Standard Rules on equalization of opportunities for person with disabilities - 1993: It is important resolution

for improving the education condition for person with disabilities.

It states, "State should recognize the principal of equal, primary, secondary and tertiary educational opportunities for children, youth and adults with disabilities, in integrated setting. They should ensure that education of person with disabilities is on integrated part of the education system. 5.

The Salamanca Declaration (1994):

It endorsed inclusive education and stated that inclusion and participation are essential to human rights. National Level The basic structure of the constitution of India, as reflected in the preamble ensures social, economic and political justice as well as equality of status and equal opportunity to all citizens of India. It is thus constitutional obligation of equality of

125 all citizens including persons with disabilities and other marginalized groups of people. Article 45 requires the state to make provision within 10 years

for free and compulsory education for all children until they complete the age of 14 years.

The Constitution (86th Amendment Act ,2002)) has substituted a new article for article 45 which provides, "

The state shall endeavour to provide early childhood care and education for all children until they complete the age of six years." In 1964,

the Kothari Commission (1964-66) recommended placement of the disabled child, as far as possible in ordinary schools. The Integrated Education for Disabled Children (IEDC) - 1974

The centrally sponsored scheme IEDC launched in 1974 to admit children with disabilities in regular schools.

The District Primary Education Programme (DPEP) - 1985. It acknowledges the fact that universalization of education is possible only if it includes children with disabilities. The National Policy on Education (NPE) - 1985

It included a full chapter on "Education of the Handicapped and formulated guidelines for action. The NPE (1986) strongly emphasized the need for the expansion of integrated education programmes.

The Project Integrated Education for Disabled (PIED) - 1987 It was launched in 1987, which encourages all schools in a neighbourhood to enroll children with disabilities.

The Rehabilitation Council of India (RCI) Act - 1992 In 1992, ` the RCI act was passed in the parliament to regulate the manpower development and funding research programme

in the field of education of children with special needs.

The Person with Disabilities (Equal Opportunities Protection of Rights and Full Participation) Act 1995

The main purpose of this act is to define responsibilities of Central Governments and State Governments with regard to services for disabled persons. It recommends making changes in assessment and curriculum and removing architecture barriers to support inclusion. It also recommends providing free books, uniform, etc.

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The National Trust Act It recommends promotion of children with autism, cerebral palsy, mental retardation and multiple disabilities.

It runs many programmes, which promote independent living community for people with disabilities by creating conducive environment in the community. The Sarva Sikhsha Mission It pledges that the "SSM

will ensure
that every child with special needs irrespective of the kind, categories and degree of disability
is
provided
education in appropriate environment."

The Amendment of
the Constitution in 2001 It makes education a fundamental right for those in the age 6-14 age group
which covers children with disabilities. The National policy for Persons with Disabilities It has a section on education,
stating, "

There is a need for mainstreaming of the person with disabilities in the general education system through inclusive
education.

It also mentions that children learns but in the company of their peers. Right to Education The Constitution (Eighty-sixth Amendment) Act, 2002 inserted Article 21-A in the Constitution of India to provide
free and compulsory education

of all children in
the
age group of six to fourteen
years

as a Fundamental Right
in such a manner as the State may, by law, determine.

The
Right of Children to Free and Compulsory Education (RTE) Act, 2009,
which represents the consequential legislation envisaged under Article 21-A, means that every child has
a right to full time elementary education of satisfactory and equitable quality in
a formal school which satisfies certain essential norms and standards. RMSA 2009 This scheme was launched in March,
2009 with the objective to enhance access to secondary education and to improve its quality. The implementation of the
scheme started from 2009-10.

The other objectives include
improving
quality of education
127 imparted at secondary level through making all secondary schools conform to prescribed norms, removing gender,
socio-economic and disability barriers,
providing universal access to secondary level education by 2017,
i.e., by the end of 12th Five Year Plan

and achieving universal retention by 2020. A Comprehensive Plan of Action for Children and youth with Disabilities It was
also presented by the minister for Human Resource Development, Arjun Singh in March 2005. This Action Plan
advocated inclusive education and envisages making all schools "disabled friendly" by 2020. 2.9 "Check your progress" 1.
Discuss about Universal Declaration of Human Rights (1948)

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- 2. Discuss about UNCRPD 2006
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- 3. Discuss about Salamanca Framework 1994
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- 4. Write an essay about Kothari Commission 1964
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128 5. Write an essay National Curriculum Framework 2005

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..... 6. Write a short note IEDC(1974), RCI (1992), PWD (1995), RMSA (2009) IEDSS (2013)

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131 Unit-3: Adaptations Accommodations and Modifications Structure : 3.1 Introduction 3.2 Objectives 3.3 Meaning, Difference, Need & Steps 3.4 Specifies for Children with Sensory Disabilities 3.4.1 Visual Impairment 3.4.2 Children with visual in Inclusive Education 3.4.3 Hearing Impairment or Deafness 3.4.4 Hearing Impaired with Inclusive Education 3.5 Specifics for Children with Neuro-Developmental Disabilities 3.5.1 ASD or other neuro-developmental disorder students in Mainstream Classrooms. 3.6 Specifies for Cildren with Loco Motor &Multiple Disabilities 3.6.1 Locomotor Impairment 3.6.2 Multiple Disabilities 3.7 Engaging Gifted / Talented Children 3.8 Let us sum up 3.9 "Chack your Progress" 3.10 References 3.1 introduction Adaptations, accommodations, and modifications may seem like interchangeable terms, but when it comes to inclusion they carry significantly different meanings. Accommodations and modifications serve as two separate kinds of curricular adaptations.

132 Before defining into the differences between accommodations and modifications, let's take a step back and focus on the concept of curricular adaptations. Accommodations accomplish this objective without modifying the curriculum. Adaptations, accommodations, and modifications need to be individualized for students, based upon their needs and their personal learning styles and interests. It is not always obvious what adaptations, accommodations, or modifications would be beneficial for a particular student, or how changes to the curriculum, its presentation, the classroom setting, or student evaluation might be made.

3.2 Objectives

- To Learn Adaptations in inclusion
- To Learn Accommodations in Inclusive Education.
- To Learn Modification in inclusion.
- To learn specifics for children with sensory Disabilities.
- To learn specifics for Children with Motor and Multiple Disabilities.
- To learn about gifted Children.

3.3 Meaning, Difference, Need & Steps

Adaptations, accommodations, and modifications need to be individualized for students, based upon their needs and their personal learning styles and interests. It is not always obvious what adaptations, accommodations, or modifications would be beneficial for a particular student, or how changes to the curriculum, its presentation, the classroom setting, or student evaluation might be made. This page is intended to help teachers and others find information that can guide them in making appropriate changes in the classroom based on what their students need. Some of the major issues that general education teachers may have with creating instructional accommodations and adaptations in the classroom may include the need for a starting point with examples of how to modify lesson plans for students with special needs in addition to looking at what different types of adaptations there are. Even though most pre-service teachers are taught to create lesson plans for the general education setting, it is also necessary for these teachers to be aware of how to modify

133 lesson plans for students with individual needs. All children do not learn the same way, therefore general education teachers need to be aware of methods they can use to alter lesson plans to benefit students with special needs. Being aware of different types of accommodations and adaptations is another important part of being a general education teacher, as these specific areas of adaptations will help teachers focus on what exactly they can change in their lesson plans to meet the specific needs of learners. According to the Council for Exceptional Children, there are several methods that teachers can consider when creating instructional accommodations and adaptations to meet the needs of diverse learners (Council for Exceptional Children, 2011):

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Altering existing materials: Teachers can re-write, reorganize, add to, or re-cast the information so that the student can access the regular curriculum material independently. For example, teachers could prepare a study guide and audiotape for students.

- Mediating existing materials: Teachers can provide additional instructional support, guidance, and direction to the student in the use of the materials. Teachers can instruction to mediate the barriers presented by the materials so that one may directly lead the student to interact with the materials in different ways. For example, one might have students survey the reading material, collaboratively preview the text, and create an outline of the material to use as a study guide.
- Selecting alternate materials: Teachers might select new materials that are more sensitive to the needs of students with disabilities or are inherently designed to compensate for learning problems. For example, use an interactive computer program that cues critical ideas, reads text, inserts graphic organizers, defines and illustrates words, presents and reinforces learning in smaller increments, and provides more opportunities for practice and cumulative review. The New Jersey Council on Developmental Disabilities lists nine different types of adaptations that teachers might use when addressing the needs of different learners (Curriculum modifications, n.d.):

1. Input: Adapting the way the instruction is delivered to the learner (such as using different visual aids).
2. Output: Adapting how the learner might respond to instruction (such as allowing a verbal instead of written response).

134 3. Time: Adapting the time allotted for learning, task completion, or testing (such as increasing or decreasing time given for tasks). 4. Difficulty: Adapting the skill level, problem type, or rules on how the learner might do the work (such as simplifying directions). 5. Level of Support: Increase the amount of personal assistance for a specific learner (such as assigning peer tutors). 6. Size: Adapting the number of items that the student will complete (such as reducing the number of answers on a multiple choice test). 7. Degree of Participation: Adapting how much the student will be involved in an activity (such as having the student write answers on the board). 8. Alternate Goals: Adapting the goals or outcomes expectations while using the same materials (such as asking the student to be able to recall book titles instead of recalling both book and author names). 9. Substitute Curriculum: Providing different instruction and materials to meet a learner's individual goals (such as asking a student to read the graphic novel version of a text instead of the entire novel).

3.4 Specifics for Children with Sensory Disabilities The concept of sensorial disability embraces persons with sensory, visually , and hearing impaired; and they are so important for humans, because those are the receptors that perceive information about the world around us. The concept of visual impairment refers to both, the blindness and other conditions of vision that do not reach it. According to the timing of deficiency, we can find blindness and visual impairment from birth and acquired, early or late; having great importance, when all this happens; because it would depend all the visual experiences, that may have been acquired before the injury. Within this category, we found visual impairment and hearing impairment. 3.4.1 Visual Impairment Visual impairment is the lack, deficiency, or decreased vision. For many people the word blind means total lack of vision, visual impairment but is divided into total blindness or amaurosis, blindness.

135 Classification Partial blindness, when the vision of the person is low or there is insufficient capacity and need to wear glasses to improve it. Macular degeneration: loss of peripheral vision and central vision is weak or a black hole. Cataracts occur when the eye's lens becomes cloudy; it is the most common cause of low vision in old age. Tubular or tunnel vision: it is caused by glaucoma. Damage to the optic nerve at the back of the eye leads to a gradual loss of nerve function and can cause loss of peripheral vision. Diabetic retinopathy is a common source of low vision in middle age. Diabetes can damage blood vessels in the eye. Blindness: means there is difficulty distinguishing between colors, especially reds and greens. Cortical blindness is caused by brain damage in the primary visual area of the occipital lobe although the visual organs are in good condition. The vision of the person is vague to light or movement. Blindness may be caused due to same diseases like Trachoma, Glaucoma, Xerophthalmia etc. or it may cause due to some accidents or some genetic defects/chromosomal aberrations. Some systemic disease like diarrhoea, blood sugar and hypertension also may cause blindness. Lenses Staff: used to acquire information about the road in front of the user is not detected unbalanced on hanging objects, Guide dogs, blind people can be transported with the help of a dog which has to be trained for several weeks, is very useful if you need to walk long distances. These dogs are not pets but companions; they should not pet him or take him by the collar without the permission of the owner. Audio books Braille: A system of touch reading and writing in which letters, words, numbers, etc. Are points that stick out of the paper. The system has 18 abbreviations, contractions calls to save space and speed up the reading or writing. 3.4.2 Children with visual in Inclusive Education Students with visual impairments have unique educational needs which are most

136 effectively met using a team approach of professionals, parents and students. In order to meet their unique needs, students must have specialized services, books and materials in appropriate media (including braille), as well as specialized equipment and technology to assure equal access to the core and specialized curricula, and to enable them to most effectively compete with their peers in school and ultimately in society. There must be a full range of program options and support services so that the Individualized Education Program (IEP) team can select the most appropriate placement in the least restrictive environment for each individual student with a visual impairment. There must be adequate personnel preparation programs to train staff to provide specialized services which address the unique academic and non-academic curriculum needs of students with visual impairments. There must also be ongoing specialized personnel development opportunities for all staff working with these students as well as specialized parent education. Providing equal access to all individuals with disabilities is the key element of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1992. Access involves much more than providing ramps. Access is also the key element of inclusion, which involves much more than placement in a particular setting. The relationship of access and inclusion may not be obvious to individuals who are not familiar with the educational and social impact of a vision loss. Placing a student with a visual impairment in a regular classroom does not, necessarily, provide access and the student is not, necessarily, included. A student with a visual impairment who does not have access to social and physical information because of the visual impairment, is not included, regardless of the physical setting. Students with visual impairments will not be included unless their unique educational needs for access are addressed by specially trained personnel in appropriate environments and unless these students are provided with equal access to core and specialized curricula through appropriate specialized books, materials and equipment.

3.4.3 Hearing impairment or deafness.

It refers to the individual's inability to detect or receive at least some sound frequencies which can usually be heard by members of their species, hearing loss can be classified as mild, moderate to profound. A deaf person uses vision as the primary mode for learning and communication.

137 Causes of hearing loss and deafness If one or both parents have greater risk of hearing loss the child is born deaf. Hearing impairment is often caused by problems during pregnancy and childbirth. Premature birth during labor conditions in which a baby does not have enough oxygen to breathe. Rubella, syphilis or some other infections in a woman during pregnancy. Inappropriate use of toxic drugs (a group of over 130 drugs, such as the antibiotic gentamicin) during pregnancy. Jaundice, which can damage the auditory nerve in a newborn baby. Other causes include infections such as meningitis, measles, mumps and chronic ear infections can lead to hearing impairment. Wax or foreign bodies blocking the ear canal can cause hearing loss at any age. Excessive noise, including working with noisy machinery, exposure to loud music or other noises such as gunfire or explosions can damage the inner ear and weak hearing. As people age, accumulated exposure to noise and other factors can lead to deafness or hearing loss. Sensori neural hearing loss can be prevented by:

- Meningitis, immunize children against childhood diseases like measles, meningitis, rubella and mumps.
- Immunize women of childbearing age against rubella before pregnancy.
- Detection and treatment of syphilis and certain other infections in pregnant women;
- Improved prenatal and perinatal care.

3.4.4 Hearing Impaired with Inclusive Education

Inclusive Education for Hearing-impaired Children, teachers learn how to support the hearing-impaired child in a mainstream school, addressing specific needs of the hearing- impaired child including academic, social, amplification and physical needs. Teachers also gain specialised knowledge about language and listening and how they form the basis for the development of literacy and academic learning. Music forms an important part of the curriculum and the necessary information is provided to any teacher who

138 wishes to use music as a way to aid the language, listening and reading development in children. •••• The model of inclusive education on which this programme is based, aims at including hearing-impaired learners in a mainstream school through the early identification of hearing loss and ongoing audiological management, parent guidance, speech-language therapy, development of listening skills and educational support. •••• This programme is directed at mainstream educators and is also suitable for speech- language therapists, audiologists, educational psychologists, and occupational therapists with previous training in education in their undergraduate studies. •••• Qualifying students are provided with applied competence in the effective inclusion of the hearing-impaired child in mainstream education. The student is equipped with knowledge of the principles and practicalities of inclusive education to optimise the education of the hearing-impaired child. •••• A module is dedicated to the guidance of parents with a hearing-impaired child. KNOWLEDGE AND PRACTICAL KNOW-HOW ARE •••• the principles of inclusion and how it differs from specialised schooling and integration; •••• how the ear and hearing works and the amplification technology available for hearing-impaired children; •••• the application of these technologies, and trouble-shooting and assisting the hearing-impaired child in the classroom; •••• language and communication development and how they lay the foundation for literacy development and academic achievement. The student is able to develop a language-development programme to enhance and encourage literacy and numeracy development. evaluating and addressing the individual needs of each child (including the hearing-impaired child) in order to support the child holistically to reach her/ his full academic potential; •••• differentiated teaching methods in order to ensure full participation of the hearing- impaired learner in the school;

139 •••• working as part of an interdisciplinary team along with other team members (of which the parents form an integral part); •••• the importance of parental and family involvement in the education of the hearing- impaired child. The students are equipped to guide and support and actively involve the parent in the education of the hearing-impaired child and in understanding him/her ; •••• the role of the parent as part of the interdisciplinary team. The students are able to understand the need for parental involvement and also how to accommodate specific needs of each child and each family in education, the role of music in the development of language, listening and literacy skills, and are able to incorporate music and movement as part of the curriculum

1 Inclusion: Fundamentals In this module students learn to understand the rationale for inclusion of the hearing-impaired child in a mainstream school. Relevancy in today's education as well as considerations based on ethical and financial implications are discussed. Students acquire knowledge on global developments in the area of inclusion and deliberate global trends in inclusion.

2 The Ear and Hearing Students are provided with information in order to understand the ear in terms of the anatomy, diseases of the ear and treatment of ear pathologies. Students are made aware of the importance of hearing in the classroom and levels of impairment.

3 Amplification Technology Understanding the importance and use of amplification technologies for children with hearing impairment in and out of the classroom are discussed. The module offers an in-depth knowledge of the technologies available and the working of these devices.

4 Listening, Language and Communication Development Listening and language are interlinked and listening affects language development. Students learn about the effects that language development have on both literacy and numeracy development. The required interdisciplinary

140 teamwork to address these issues with the hearing-impaired child is discussed. 5 Educational Practices for inclusion The impact of hearing impairment in classroom practice and aligning the learning environment to support the hearing-impaired child to achieve his/her potential, are covered. Evaluating the child's needs holistically in order to support the hearing-impaired child and adapting the curriculum, teaching methods and assessments to the hearing-impaired child's specific needs, are included. 6 Parent and Family Guidance and Support The aim of this module is to guide and support the parent and family in all aspects of hearing impairment of their child as well as addressing the educational needs of the child. The importance of the parent or guardian as part of the interdisciplinary team working with the hearing-impaired child is stressed. 7 Music in the Development of Language and Literacy The importance of music in speech, language and listening development and its effects on academic performance are clarified. The role of music in overall academic performance is explained. The effect of music in the holistic development of the child is discussed. 3.5 Specifies for Children with Neuro-Developmental Disabilities Neurodevelopmental disorders are impairments of the growth and development of the brain or central nervous system. A narrower use of the term refers to a disorder of brain function that affects emotion, learning ability, self-control and memory and that unfolds as the individual grows. The term is sometimes erroneously used as an exclusive synonym for autism and autism spectrum disorders. Disorders considered neurodevelopmental in origin, or that have neurodevelopmental consequences when they occur in infancy and childhood, include: •••• Intellectual disability (ID) or intellectual and developmental disability (IDD) •••• Autism and autism spectrum disorders such as Asperger syndrome •••• Fetal alcohol spectrum disorder 141 •••• Motor disorders including developmental coordination disorder, stereotypic movement disorder and the tic disorders including Tourette syndrome. •••• Traumatic brain injury (including congenital injuries such as those that cause cerebral palsy) •••• Communication, speech and language disorders •••• Genetic disorders, such as fragile-X syndrome •••• Down syndrome •••• Attention deficit hyperactivity disorder •••• Mendelsohnn's syndrome •••• Schizophrenia •••• Schizotypal disorder •••• HIV •••• Malaria Neurodevelopmental disorders are associated with widely varying degrees of difficulty which may have significant mental, emotional, physical, and economic consequences for individuals, and in turn their families and society in general. Causes The development of the brain is orchestrated, tightly regulated, and genetically encoded process with clear influence from the environment. This suggests that any deviation from this program early in life can result in neuro-developmental disorders and, depending on specific timing, might lead to distinct pathology later in life. Because of that, there are many causes of neuro-developmental disorder, which can range from deprivation, genetic and metabolic diseases, immune disorders, infectious diseases, nutritional factors, physical trauma, and toxic and environmental factors. Some neuro-developmental disorders-such as autism and other pervasive developmental disorders-are considered multifactorial syndromes (with many causes but more specific neurodevelopmental manifestation) Deprivation Behavioral retardation, as in the reactive attachment disorders, has been observed in emotionally deprived children living with their families. However, prominent modern

142 thought attributes other causative mechanisms to autism and autistic spectrum disorders. However, nurture is not the only cause of deprivation that leads to neuro-developmental sequelae. A common example of sensory deprivation due to biologic factors is blindness. Blind infants are at risk for poor developmental outcomes that if left untreated can lead to severe, autistic-like behaviors. Despite its biologic basis, caregivers can ameliorate blindness-related sensory deprivation. This can lead to positive neurodevelopmental outcome, as in the cases of author Helen Keller, who was trained in the use of tactile sign language, and musicians such as Arthel "Doc" Watson and Ray Charles who remained emotionally connected to others via their sense of hearing. Genetic disorders A prominent example of a genetically determined neuro-developmental disorder is Trisomy 21, also known as Down syndrome. This disorder usually results from an extra chromosome 21, although in uncommon instances it is related to other chromosomal abnormalities such as translocation of the genetic material. It is characterized by short stature, epicanthal (eyelid) folds, abnormal fingerprints, and palm prints, heart defects, poor muscle tone (delay of neurological development) and mental retardation (delay of intellectual development). Less commonly known genetically determined neurodevelopmental disorders include Fragile X syndrome, Rett syndrome, and Williams syndrome. Fragile X syndrome was first described in 1943 by J.P. Martin and J. Bell, studying persons with family history of sex-linked "mental defects". Rett syndrome, another X-linked disorder, produces severe functional limitations. Williams syndrome is caused by small deletions of genetic material from chromosome 7. Immune dysfunction Immune reactions during pregnancy, both maternal and of the developing child, may produce neuro-developmental disorders. One typical immune reaction in infants and children is PANDAS, or Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal infection. Another disorder is Sydenham's chorea, which results in more abnormal movements of the body and fewer psychological sequelae. Both are immune reactions against brain tissue that follow infection by Streptococcus bacteria. Susceptibility to these immune diseases may be genetically determined, so sometimes several family members may suffer from one or both of them following an epidemic of Strep infection.

143 Infectious diseases number of infectious diseases can be transmitted either congenitally or in early childhood, and can cause serious neurodevelopmental disorders, such as schizophrenia. Congenital toxoplasmosis may result in formation of cysts in the brain and other organs, causing a variety of neurological deficits. Congenital syphilis may progress to neurosyphilis if it remains untreated. Measles can progress to sub acute sclerosing panencephalitis. Congenital rubella syndrome can produce schizophrenia in addition to multiple other symptoms. Metabolic disorders Metabolic disorders, present in either the mother or the child, can cause neurodevelopmental disorders. Two examples are diabetes mellitus (a multifactorial disorder) and phenylketonuria (an inborn error of metabolism). Many such inherited diseases may directly affect the child's metabolism and neural development but less commonly they can indirectly affect the child during gestation. (See also teratology). In a child, type 1 diabetes can produce neurodevelopmental damage by the effects of excess or insufficient glucose. The problems continue and may worsen throughout childhood if the diabetes is not well controlled. Type 2 diabetes may be preceded in its onset by impaired cognitive functioning. However a non-diabetic fetus can also be subjected to glucose effects if its mother has undetected gestational diabetes. Maternal diabetes causes excessive birth size, making it harder for the infant to pass through the birth canal without injury or it can directly produce early neurodevelopmental deficits. Usually the neurodevelopmental symptoms will decrease in later childhood. Phenylketonuria, also known as PKU, is an inborn error of metabolism that can induce neurodevelopmental disorders in children. Children with PKU require a strict diet to prevent mental retardation and other disorders. In the maternal form of PKU, excessive maternal phenylalanine can be absorbed by the fetus even if the fetus has not inherited the disease. This can produce mental retardation and other disorders. Nutrition Nutritional deficits may cause neurodevelopmental disorders, such as spina bifida, which is common, and anencephaly, which is rare. Both disorders are neural tube defects with malformation and dysfunction of the nervous system and its supporting structures, leading to serious physical disability as well as its emotional sequelae. The most common

144 nutritional cause of neural tube defects is maternal deficiency of folic acid, a B vitamin usually found in fruits, vegetables, whole grains, and milk products. (Neural tube defects are also caused by medications and other environmental causes, many of which interfere with folate metabolism, thus they are considered to have multifactorial causes.) Another deficiency, iodine deficiency, produces a spectrum of neuro- developmental disorders ranging from mild emotional disturbance to severe mental retardation. Excesses in both maternal and infant diets may cause disorders as well, with foods or food supplements proving toxic in large amounts. For instance in 1973 K.L. Jones and D.W. Smith of the University of Washington Medical School in Seattle found a pattern of "craniofacial, limb, and cardiovascular defects associated with prenatal onset growth deficiency and developmental delay" in children of alcoholic mothers. This disorder, now called fetal alcohol syndrome, has significant symptom overlap with several other entirely unrelated neurodevelopmental disorders. It has been discovered that iron supplementation in baby formula is linked to lowered I.Q. and other neurodevelopmental delays. Trauma Brain trauma in the developing human is a common cause (over 400,000 injuries per year in the US alone, without clear information as to how many produce developmental sequelae) of neurodevelopmental syndromes. It may be subdivided into two major categories, congenital injury (including injury resulting from otherwise uncomplicated premature birth) and injury occurring in infancy or childhood. Common causes of congenital injury are asphyxia (obstruction of the trachea), hypoxia (lack of oxygen to the brain) and the mechanical trauma of the birth process itself.

3.5.1 ASD or other neurodevelopment disorder

Students in Mainstream Classrooms For children who present at the high-functioning end of the spectrum, the classic "Asperger's kids," inclusion in a mainstream classroom is a good option. Special accommodations for children with ASD or other neurodevelopment disorder may include modifying homework and classroom assignments, providing extra time for assignments, and working with a special education specialist to devise lesson plans. Children with ASD may be taught in classrooms with a mainstream teacher who is also certified in special education.

145 Many students with autism or other neurodevelopment students , however, will not be able to succeed in a mainstream classroom setting. These children may have significant cognitive impairment, an extreme learning disability, or a physical disability in addition to ASD. In some cases the disorder may be so severe that the child has never learned to communicate verbally. For such children a special education classroom or institutional setting may be the only option. Whatever early intervention therapy or teaching method is used to assist a child with ASD or others neurodevelopmental students , clear communication among parents, teachers and therapists is essential. Students on the autism spectrum lack the ability to understand how their lack of social and communication skills affects their relationship with others, and careful examination of such students' progress is necessary to make sure they are not being bullied or taken advantage of in peer interactions. Every opportunity must be made to help a child with ASD have a positive experience on which they can lay a foundation for future developmental growth.

3.6 Specifies for children with Loco-Motor & Multiple Disabilities

3.6.1 Locomotor disability:

Means a person's inability to execute distinctive activities associated with moving, both himself/herself and objects, from place to place, and such inability resulting from affliction of either bones, joints, muscles or nerves. Main Causes Locomotor disability may arise from the following conditions

- Cerebral Palsy
- Polio
- Amputation
- Paralysis
- Congenital Deformities

Categories of Locomotor Disability for Evaluation

Assessment of Permanent Physical Impairment of Upper Limb

The estimation is purely a measurement of functional impairment and is not expression

146 of personal opinion. The estimation and measurement should be made when the clinical condition has reached the stage of maximum improvement from the medical treatment. Normally the time period is to be decided by the medical doctor who is evaluating the case for issuing the PPI Certificate as per standard format of the certificate.

1. The upper limb is divided into two component parts; the arm component and the hand component.
2. Measurement of the loss of function of arm component consists of measuring the loss of motion, muscle strength and co-coordinated activities.
3. Measurement of loss of function of hand component consists of determining the prehension, sensation and strength. For estimation of prehension opposition, lateral pinch cylindrical grasp, spherical grasp and hook grasp have to be assessed as shown in Hand Component of Form A Assessment Proforma for upper extremity.
4. The impairment of the entire extremity depends on the combination of the functional impairments of both components. Arm Component Total value of arm component is 90%

Principles of evaluation of range of motion (ROM) of joints

1. The value of maximum ROM in the arm component is 90%
2. Each of the three joints of the arm is weighed equally (30%)

3.6.2 Multiple Disabilities "

Multiple disabilities" means concomitant impairments (such as mental retardation blindness, mental retardation-orthopedic impairment, etc.), the combination of which causes such severe educational needs that they cannot be accommodated in special education programs solely for one of the impairments.

Multiple disabilities is a term for a person with several disabilities, such as a sensory disability associated with a motor disability. Depending on the definition, a severe intellectual disability may be included in the term "multiple disabilities". Individual usually has more than one significant disability, such as movement difficulties, sensory loss, and/or a behavior or emotional disorder.

147 Characteristics People with severe or multiple disabilities may exhibit a wide range of characteristics, depending on the combination and severity of disabilities, and the person's age. There are, however, some traits they may share, including: Psychological •••• May Feel ostracized •••• Tendency to Withdraw from society •••• Students with multiple disabilities may become fearful, angry, and upset in the face of forced or unexpected changes. •••• May execute self-injurious behavior Behavioral •••• May display an immature behavior inconsistent with chronological age •••• May exhibit an impulsive behavior and low frustration level •••• May have difficulty forming interpersonal relationships •••• May have limited self-care skills and independent community living skills Physical/health •••• A variety of medical problems may accompany severe disabilities. Examples include seizures, sensory loss, hydrocephalus, and scoliosis. •••• May be physically clumsy and awkward •••• May be unsuccessful in games involving motor skills Challenges Families •••• A variety of medical problems may accompany severe disabilities. Examples include seizures, sensory loss, hydrocephalus, and scoliosis. Time is needed to ensure their safety at home in times of condition like seizures. •••• Financially, the medical/transport fees may place burdens on the family. •••• The effort needed to ensure safety of the person will require family members to take turns to look after that person.

148 •••• Individuals have only limited speech or communication •••• Requires a lot of patience with individuals with multiple disabilities Individuals •••• Difficulty in basic physical mobility •••• May experience fine-motor deficits that can cause penmanship problems •••• May have slow clerical speed. •••• May tend to forget skills through disuse •••• May have trouble generalizing skills from one situation to another •••• May lack high level thinking and comprehension skills •••• May have poor problem-solving skills •••• Ability to engage in abstract thinking is limited •••• May be poor test taker due to limiting factors of the disabilities •••• May have difficulty locating the direction of sound •••• May have speech that is characterized by substitution, omissions •••• May have difficulty learning about objects and object relationships •••• May lack maturity in establishing career goals •••• May face problems in socializing with peers Accommodations/strategies •••• A multi-disciplinary team consisting of the student's parents, educational specialists, and medical specialists in the areas in which the individual demonstrates problems should work together to plan and coordinate necessary services. •••• Involvement of the appropriate professionals (E.g. occupational therapists, speech/language therapist etc.) •••• The arrangement of places school and homes must be easily accessible. •••• Have a buddy system that ensures their needs are heard and that they get aid when needed. •••• Give Simple and Specific and Systematic instructions to what you exactly want the person to do.

149 •••• Use visual aids when communicating with the child. •••• Engage the child regularly in oral language activity. 3.7 Engaging Gifted / Talented Children The term "gifted and talented," when used with respect to students, children, or youth, means students, children, or youth who give evidence of high achievement capability in such areas as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services There are a number of characteristics that can signal to a professional that a young child might be gifted. There are behaviours that can be observed that indicate when a child's thinking or learning is advanced. Examples include: •••• early development of language •••• abstract thinking •••• strong memory •••• a capacity to focus and concentrate on tasks of interest •••• intellectual curiosity •••• a strong motivation to learn. Although development may be rapid in some areas, young gifted children have the same learning to master as all children. How they manage this learning and when these behaviours appear can be different because their cognitive development can be advanced in particular ways. For instance young gifted children may start talking earlier, or may begin at much the same age as other children but then their language development can be more rapid and they quickly become very articulate. Young gifted children can also behave in a more sophisticated way than their peers. This can have different outcomes. For instance it could result in them taking on the role of the leader in play, or it may put them out of step with other children, making social interaction more difficult. In many cases, where professionals and families have recognised a child's advanced development or learning and are responding in an appropriate way, it may not be useful to seek a formal identification of giftedness through assessments such as IQ tests. Formal

150 assessment of giftedness may be more appropriate later on, when the child is older, about to transition to school or is attending school. If the child and their family are receiving appropriate support, formal testing may not be required, particularly in the early years. On the other hand, there are situations when formal testing is appropriate, such as when very high levels of giftedness or a learning difficulty are suspected, or if such testing is required for entry to specific programs. Myth: Gifted and talented children are not found in disadvantaged areas, they are products of upper, middle class or professional families. Fact: Gifted children occur in the same numbers in all socio-economic and cultural groups. The challenge for early childhood professionals is to be aware and know how to identify children who are gifted and talented. Considerations in identification In identifying giftedness and/or talent in young children, professionals should consider a number of factors that can affect the process. •••• Individual assessments and observations are 'snapshots' only, and provide information about what the child can do at this time. To really identify a young gifted and/or talented child requires a collection of evidence over time. •••• For various reasons, young children may not perform 'on demand', and thus not demonstrate their full potential. •••• The development of young gifted and talented children can be very uneven, with peaks and troughs, stops and starts. Multiple assessments and observations over time are necessary to identify advanced development or learning. •••• Where gifted and talented children also have disabilities (dual exceptionality), the disability can hide or mask the giftedness or talent. Educators should be aware that gifted and talented children can show learning that may not fit within conventional ideas about achievement.

151 •••• Cultural and other biases can interfere with a professional's ability to identify giftedness and talent in young children. Families' different cultural backgrounds can lead to a diversity of expressions of giftedness and talent, and may not fit narrow or pre-determined ideas. In some cultures, children may be discouraged from displaying their abilities. •••• Stereotypes about giftedness and talent can lead to failure to identify young gifted children, particularly where the signs of giftedness are subtle. Young gifted children are not 'geniuses'. Not all gifted children are early readers or good at maths. •••• Young gifted children may lack opportunity or support to demonstrate their gifted potential, or develop this potential into talent, and thus not be identified. In the world of education, a gifted and talented child is defined as someone who has exceptional aptitude or talent in one or more areas. While some gifted children are separated from their peers and educated in special gifted and talented classrooms, others are served by getting involved in special enrichment classes and activities, either during or after school. Recognizing a student's giftedness by pulling a student out of the general education classroom can often have negative side effects. Keeping gifted students in the classroom through a full-inclusion program, however, can negate some of those side effects. In a full-inclusion classroom, gifted students stay in the classroom with students of all abilities and the classroom instruction is differentiated, allowing gifting students to receive instruction at their level while still interacting with their peers. Celebrating Areas of Giftedness One of the benefits of teaching gifted children in a full-inclusion classroom is the ability to focus on their specific areas of giftedness. While some students are gifted in multiple areas, many students may only be gifted in one or two key areas. Unfortunately, when students are identified as gifted, they are often treated as if they are gifted in every area and therefore receive high-level instruction in every area, even if they are not ready for it. In a full-inclusion classroom, instruction in every subject is differentiated, allowing gifted students to work at higher-levels in areas where they are gifted and work at other levels in areas where they are not. Positive Interaction with Peers Being gifted is not easy. Often when gifted children are pulled out of the general education

152 classroom they face ridicule from their peers. While teaching gifted children in full- inclusion classrooms does not guarantee they will never be called a "nerd" or made fun of for their giftedness, it does not make their giftedness as obvious to their peers. They have the opportunity to socialize with other students their age and learn to work and interact with students of all different ability levels. In the full-inclusion classroom, every child has his/her own strengths and weaknesses. Enhancing the Curriculum When done effectively, full-inclusion programs have the potential to enhance the curriculum for all students, not just gifted students. Special classes and pull-out programs for gifted students typically follow a set curriculum and just work at a higher level than general education classrooms, but they do not always meet the needs of gifted students. Full-inclusion classrooms operate with differentiated instruction, allowing teachers to focus on adapting the curriculum to meet the needs of individual gifted children and all students in the classroom, thereby enhancing the curriculum and improving the instruction all students receive. Full Inclusion Done Right For teachers, a full-inclusion classroom full of students with learning disabilities, gifted students and those who are just average can be overwhelming. In order for full-inclusion classes to become overwhelming for gifted students, teachers must be committed to teaching gifted children and all children at their levels through differentiated instruction. 3.8 Let us Sum Up

Adaptation: all students should have equitable access to learning, opportunities for achievement and the pursuit of excellence in all aspects of their educational programs. Adaptations are teaching and assessment strategies especially designed to accommodate a student's needs so he or she can achieve the learning outcomes of the subject or course and to demonstrate mastery of concepts. Essentially, adaptations are "best practice" in teaching. A student working on learning outcomes of any grade or course level may be supported through use of adaptations. Accommodations can help kids learn the same material and meet the same expectations as their classmates. If a student has reading issues, for example, she might listen to an audio recording of a text. There are different

types of classroom accommodations, including presentation (like listening to an audio recording of a text) and setting (like

153 where a student sits). Modification: Kids who are far behind their peers may need changes, or modifications,

to the curriculum. For example, a student could be assigned shorter or easier reading assignments. Kids who receive modifications are not expected to learn the same material as their classmates.

In this three parts are very much important in inclusive education . 3.9 "Check your Progress" Q. Discuss about Adaptation , Accommodations and Modifications

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..... 1. What is Sensory Disabilities?

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..... 2. Discuss about Neuro - Developmental

Disabilities.

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..... 3. Write a brief note on Multiple Disabilities.

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154 4. Who are they Gifted Children ?

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..... 5. Make difference between multiple disability and multi sensori impartment?

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National Trust
for the
Welfare of Persons with Autism, Cerebral Palsy, Mental retardation and
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156 Unit - 4 □□□□□

Inclusive Academic Instructions Structure 4.1 Introduction 4.2 Objectives 4.3 Universal Design for Learning : Multiple Means of Access, Expression, Engagement & Assessment 4.3.1 Meaning and Definition. 4.3.2 Universal Design in Education. 4.3.3 Features of Universal Design for Learning. 4.3.4 Principles of Universal Design for Learning. 4.4 Co-Teaching Methods : One Teach One Assistant, Station-Teaching, Parallel Teaching, Alternate Teaching & Team Teaching. 4.4.1 Meaning of Co-Teaching. 4.4.2 Benefits of Co-Teaching. 4.4.3 Co-Teaching Methods. 4.4.3.1 One Teach One Assist 4.4.3.2 Station Teaching 4.4.3.3 Parallel Teaching 4.4.3.4 Alternative Teaching 4.4.3.5 Team Teaching 4.5 Differentiated Instructions : Content, Process & Product 4.5.1 Meaning of Differentiated Instruction. 4.5.2 Four Ways to Differentiate Instruction 4.6 Peer Mediated Instruction : Class Wide Peer Tutoring, Peer Assisted learning Strategies. 157 4.6.1 Meaning and Definition of Peer Mediated Instruction. 4.6.2 Advantages of Peer Mediated Instruction. 4.6.3 Types of Peer Mediated Instruction. 4.6.3 1 Class Wide Peer Tutoring 4.6.3 1 Peer Assisted Learning Strategies. 4.7 ICT for Instructions 4.7.1

Meaning of ICT and its application in Education. 4.7.2 ICT in Educating Children with Special Needs. 4.7.3 Why Students Prefer ICT activities over Conventional Learning? 4.7.4 ICT and Inclusive Education. 4.8 Let us Sum Up 4.9 “Check your Progress” 4.10 References 4.1 Introduction According to

Loreman and Deepeler, (2001), Inclusion means full inclusion of children with diverse abilities in all aspects of schooling that other children are able to access and enjoy. It involves regular schools and classrooms genuinely adapting and changing to meet the needs of all children, as well as celebrating and valuing differences.

This definition of inclusion does not imply that children with diverse abilities will not receive specialized assistance or teaching outside of the classroom when required, but rather that this is just one of many options that are available to, and in fact required of, all children. The history of education for persons with disabilities is a progression from segregation to integration and now to inclusion. Inclusion refers to the opportunity for persons with a disability to participate fully in all of the educational employment, consumer, recreational, community and domestic activities that typify every society (ILSMH 1994)

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Inclusive education is concerned with removing all barriers to learning, and with the participation of all learners vulnerable to exclusion and marginalization. It

is a strategic approach designed to facilitate learning success for all children.

It addresses

the common goals of decreasing and overcoming all exclusion from the human right to education, at least at the elementary level and enhancing access, participation and learning success in quality basic education for all 2000

Bulletin, UNESCO NO.32, 1998. An ideal inclusive education concept aims at facilitating total integration of the child in the community. The upcoming inclusive education programs in India are avoiding separation of children with disabilities from their families for the purpose of education. In India many schools are implementing the inclusive education, which also aims towards universalization of primary education of both disabled and non-disabled students. Inclusion requires a climate of acceptance. As stated earlier, the ideal inclusive education in India would be possible only when all general education teachers are capable of serving students with special needs. In addressing the challenges of educating these children, the schools become effective schools and the teachers become effective teachers. Attitude is the basic and pervasive aspects for determining the effectiveness of inclusive education. All the research evidence point towards a considerable potential for a greater amount of cooperative work between teachers and students. 4.2

Objectives After going through this unit you will be able to • define universal design for learning and its implication in inclusive set up. • explain the different co-teaching methods along with its advantages and disadvantages. • discuss about differentiated instruction. • state about peer mediated instructions and its types. • explain the importance of ICT for instruction.

159 4.3

Universal design for learning : Multiple Means of Access, Expression, Engagement & Assessment 4.3.1

Meaning and Definition of Universal Design for learning Universal Design for Learning is a much-touted approach to providing appropriate and accessible education to all students, including those with disabilities, in the context of the demands of the 21st Century educational environment. UDL provides a blueprint (framework) for creating flexible goals, methods, materials, and assessments that accommodate learner differences (Cast, 2002). Universal design for learning is an approach to ensure that educational programs serve all students. UDL definition “the proactive design of curricula (including learning goals, instructional methods and materials, and assessments) that are accessible and usable by all students with little or no need for additional accommodations and are compatible with available assistive technology” in Forum, June 2008 4.3.2 Universal Design in Education The goal of education in the 21st century is not simply the mastery of content knowledge or use of new technologies. It is the mastery of the learning process. Education should help turn novice learners into expert learners—individuals who want to learn, who know how to learn strategically, and who, in their own highly individual and flexible ways, are well prepared for a lifetime of learning. Universal Design for Learning (UDL) helps educators meet this goal by providing a framework for understanding how to create curricula that meets the needs of all learners from the start. 4.3.3 Features of Universal Design for Learning • UDL assumes a continuum of learning differences in the classroom. • UDL relies on curriculum being presented in a flexible, engaging and challenging manner.

160 • UDL maintains high expectations for all students. • UDL design for those in the margins, works better for everyone • UDL is inclusive by design. Inclusive Education “The new challenge of inclusion is to create schools in which our day-to-day efforts no longer assume that a particular text, activity, or teaching mode will “work” to support any particular students’ learning” Ferguson, 1995 Universal Design for Learning • Is what? A scientifically valid framework that • Does what? Provides multiple means of access, assessment, and engagement and removes barriers in instruction • For what? To achieve academic and behavioral success for all 4.3.4 Principle of Universal Design for Learning Universal Design for Learning calls for • Multiple means of access or representation, to give learners various ways of acquiring information and knowledge. • Multiple means of action and expression, to provide learners alternatives for demonstrating what they know, • Multiple means of engagement and assessment, to tap into learners’ interests, offer appropriate challenges, and increase motivation.

161 Principle I: Provide Multiple Means of Representation (the “what” of learning) Learners differ in the ways that they perceive and comprehend information that is presented to them. For example, those with sensory disabilities (e.g., blindness or deafness); learning disabilities (e.g., dyslexia); language or cultural differences, and so forth may all require different ways of approaching content. Others may simply grasp information quicker or more efficiently through visual or auditory means rather than printed text. Learning, and transfer of learning, occurs when multiple representations are used, because it allows students to make connections within, as well as between, concepts. In short, there is not one means of representation that will be optimal for all learners; providing options for representation is essential. Principle II: Provide Multiple Means of Action and Expression (the “how” of learning) Learners differ in the ways that they can navigate a learning environment and express what they know. For example, individuals with significant movement impairments (e.g., cerebral palsy), those who struggle with strategic and organizational abilities (executive function disorders), those who have language barriers, and so forth approach learning tasks very differently. Some may be able to express themselves well in written text but not speech, and vice versa. It should also be recognized that action and expression require a great deal of strategy, practice, and organization, and this is another area in which learners can differ. In reality, there is not one means of action and expression that will be optimal for all learners; providing options for action and expression is essential. Principle III: Provide Multiple Means of Engagement / Assessment (the “why” of learning) Affect represents a crucial element to learning, and learners differ markedly in the ways in which they can be engaged or motivated to learn. There are a variety of sources that can influence individual variation in affect including neurology, culture, personal relevance, subjectivity, and background knowledge, along with a variety of other factors. Some learners are highly engaged by spontaneity and novelty while other are disengaged, even frightened, by those aspects, preferring strict routine. Some learners might like to work alone, while others prefer to work with their peers. In reality, there is not one means of engagement that will be optimal for all learners in all contexts; providing multiple options for engagement is essential. In UDL we are seeking to create expert learners, individuals who- whatever the particular strengths and weaknesses, know themselves, and know how to learn. 4.4

Co-Teaching Methods : One Teach One Assist, Station- Teaching, Parallel Teaching, Alternate Teaching & Team Teaching 4.4.1

Meaning of Co-Teaching When a general education teacher and a special education teacher work together to plan and deliver instruction to a diverse population in a general education setting. It involves the distribution of responsibility among people for planning, instruction, and evaluation for a classroom of students. Another way of saying this is that co-teaching is a fun way for students to learn from two or more people who may have different ways of thinking or teaching. Some people say that co-teaching is a creative way to connect with and support others to help all children learn. Others say that co-teaching is a way to make schools more effective. A common example of co-teaching today is played out in many inclusive classrooms where a General Education teacher and a Special Education teacher share responsibility for classroom management and instruction. Co-teaching may be defined as two or more people who agree to

1. Coordinate their work to achieve at least one common, publicly agreed-on goal.
2. Share a belief system that each of the co-teaching team members has unique and needed expertise.
3. Demonstrate parity by alternatively engaging in the dual roles of teacher and learner, expert and novice, giver and recipient of knowledge or skills.
4. Use a distributed functions theory of leadership in which the task and relationship functions of the traditional lone teacher are distributed among all co-teaching group members.
5. Use a cooperative process that includes face-to-face interaction, positive interdependence, performance, as well as monitoring and processing of interpersonal skills, and individual accountability.

163 4.4.2 Benefits of Co-Teaching The benefits of co-teaching for Teachers are:

- It is easier to monitor students' behavior
- It builds relationships and opportunities for professional and/or personal growth
- It provides more support during instructional activities
- It gives support to provide students' accommodations
- It helps to receive feedback from each other
- It provides more flexible grouping
- It covers content more effectively to support mastery learning

The benefits of Co-Teaching for Students:

- It gives access to the general education curriculum
- It provides more instructional support
- It enhances learning from peers
- It provides more opportunities for social interactions
- It increase respect and understanding for all students

4.4.3. Co-Teaching Methods Marilyn Friend and Lynne Cook (1996a) have presented different methods of co-teaching that provide ways for two teachers to work together in a classroom. They include:

4.4.3.1

One teach One Assist 4.4.3.2 Station Teaching 4.4.3.3 Parallel Teaching 4.4.3.4 Alternative Teaching 4.4.3.5 Team

teaching 4.4.3.1
One teach One Assist With this model one teacher has the primary responsibility for planning and teaching, while the other teacher moves around the classroom helping individuals and observing particular behaviors. For example, one teacher could present the lesson while the other

164 walks around or one teacher presents the lesson while the other distributes materials. Some advantages of this approach are:

- Students receive individual help in a timely manner
- It'

s
easier to keep students on task because of the proximity of the teacher. • It saves time when distributing materials. Some disadvantages of this approach are:

- Through the eyes of the students, one teacher has more control than the other.
- Students often relate to one person as the teacher and the other as a teacher's aide.
- Having a teacher walk around during the lesson may be distracting to some students.

4.4.3.2

Station Teaching Both teachers divide the instructional content, and each takes responsibility for planning and teaching part of it. In station teaching, the classroom is divided into various teaching centers. Both the teachers are at particular stations; the other stations are run independently by the students or by a teacher's aide. For example, three or more science stations, each containing a different experiment, could be organized with both the teachers

working with the two stations that need the most supervision. It is also possible to use an aide or parent volunteer or trainee teacher

to supervise stations. Some advantages of this approach are:

- Each teacher has a clear teaching responsibility.
- Students have the benefit of working in small groups.
- Teachers can cover more material in a shorter period of time.

Some disadvantages of this approach are:

- To work effectively, this approach requires a lot of preplanning.
- All materials must be prepared and organized in advance.
- The noise level will be at a maximum.

4.4.3.3

Parallel Teaching In parallel teaching, both the teachers plan jointly but split the classroom in half

165 to teach the same information at the same time. For example, both teachers could be explaining the same math problem-solving lesson in two different parts of the room. If the room had two computers, each teacher could use a computer to model the use of the Internet or a new piece of software to half of the class. Each half of the class could be involved in a literature study group during a text study. Some advantages of this approach are:

- Preplanning provides better teaching.
- It allows teachers to work with smaller groups.
- Each teacher has the comfort level of working separately to teach the same lesson.

Some disadvantages of this approach are:

- Both teachers need to be competent in the content so the students will learn equally.
- The pace of the lesson must be the same so they finish at the same time.
- There must be enough flexible space in the classroom to accommodate two groups.

4.4.3.4 Alternative Teaching In alternative teaching, one teacher manages most of the class while the other teacher works with a small group inside or outside of the classroom. The small group does not have to integrate with the current lesson. For example, a teacher could take an individual student out to catch him/her up on a missed assignment. A teacher could work with an individual or a small group for assessment purposes or to teach social skills. A small group of students could work together for remedial or extended challenge work. Some advantages of this approach are:

- Working with small groups or with individuals helps meet the personal needs of students.
- Both teachers can remain in the classroom so one teacher can informally observe the other modeling good teaching.

Some disadvantages of this approach are:

- Groups must vary with purpose and composition or the students in the group will quickly become labeled (e.g., the “smart” group).

166 • The students might view the teacher working with the larger group as the teacher in control. • Noise level must be controlled if both teachers are working in the classroom.

4.4.3.5

Team Teaching Both teachers are responsible for planning, and they share the instruction of all students. The lessons are taught by both teachers who actively engage in conversation, not lecture, to encourage discussion by students. Both teachers are actively involved in the management of the lesson and discipline. This approach can be very effective with the classroom teacher and a student teacher or two student teachers working together. Some advantages of this approach are:

- Each teacher has an active role.
- Students view both teachers as equals.
- Both teachers are actively involved in classroom organization and management.

Some disadvantages of this approach are:

- Preplanning takes a considerable amount of time.
- Teachers’ roles need to be clearly defined for shared responsibility.

4.5

Differentiated Instruction : Content, Process & Product

4.5.1 Meaning of Differentiated Instruction Differentiated instruction is an instructional theory that allows teachers to face this challenge by taking diverse student factors into account when planning and delivering instruction. Based on this theory, teachers can structure learning environments that address the variety of learning styles, interests, and abilities found within a classroom. Differentiating instruction means creating multiple paths so that students of different abilities, interest or learning needs experience equally appropriate ways to absorb, use, develop and present concepts as a part of the daily learning process. It allows students to take greater responsibility and ownership for their own learning, and provides opportunities for peer teaching and cooperative learning.

167 4.5.2 Four Ways to Differentiate Instruction: Differentiation can occur in the content, process, product or environment in the classroom. 1. Differentiating the Content/Topic Content can be described as the knowledge, skills and attitudes we want children to learn. Differentiating content requires that students are pre-tested so the teacher can identify the students who do not require direct instruction. Students demonstrating understanding of the concept can skip the instruction step and proceed to apply the concepts to the task of solving a problem. This strategy is often referred to as compacting the curriculum. Another way to differentiate content is simply to permit the apt student to accelerate their rate of progress. They can work ahead independently on some projects, i.e. they cover the content faster than their peers. 2. Differentiating the Process/Activities Differentiating the processes means varying learning activities or strategies to provide appropriate methods for students to explore the concepts. It is important to give students alternative paths to manipulate the ideas embedded within the concept. For example students may use graphic organizers, maps, diagrams or charts to display their comprehension of concepts covered. Varying the complexity of the graphic organizer can very effectively facilitate differing levels of cognitive processing for students of differing ability. 3. Differentiating the Product Differentiating the product means varying the complexity of the product that students create to demonstrate mastery of the concepts. Students working below grade level may have reduced performance expectations, while students above grade level may be asked to produce work that requires more complex or more advanced thinking. There are many sources of alternative product ideas available to teachers. However sometimes it is motivating for students to be offered choice of product. 4. Differentiating By Manipulating the Environment or Through Accommodating Individual Learning Styles There has been a great deal of work on learning styles over the last 2 decades. Dunn and Dunn focused on manipulating the school environment at about the same time

168 as Joseph Renzulli recommended varying teaching strategies. Howard Gardner identified individual talents or aptitudes in his Multiple Intelligences theories. It has been concluded that differentiation may be done by manipulating the environment or by accommodating individual learning styles in the learning process. 4.6 Peer Mediated Instruction : Class Wide Peer Tutoring, Peer Assisted Learning Strategies 4.6.1

Meaning and Definition of Peer Mediated Instruction Teachers in general and special education classrooms are continually faced with instructional challenges as the diversity of students in classrooms widens. Researchers and practitioners are interested in implementing best practices that improve educational outcomes for all learners. One solution to overcoming these challenges is the implementation of Peer-Mediated Instruction and Intervention (PMII). Peer-mediated instruction is a widely applied and researched educational intervention in both general and special education settings. Peer-Mediated Instruction and Intervention is an alternative classroom arrangement in which students take an instructional role with classmates or other students. Many approaches have been developed in which students work in pairs (dyads) or small cooperative learning groups. To be most effective, students must be taught roles in the instructional episode; to be systematic, elicit responses, and provide feedback. Research supports the use of these approaches as alternative practice activities, however, does not condone the use of peers for providing instruction in "new" instructional content. Myredden, V, Goodlad and Hirst, 1989 described peer tutoring or peer mediated instruction as "The system of instruction in which learners help each other and learn by teaching." Probably the most succinct definition of peer tutoring comes from Damon and Phelps "Peer tutoring is an approach in which one child instructs another child on material on which the first is an expert and the second is novice. 4.6.2

Advantages of Peer Mediated Instruction Peer mediated instruction has been a favoured practice in inclusive setting due to its potential advantages. Peer mediated instruction benefits children with special needs and all other children. It has the potential to deliver many of the benefits normally associated with expert tutoring by teachers. If teachers organize the contents of the

169 program peer tutors can provide appropriate activities tailored to meet the individual needs of children with special needs. They can ensure a high level of tutee participation in the learning process, and individual guidance and personal care can be provided. Peer mediated instruction normally promotes healthy social relationships between students with special needs and their peer tutors. It also encourages positive interaction between regular class students and those with special needs, and allows individuals to work together in cooperative work environments. Peer mediated instruction encourages close personal relationships, personal interdependence and shared responsibility for learning outcomes. Peer mediated instruction reduces deficiencies in children with special needs and such children are active and participate in many regular class activities.

4.6.3 Types of Peer Mediated Instruction Ryan, Reid, and Epstein (2004), has summarized some peer tutoring formats, which are commonly in practice. These formats are as follows:

4.6.3.1 Class wide Peer Tutoring (CWPT): In this format of peer tutoring entire class participates in tutoring dyads. During each tutoring session students can participate as both Peer Tutor and tutees, or they can participate as only the tutor or the tutee. Class wide Peer Tutoring is a variation of peer-mediated instruction that has been used in elementary, middle school, and high school classrooms. In CWPT students form pairs and take turns in the roles of tutor and student. The CWPT program was originally developed and used with special education students in their mainstream classrooms. It was very evident early on that the procedures were not only effective for the targeted students, but for the entire classroom of students regardless of their ability levels. Thus, CWPT has been researched and proven effective with the following student populations:

- Students with special needs
- Educationally labeled students
- Students at risk of school failure
- Students who are culturally and linguistically diverse
- Students with ADD and ADHD

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4.6.3.2 Peer Assisted Learning Strategies It is a modified version of CWPT developed by Fuchs et al (1997) where teachers identify the children who require help in specific skills and the most appropriate children to help them learn those skills. Pairs are changed regularly, and over time as student work on a variety of skills all students have the opportunity to be “coaches” and “players”. Pupils are divided into higher ability and lower ability pairings. It’s a version of classwide peer tutoring where teachers evaluate and identify students who need help with specific skills and determine the most appropriate students in the class to assist them with those skills. The students are paired as “coaches” and “players” but rotate roles as activities change and students are required to work on a variety of skills. PALS is designed to complement, not replace, the existing math or reading curriculum by providing opportunities for students to practice what the teacher has taught. Research supports that the use of pairs in the classroom provides more focus on individual student needs rather than a teacher-directed activity that may address the needs of a few students but not be able to meet the needs of all student.

Peer-Assisted Learning Strategies (PALS) is a supplemental peer-tutoring program in which student pairs perform a structured set of activities in reading or math (PALS Reading and PALS Math, respectively) The designation of tutoring pairs and skill assignment is based on teacher judgment of student needs and abilities, and teachers reassign tutoring pairs regularly. Although PALS is for students with diverse academic needs, this intervention report focuses on the use of PALS to improve the reading and mathematics skills of students with learning disabilities.

Some benefits attributed to the PALS program include:

- Actively involves all students in tasks they can perform successfully.
- Increases student opportunity to read and practice basic math skills.
- Motivates students to do better in reading and math.
- Expands instructional resources in the classroom.
- Provides for positive and productive peer interaction.

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- Creates opportunity for lower functioning students to assume an integral role in a valued activity.
- Allows students with disabilities to spend more time in least restrictive environment and increases their access to the general education curriculum.
- Helps teachers accommodate academic diversity.
- Accelerates student achievement in reading and math.
- Is affordable and easily implemented.
- Is found to be an enjoyable activity by teachers and students.

4.7

ICT for Instructions 4.7.1 Meaning of ICT and its Application in Education. Educational systems around the world are under increasing pressure to use the new information and communication technologies (ICTs) to teach students the knowledge and skills they need in the 21st century. The 1998 UNESCO World Education Report, *Teachers and Teaching in a Changing World*, describes the radical implications the new information and communication technologies have for conventional teaching and learning. It predicts the transformation of the teaching-learning process and the way teachers and learners gain access to knowledge and information. The use of computer based technology has become the need of the day due to different reasons. The technological advancement has brought the use of sophisticated hardware and software like radio, television, tape recorder, films, and transparency in the field of education. The professionals/teachers of today employ numerous information communication technology (ICT) supported methods and materials in the classroom to enhance the teaching-learning process in a more effective way. As we are entering into the era of inclusion and as it has become the fundamental right of each child to be educated, children with disabilities are being enrolled in the regular schools through the centrally sponsored scheme of the Government of India called *Sarva Shiksha Abhiyan*. Since, the professionals/teachers in the regular schools lag in the skills to teach the children with special needs, the knowledge about the ICT supported teaching methods for the disabled children would be of great boon to them to handle the entire class without any discrimination.

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Inclusive education is a strategy based on human rights and democratic principles that confronts all forms of discrimination.

Inclusive education is concerned with removing all barriers to learning, and with the participation of all learners vulnerable to exclusion and marginalization. It

is a strategic approach designed to facilitate learning success for all children.

Hence, it becomes the duty of a regular teacher to handle children with special needs along with normal children in his/her classroom. So the ICT that he uses should also meet the diverse needs of children with disabilities such as children with learning disabilities, mild intellectual disability, autism, hearing impairment and visual impairment. 4.7.2 ICT in educating children with special needs Educating all students by today's standards and for tomorrow's living most certainly includes the use of technology. Its relationship to providing essential supports for students with disabilities in areas of self-care, education, employment, recreation/leisure, and community living are readily accepted. Additionally, access to technology can provide meaningful learning experiences to develop problem solving and higher order thinking skills and to function in the world beyond the classroom. The appropriate and successful integration of technology into learning environments has the potential to benefit all students. As states and schools work to implement the requirements of educational reform required by the *No Child Left Behind Act, 2001*, they must ensure that all students are included, in particular students with disabilities. Specifically, technology assists students with disabilities to: (a) Maximize independence in academic and employment tasks; (b) Participate in classroom discussion; (c) Gain access to peers, mentors, and role models; (d) Self-advocate; (e) Gain access to the full range of educational options; (f) Participate in experiences not otherwise possible; (g) Succeed in work-based learning experiences; (h) Secure high levels of independent learning;

173 (i) Prepare for transitions to college and careers; (j) Work side-by-side with peers; (k) Master academic tasks that they cannot accomplish otherwise; (l) Enter high-tech career fields; and (m) Participate in community and recreational activities "Inclusive education according to UNESCO means that the school can provide a good education to all pupils irrespective of their varying abilities. All children will be treated with respect and ensured equal opportunities to learn together. Inclusive education is an on-going process. Teachers must work actively and deliberately to reach its goals".

4.7.3 Why Students Prefer ICT Activities Over Conventional Learning? The following is the list of qualities derived by students favoring ICT activities over conventional learning. These student preferences also contribute to our understanding of why ICT enhances achievement, as because ICT; • is infinitely patient • never gets tired • never gets frustrated or angry • allows students to work privately • never forgets to correct or praise • is fun and entertaining • helps individualized learning mode • is self-paced • does not embarrass students who make mistakes • makes it possible to experiment with different options • gives immediate feedback • is more objective than teachers • gives more meaningful contact with students than teachers • is impartial to race or ethnicity

174 • is great motivator • gives a sense of control over learning • is excellent for drill and practice • calls for using sight, hearing, and touch • teaches in small increments • help students improve their spelling • builds proficiency in computer use, which will be valuable later in life • eliminates the drudgery of practices certain learning activities by hand (e.g., drawing graphs) • works rapidly-closer to the rate of human thought. 4.7.4 ICT and Inclusive Education Inclusion should, then, be regarded as a long-lasting process which requires time, effort, competence and strong conviction by all those involved in students' education, first and foremost, by teachers. The key role of teachers in giving birth to and maintaining a truly inclusive classroom is unquestionable (Anderson et al, 2007), but such an important mission also requires that suitable, effective and barrier-free educational means should be employed. From this perspective, ICT resources are promising; there are grounds for maintaining that they help most students overcome barriers to learning, thus increasing their school achievement, together with their autonomy, willingness and self esteem. Indeed, educational research provides strong evidence that: "ICT is both a medium and a powerful tool in supporting inclusive practice. It provides wide-ranging support for communication, assisting many learners to engage with learning, including those who are hard to reach, and helps to break down some of the barriers that lead to under- achievement and educational exclusion" (Becta, 2007). 4.8 Let us Sum Up • The Indian Education Commission (1964-66):

The Indian Education Commission was the first statutory body to suggest that

the

education of handicapped children has to be organized not merely on humanitarian grounds,

but also

on grounds of

175 utility.

The Commission

observed that although the

Indian Constitution had issued specific directives about

compulsory education for all, including children with disabilities, very little

had been done in this regard.

The Commission also emphasized

that the education of children with disabilities should be "an inseparable part of the general education system." •

The

main elements of inclusive education are: ¶ A human rights issue ("Education for all" means all children, not almost all). ¶

Education for all in school for all disabled and non- disabled children learning to live together. ¶ Togetherness "enabling

all to participate together in society from the beginning: contributing to social harmony and stimulating the building of

relationship among individuals groups and nations. ¶ Breaking barriers "familiarity and tolerance for prejudices and

rejection. • The goal of education in the 21st century is not simply the mastery of content knowledge or use of new

technologies. It is the mastery of the learning process. Education should help turn novice learners into expert learners—

individuals who want to learn, who know how to learn strategically, and who, in their own highly individual and flexible

ways, are well prepared for a lifetime of learning. • Co-Teaching Strategies Strategy Definition/Example One Teach, One

Assist One teacher has primary instructional responsibility while the other assists students with their work, monitors

behaviors, or corrects assignments. Station Teaching The co-teaching pair divides the instructional content into parts –

Each teacher instructs one of the groups, groups then rotate or spend a designated amount of time at each station –

often an independent station will be used along with the teacher led stations.

176 Parallel Teaching Each teacher instructs half the students. The two teachers are addressing the same instructional material and presenting the material using the same teaching strategy. The greatest benefit to this approach is the reduction of student to teacher ratio. Alternative (Differentiated) Alternative teaching strategies provide two different approaches to teaching the same information. The learning outcome is the same for all students however the avenue for getting there is different. Team Teaching Well planned, team taught lessons, exhibit an invisible flow of instruction with no prescribed division of authority. Using a team teaching strategy, both teachers are actively involved in the lesson. From a students' perspective, there is no clearly defined leader – as both teachers share the instruction, are free to interject information, and available to assist students and answer questions. • Differentiating instruction means creating multiple paths so that students of different abilities, interest or learning needs experience equally appropriate ways to absorb, use, develop and present concepts as a part of the daily learning process. It allows students to take greater responsibility and ownership for their own learning, and provides opportunities for peer teaching and cooperative learning. • Peer tutoring programs represent a viable means of improving the curricular and social interaction skills of students with autism (Odom et al., 1999). Research reveals that the teaching of specific tutoring strategies facilitates interaction between children with autism and their socially competent peers. Studies indicate that effects of social initiation intervention are immediately evident and substantial (Odom, McConnell, McEvoy, Peterson, Ostrosky, Chandler, et al., 1999).

177 • Peer Mediated Instruction and Intervention o Students taught roles o Students instruct o Teachers monitor/facilitate o Academic and social goals • Class-Wide Peer Tutoring o Teams of dyads within the classroom environment o Highly structured teaching procedures o Daily point earning/public posting of points o Direct practice of academic skills • Peer-Assisted Learning Strategies (PALS) is a class wide peer tutoring program. Teachers carefully partner a student with a classmate. The pair works on various activities that address the academic needs of both students. Pairs change over time. PALS can be used across content areas. The strategy provides direct opportunities for a teacher to circulate in the class, observe students, and offer individual remediation. PALS therefore allows for differentiated instruction via having partners work simultaneously on various teacher-directed activities. • The meaning of technology-based interventions in education is subject to multiple interpretations. Over the last forty years, technology-based intervention introduced into the classroom have included television, the use of film projectors and educational films, videotapes and videodisks, and the use of stand-alone and networked computers and data terminals. For all practical purposes in today's classroom, the term "technology-based interventions" mean the utilization of computers to both deliver instruction and to enable student learning (Ringstaff & Kelley, 2002). • In the 2003 Daniel K. Davis, Michael Wehmeyer and Steven E. Stock in their study on the utilization of Computer Technology to facilitate Money Management by Individuals with Mental Retardation yielded the result which indicated that the use of a money management software programme can be an effective tool to enable people with mental retardation to perform financial management tasks more independently.

178 4.9 "Check Your Progress" 1. What is Universal Design for Learning? Discuss its importance in relevance to inclusive education. 2. Briefly discuss about peer tutoring and its types with examples. 3. How does technology influence education in an inclusive setup? 4. Enumerate the different co teaching methods with examples. 4.10 References and Further Readings 1) Burk, M. (1998). Computerized test accommodations: A new approach for inclusion and success for students with disabilities. Washington, D.C.: A. U. Software. 2) Dolan, B. (2000). Universal design for learning: Associate editor's column. Journal of Special Education Technology, 15(4), 47–51. 3) Friend, M. & Cook, L. (1996a). Interactions: Collaboration skills for school professionals. Whit Plains: Longman. 4) Maher, C.A. (1984). Handicapped adolescents as cross-age tutors: Program description and evaluation. Exceptional Children, 51,1, 56-63. 5) McMaster, K.N., & Fuchs, D. (2002). Effects of cooperative learning on the academic achievement of students with learning disabilities: An update of Tateyama-Sniezek's review. Learning Disabilities Research & Practice, 17, 2 107- 117. 6) Anne, M.B., & Thomas, M.S., (1989). Teaching Exceptional Students In Your Classroom. Allyn and Bacon, Boston. 7) Anderson, N., (1995). Inclusive education: Using Technology to provide higher level Cognitive Challenges. Australian Disability Review, 2, pp 34-39. 8) Dalton, D. W., Hannafin, M. J., (1988). "The Effects of Compuetr-Assisted and Traditional Mastery Methods on Computation Accuracy and Attitudes". Journal of Educational Research 82/1, pp: 27-33.

179 Unit - 5 □□□□□ Support

and Collaborations for Inclusive Education Structure 5.1 Introduction 5.2 Objectives 5.3 Stakeholders of Inclusive Education and their responsibilities. 5.3.1

Who are

the Stakeholders of Inclusive Education? 5.3.2 Roles and Responsibilities of the Stakeholders. 5.4 Advocacy and Leadership for Inclusion in Education 5.4.1 Advocacy for Inclusion in Education. 5.4.2 Leadership for Inclusion in Education. 5.5 Family Support and Involvement for Inclusion 5.5.1 Families – The Cornerstone of the Society 5.5.2 Rationale for Family Support and Involvement 5.5.3 Examples of Parent Organizations in India 5.6 Community involvement for inclusion 5.6.1 Involving Community for Inclusion 5.6.2 Utilizing the Community 5.7 Resource Mobilization for Inclusive Education 5.7.1 Resource Mobilization: Importance 5.7.2 Methods of Resource Mobilization 5.8 Let us Sum Up 5.9 “Check your sProgress” 5.10 References

180 5.1 Introduction

Although the concept of inclusive education has been promoted internationally for more than a decade, multiple barriers remain to the full participation of children with disabilities in education. Lack of information, combined with discriminatory attitudes towards persons with disabilities at all levels of society, contributes to the continued neglect of their right to education. This partly explains the minimal rate of progress that has been made towards the enrolment and participation in the education process of children with disabilities. The factors are complex and extend beyond the boundaries of the school and classroom.

It is conservatively estimated that less than 10 per cent of children with disabilities in developing countries in the Asia-Pacific region are in school.

The

title of the

flagship, the “Right to Education for Persons with Disabilities Towards Inclusion”

reflects the current situation in which there is a movement towards inclusive education throughout the world. All children have the right to education. The equal right for children with disabilities has been clearly mandated but the right is not being comprehensively upheld. The growing trend towards more flexible, relevant and responsive education has been promoted 1990. The Salamanca Statement provided a vision of an inclusive system of education which would play a role beyond the school and would contribute to the building of inclusive and non-discriminatory societies. Inclusive schools would benefit all children as they developed ways of teaching that respond to individual differences and diverse abilities. In addition, they would be cost-effective, removing the need for separate schools systems for children with disabilities. In spite of the clear advantages of inclusive education, the data on the number of children with disabilities not in school suggests that the process is unacceptably slow and many of the most significant barriers that remain are not able to be solved at the level of the individual teacher or the individual school.

Inclusive education aims to provide quality education for all learners. In order to achieve an inclusive school, support is needed from the entire community: from decision-makers to end-users (learners and their families). Collaboration is required at all levels and all stakeholders need a vision of long-term outcomes – the type of young people the school and the community will ‘produce’. Changes in terminology, attitudes and values, reflecting the added value of diversity and equal participation, are needed.

181 In order for teachers and other education professionals to be prepared for inclusion, changes are needed in all training aspects – training programmes, daily practices, recruitment, finances, etc. The next generation of teachers and education professionals must be prepared to be teachers/trainers for all learners; they need to be trained not just in terms of competences but also of ethical values. 5.2

Objectives After going through this unit you will be able to

l discuss about the role of

different stake holders of inclusive education. l explain the importance of advocacy and leadership. l discuss about family and community support in inclusive education. l state about the meaning and importance of resource mobilization. 5.3

Stakeholders of Inclusive Education and their Responsibilities 5.3.1 Who are

the stakeholders of

Inclusive Education? Inclusive education

is

a process of addressing and responding to the diverse needs of all

learners

by

reducing barriers to, and within, the learning environment.

The overall goal of inclusive education, is thus the realization of a school (or any organized educational provision) where all learners are participating and treated equally, and which also proactively seeks and reaches out to any learner who is left behind.' – Salamanca World Conference on Special Needs Education (1994)

To make inclusive education a reality, a number of pieces in the system have to fall in place. It is true that the Government of India has made a significant fund allocation to achieve 'Education for all' through SSA. But to make it happen we need to have the stakeholders suitably prepared and involved. Some of the stakeholders include the regular teachers, special/resource teachers, school administrators, parents of children with special needs and parents of their peers who may not have special needs, children themselves with special needs, and those without special needs. In short, all sections of society who have a stake – directly and indirectly – in children's education.

182 The success of inclusion lies in the coordinated and collaborative efforts of all of the stakeholders. 5.3.2

Roles and responsibilities of Stake holders (a) Special Educators

With inclusive education initiated as a major step, a changing role of special educators is seen to be emerging. The educational programmes of special educators approved by the Rehabilitation Council of India (RCI) prepare the special educators to become special teachers to cater to the needs of children with special needs in special schools. SSA has opened doors for them to be resource teachers in the inclusive education settings, where they are expected to visit regular schools periodically and function as partners to the regular educators in meeting the needs of children who have special needs.

A short-term in-service programme may prepare them with updated techniques, which can be offered by the Continuous Rehabilitation Education (CRE) programmes of RCI. (

b) Resource Teachers and Regular Teachers

In inclusive schools, though the responsibility of education of all children lies with the regular teacher, the resource teachers are expected to facilitate inclusive education by supporting the children and the teachers in regular schools. It is essential that both the resource teachers

and regular teachers are prepared suitably to have a smooth, seamless inclusion. (c) Children with Special Needs and their Peers

Children with disabilities and their peer group without special needs are to be prepared for inclusion so that the experience is not overwhelming for either of them. Children with special needs who are used to a protective environment with small class strength of 8 to 10 children may be shocked when placed in a large class of 40 children.

And

those children who have not seen a child with a disability can react to the situation with varied emotional and behavioural responses ranging from pity and sympathy to bullying and making fun of their peers with special needs. (d)

Parents

of children with and without disabilities

Parents also can have apprehensions if not suitably prepared. Parents of a child with disability may prefer the protective special class to the large regular class where their

183 child may not get attention from the teacher. There have been occasions where the parents of a child without any special needs were afraid that their child might 'behave' in an odd manner by being with children with special needs.

These are but a few examples of the many issues related to inclusion that needs to be addressed, so that inclusion is realized in its true sense. (e) School Administrators

The school administrators are another important component to make inclusion a success. Accessibility to classrooms by providing ramps for wheelchair users, having brightly lit and ventilated classrooms so that children who cannot hear can see the teacher clearly when she talks and the children with low vision will be able to see better, having curtains in class so that a child with attention deficit does not get distracted and look outside while the teacher is teaching. All these are the responsibility of the school administrator, so that accessibility and barrier free environment is ensured. More importantly, the attitude of the administrator will impact the other stakeholders. Therefore, by ensuring that the administrators have a positive attitude towards inclusion, a major milestone towards successful inclusion can be achieved. (f) Government of India

and State Governments

The Government of India has taken a major step towards inclusive education. To make it a success, all the stakeholders need to do their best so that inclusive education will be achieved in its true sense. After all, it is the right of the child to get the best education. Let us make it happen and bring out the maximum potential in every child – the future leaders of our nation!

Governments should work in close cooperation with non-governmental organizations which are providing education to children with disabilities and developing strategies to include them in regular community schools, with a view to learning from these processes and including them in the national education system. Governments should consult with organizations

of persons with disabilities and parents of children with disabilities,

in the development of policies and changes to the school system, to ensure that these children are included in regular community schools and that their needs met.

184 (

g)

School and Community Non-governmental organizations should engage with ministry of education officials to ensure that they are aware of, and participating in, the non-government projects on including children with disabilities in education. Disabled peoples' organizations should advocate to ministry of education officials to fulfill the right to the education of children with disabilities by including them in national education policies and schools. Parents should advocate for the inclusion of their children in local community schools within the national education system. 5.4

Advocacy and Leadership for Inclusion in Education 5.4.1 Advocacy for Inclusion in Education

Advocacy by organizations of parents of children with disabilities, and by organizations of people with disabilities is a very important mechanism for changing the education system to make it more willing and more capable of including children with disabilities in schools and making sure that the schools meet their educational needs. In many countries where special schools have been established, they were started by organizations of parents working in partnership with non-governmental organizations. In other countries they have been instrumental in encouraging governments to include children with disabilities in regular pre-schools, primary schools, secondary schools and universities. The Biwako Millennium Framework has identified the strengthening of

self-help organizations of persons with disabilities and related family and parent associations

as the first priority for the second decade of disabled persons. It states that they

are the "most qualified and best equipped to support, inform and advocate for themselves and other persons with disabilities."

This includes children with disabilities. Advocacy for

Inclusion believes that children who have a disability should have an inclusive education of their choosing in the same way that choices are available to students in the broader community. School communities must be inclusive of all children, and openly recognize the unique contributions that children who have a disability make to community life. It is

essential that an inclusive education be supported to maintain and strengthen the personal relationships and social networks of children who have a disability. Each child's support must be individualized and

185 flexible, while remaining relevant to their particular needs at the time. Advocacy involves participation in the policy-making process, and raising public awareness and support to shift the balance of power and bring about change. It is a long-term, cyclical process that: I has measurable, achievable, realistic and time bound goals I addresses the right audience, using appropriate information, and transmits a clear message I builds coalitions and raises local funds. To realize inclusive education, different actors must be addressed, e.g. Government, district authorities, international organizations, community leaders, school boards, teachers, parents, and children.

5.4.2 Leadership for Inclusion in Education

For inclusive education to succeed, administrators must take action to publicly articulate the new vision, build consensus for the vision, and lead all stakeholders to active involvement. Administrators can provide four types of support identified as important by special educators: personal and emotional (for example, being willing to listen to concerns); informational (for example, providing training and technical assistance); instrumental (for example, creating time for teachers to meet); and appraisal (for example, giving constructive feedback related to implementation of new practices) (Littrell, Billingsley, & Cross, 1994). Visionary leaders recognize that changing any organization, including a school, is a complex act. They know that organizational transformation requires ongoing attention to consensus building for the inclusive vision. It also requires skill development on the part of educators and everyone involved in the change; the provision of extra common planning time and fiscal, human, technological, and organizational resources to motivate experimentation with new practices; and the collaborative development and communication of a well-formulated plan of action for transforming the culture and practice of a school (Ambrose, 1987; Villa & Thousand, in press). Inclusion is increasingly understood as an educational reform that responds to the diversity of all learners, challenging the marginalization, exclusion and underachievement which may result from all forms of 'difference'. Leadership for

186 inclusion is conceptualized here as driving a constant struggle to create shared meanings of inclusion and to build collaborative practice, an effort that needs to be rooted in critical practice.

5.5 Family Support and Involvement for Education

5.5.1 Families – The Cornerstone of the Society

The history of progress and of systems change for individuals with disabilities show us that positive changes have come from the work, tenacity and the vision of families. It has been years of struggle, of strong vision or creative thinking and strong social powers that have created the awareness of disability as a human right issue and children with special needs are valued as fellow citizens in the communities in which we live. It is always fascinating to reflect as to how families kept that vision despite horrific histories and practices in almost all countries over the years. Gandhi said that "we must be the change we want to see". Families having children with disabilities play a dual role, we bring up one child to live in a community and we raise the community to welcome our children. Families have a right to be involved in their child's education and to participate with the school in decisions concerning their child and the school community. Extensive research has shown the benefits of parental involvement in education. These benefits include higher achievement, better attendance, more positive attitudes and behaviours and higher graduation rates. Moreover, schools that work well with families show improved teacher morale, and are seen by the community to be performing better than those that do not.

5.5.2 Rationale for Family Support and Involvement

Many reasons can be given for encouraging family involvement in their children's education and intervention program. When we talk about families we usually mean parents. However it is important to consider the needs of other family members in adapting to child with special needs and providing them equal opportunities which a child without disabilities enjoys. I Parents and immediate family members are the major socializing agents for their child, the primary transmitter of cultural values, beliefs and traditions. I Children with disabilities acquire developmental skills more quickly when

187 family members participate in home teaching. | Involvement in intervention program offers parents access to support from other parents and a better perspective on their own child's strengths and needs. | Consistency of adults' expectations can be maintained young children become anxious when adults do not agree on expectations. | Parents know their child better than teachers or clinicians thus parents are a source of unique information. | Family members can help the child transfer learning from school to home and neighborhood. | Only a few hours a day are spending in school, many more hours are spending at home with family. 5.5.3 Examples of Parent Organizations in India | Parivaar-Bengal, part of Parivaar (National Confederation of Parents Organisations) has empowered parents in the districts of West Bengal | Mentaid – Self advocacy for young adults with intellectual and developmental disability 5.6 Community involvement for inclusion 5.6.1 Involving Community for Inclusion Societies respond differently to the provision of services such as education, health, transport, employment, and rehabilitation for persons with disabilities. Accessibility to services by persons with disabilities continues to be a major challenge in all parts of the world, but especially in developing countries. However, many countries have realized the advantages of including persons with disabilities in all development activities. Policies have been adapted to safeguard and improve their lives, and programmes such as Community Based Rehabilitation (CBR) and Inclusive Education (IE) have been put in place. The overall aim of these programmes, is to develop the potential of persons with disabilities and for them to become productive citizens in the community and get equal opportunities. 5.6.2 Utilizing the Community Inclusive education recognizes that the whole community needs to be involved in

188 order to ensure that ALL children receive the education that is their basic human right. This means that we have to think about who is in our communities and how they can support the process of inclusive education. The following are a part of the community: | Parents and family members | Teachers, principals, school boards, school review officers | Local leaders – church, community leaders, women's committees, youth groups, etc. | Local health workers | Local business – shopkeepers, bus drivers | Local sports groups | Local parent groups and disabled people's organizations Schools can use their community to assist by helping with fundraising, providing parent-to-parent support, helping with transport, counseling, being an assistant/helper to the teacher, teaching cultural skills (weaving, cooking), helping identify students not in school, promoting public awareness, and helping with school supplies. Churches can include ALL children in Sunday school and youth groups. Nurses/health workers provide parents with knowledge, and can help find children who do not attend school. Members of disability-related organizations can give talks to schools, raise public awareness and suggest ways to include children 5.7 Resource Mobilisation for Inclusive Education 5.7.1 Resource Mobilization: Importance Inclusive Education requires policy action at both the national and local level. At the national level, the government must implement the passage of new laws mandating inclusive education, while at the local level schools and the community must participate in capacity building, resource mobilization, and generating knowledge. Resource mobilization is imperative for the success of IE. Resources play a significant role in enabling provision of IE services in the country. IE services require specialized human, materials and physical resources. The government is providing required specialized teaching staff. Learners with special needs and disabilities require more and specialized material resources for their education than their non-disabled peers. Material resources are needed at both the

189 individual level and school level. The nature and type of materials required depend on the type and degree of disability. The physical environment where learners with special needs and disabilities operate should be accessible to them and be disability friendly. This calls for adequate allocation of material resources to learning institutions to improve physical structures and provide individual learners with special needs and disabilities with basic learning aids. 5.7.2 Methods of Resource Mobilization Financing and support of educational services for students with special needs is a primary concern for all countries, regardless of available resources. Yet, a growing body of research asserts that Inclusive Education is not only cost-efficient, but also cost-effective and that "equity is the way to excellence" (Skrtic, 1991, OECD, 1999) (a) Governmental Funding Formulas Across countries, the issue of resources appears not so much as an issue of levels of funding, as it is an issue of distribution and allocation of funds. Specifically, fiscal policies and their built-in incentives (or disincentives) for IE "may be as important in affecting program provision as the amounts allocated" (Parrish, 2002). Many parents cannot afford assistive and functional devices needed by learners with special needs and disabilities as they are expensive and out of reach. The government is providing basic learning aids: though provision of assistive/functional devices is still a constraint due to inadequate resources and funding. These will be supplemented by other service providers, which include individuals, faith based organizations, civil society organizations, the corporate sector, bilateral and multilateral agencies. (b) Pupil Bound Budget System Sometimes mainstream schools are eager to have these children (and their budgets) within their walls. However, it is likely that they prefer children (with budgets) who do not cause them too much additional work. Also, parents will always try to get the best for their child and as a result will try to get the highest amounts of special needs funding. This pupil bound budget system is certainly not advisable for children with milder special needs. Criteria for learning disabilities are vague, ambiguous and change over time and this in itself may be a source of debate if budgets are linked to children. In practice, only clear-cut criteria are useful if funds are tied to children. If it is not possible to develop these, pupil bound budgets should not be used.

190 Generally it is desirable that funds are spent on special education itself (in an inclusive setting), instead of on bureaucratic procedures like diagnosis, categorization, appeals and litigation. (c) Decentralized Model Inclusion can be achieved more easily in a decentralized model when compared to a central approach. In a centrally prescribed plan too much emphasis may be put on the organizational characteristics of that specific model without inclusionary practice being realized. Local organizations with some autonomy may be better equipped to change the system. Therefore, a decentralized model is likely to be more cost-effective and provide less opportunity for undesirable forms of strategic behavior. Nevertheless, the central government has to clearly specify which goals must be achieved. Decisions concerning the way in which such goals are to be achieved is then left to local organizations. 5.8 Let us Sum Up 1.

Everyone

has the

right to education. Education shall be free, at least in the elementary and fundamental stages.

Elementary education shall be compulsory.

Education

shall be

directed to the full development of human personality and to

the strengthening of respect for human rights

and fundamental freedoms.

It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the

activities of the United Nations for the maintenance of peace." (

art.26 - Universal Declaration of Human Rights) 2. While there are also very important human, economic, social and political reasons for pursuing a policy and approach of inclusive education, it is also a means of bringing about personal development and building relationships among individuals, groups and nations. It is thus imperative that schools and local authorities take the responsibility to ensure that this right is implemented. Concretely this involves: I Initiating debates around how the community understands human rights; I Generating collective thinking and identifying practical solutions such as how human rights can be made part of the local school curriculum;

191 I Linking the Human Rights movement with educational access; I Fostering grassroots action and strengthening its ties to the policy level in order to promote protection; I Encouraging the creation of community and children's councils where issues of access can be discussed; and Developing community-school mechanism to identify children not in school as well as develop activities to ensure that children enroll in school and learn. 3.

Inclusion is seen as a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education. It involves changes and modifications in content, approaches, structures and strategies, with a common vision which covers all children of the appropriate age range and a conviction that it is the responsibility of the regular system to educate all children. 4.

An important concern in a decentralized system is the issue of accountability. Clients of the education system and taxpayers in general have a right to know how funds are spent and to what end. Accordingly, some kind of monitoring, inspection and evaluation procedures will be inevitable elements of the funding system. The need for monitoring and evaluation is even greater in a decentralized model compared to more centralized options. Independent evaluation of the quality of education for children with special needs is therefore part of such a model. 5. Inclusion Support Agencies (ISA) are responsible for managing and coordinating access to quality inclusion support that is relevant, appropriate and timely for all eligible education and care services within a defined region. ISAs employ Inclusion Support Facilitators (ISFs) who work directly with educators and staff in education and care services. ISFs provide practical advice and facilitate access to a range of supports designed to strengthen the service's ability to create an inclusive environment for all children. 5.9 "Check Your Progress" 1. Discuss about the different stakeholders in inclusive education and their responsibilities.

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192 2. Write a note on Resource Mobilization for Inclusive education.
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..... 3. How does community influence education in an inclusive setup?

..... 4. Enumerate the role of parents in inclusive education.

..... 5.10 References 1) Bernard, A. (2000) Education for All and Children who are Excluded. Education for All 2000 Assessment. Thematic Studies. On the Internet: http://www2.unesco.org/wef/enleadup/findings_excluded%20summary.shtm 2) Booth, T. (1996) Chambers, R. 1997: Who's reality counts? Putting the first last. London, Intermediate Technology Publications. 3) UNESCO (1999a) From Special Needs Education to Education for All. A Discussion Document. Tenth Steering Committee Meeting UNESCO Paris 30 September - 1 October 1998. Unpublished manuscript. 4) UNESCO (1999b) Welcoming Schools. Students with Disabilities in Regular Schools. Paris: UNESCO 5) UNESCO (2001a)

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B B-7 : Introduction to Sensory Disabilities (VI, HI, Deaf-Blind)

A COLLABORATIVE PROGRAMME OF NETAJI SUBHAS OPEN UNIVERSITY AND REHABILITATION COUNCIL OF INDIA

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B ●●●●● CROSS DISABILITY AND INCLUSION COURSE CODE - B7 INTRODUCTION TO SENSORY DISABILITIES (VI, HI,

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without the written permission from the NSOU authorities. Dr. Ashit Baran Aich Registrar, (Acting) NSOU

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17)

the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations

which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the

National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and

futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the

directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of

Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the

month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within

such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put

the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It

required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every

intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs

are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline

concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of

these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the

Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the

learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher

dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better

understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled

support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also

provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support

systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations.

However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must

acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their

respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar

Sarkar Vice-Chancellor, NSOU

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B B-7 : INTRODUCTION TO SENSORY DISABILITIES (VI, HI, DEAF BLIND) B - 7 □ □ □ □ □

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Introduction to Sensory Disabilities UNIT - 1 : HEARING IMPAIRMENT : NATURE & CLASSIFICATION 9-69 UNIT - 2 : IMPACT OF HEARING LOSS 70-137 UNIT - 3 : VISUAL IMPAIRMENT –NATURE AND ASSESSMENT 138-181 UNIT - 4 : EDUCATIONAL IMPLICATION OF VISUAL IMPAIRMENT 182-276 UNIT - 5 : DEAF - BLINDNESS 277-298 8 9 Unit-1.1 ppppp Types of sensory impairments: Single(Hearing Impairment & Visual Impairment) & Dual sensory impairment (Deaf-Blindness)

Structure 1.1.1 Introduction 1.1.2 Objectives 1.1.3 What is sensory impairment 1.1.4 Meaning of sensory impairment 1.1.5 Types of sensory impairment 1.1.5.1 Hearing Impairment (H.I.) Meaning of visual impairment Classification Symptoms of hearing impairment Causes of hearing impairment 1.1.5.2 Visual Impairment (V.I.) Meaning of visual impairment Classification Symptoms of visual impairment Causes of visual impairment 1.1.5.3 Dual sensory impairment (Deaf-Blindness) Meaning of dual sensory impairment Classification Symptoms of Deaf-Blindness Causes of Deaf-Blindness Unit-1 ppppp Hearing Impairment : Nature & Classification
10 1.1.6 Let us Sum up 1.1.7 "Check your progress" 1.1.1 Introduction It is very interesting to know that 90% of the information about the world around us comes from our sight and hearing. We talk to each other, we read our bills, news papers and books, we see T.V., listen to the radio etc. Medically there are four senses, viz., visual, auditory, gustatory and olfactory, which give special information about the environment; hence these are named as special senses. For example, visual sensation not only gives us the sensation of light but we extract much information from the scenery, e.g. soothing or repulsive, hostile or friendly and so on. Every man has to right live independently. But some people live independently with some major impairment. This impairment varies in nature. Some are related to vision; some are auditory; mental and physical impairments are also to be counted in this nature. 1.1.2 Objectives After going through this sub unit, the learners will be able to: lllll understand the meaning of sensory disabilities lllll know about the different aspects of hearing impairment lllll know about the different aspects of visual impairment lllll know about the different aspects of deaf-blindness 1.1.3 What is sensory impairment? Going to details sensory impairment, we must know about two things. (1) The sensory system and (2) Receptors. (1) The sensory system This system is responsible for carrying different sensations resulting from stimulation of the sensory receptors by external or internal stimuli. For the purpose of perception, a 11 sensation is to be carried to the part of CNS (Central Nervous System) called sensorium. (2) Receptors The receptors associated with nervous system are called sensory receptors or neural receptors. A sensory receptor can be defined as a biological transducer which can convert (transduct) various forms of energy in action potential (AP) in the sensory nervous to which they are connected. Medically receptors for special senses are i) Vision : rods and cones, ii) Hearing: hair cells, iii) Taste : tests buds, iv) Smell: olfactory neurones. 1.1.4 Meaning of sensory impairment The sensory impairment means the senses that is

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sight, hearing, smell, touch, taste and spatial awareness, is no longer normal.

Mainly the term 'sensory impairment' is used here to refer to people with either visual or hearing impairments or both - the extent of those impairments will vary from person to person. As an example, if a man wears glasses then he/ she has

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sight impairment, if find it hard to hear or have a hearing aid then call hearing impairment.

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A person does not have to have full loss of a sense to be sensory impaired. 1.1.5

Types of Sensory Impairment: Single (Hearing impairment & Visual Impairment) The term sensory impairment encompasses visual loss (including blindness and partial sight), hearing loss (including the whole range) and multisensory impairment (which means having a diagnosed visual and hearing impairment with at least a mild loss in each modality or deaf blindness). In this context it is said that sensory impairment has two types. One is single and another is dual. Hearing impairment & Visual Impairment is under the single sensory impairment and Deaf-blindness is under dual sensory impairment.

12 1.1.5.1 Hearing impairment (HI)

Hearing is the ability to perceive sound.

A person suffering from hearing impairment has difficulty in perceiving or identifying sound clearly due to auditory problems.

So it is said that hearing impairment is hearing loss that prevents a person from totally receiving sounds through the ear. The impairment may be unilateral or bilateral. If the loss is mild, the person has difficulty hearing faint or distant speech. A person with this degree of hearing impairment may use a hearing aid to amplify sounds. Meaning of Hearing Impairment Hearing impairment refers to a defect in or damage to the hearing mechanism. This defect or damage may occur in any part of the ear, outer ear or middle ear or inner ear. Hearing impairment leads to hearing disability or loss of hearing. Hearing disability or loss of hearing may range of severity from mild to moderate to profound. A person may become deaf or hard of hearing depending upon the nature of impairment and the degree of hearing loss. Classification The degree of hearing loss can be classified five levels as listed below: Degree of Hearing Loss Ability to perceive sound Mild Difficult to identify soft sound such as whispering. Moderate Unable to hear clearly what others are saying during conversation. Hearing aids are necessary. Moderately -severe Unable to clearly hear loud noises such as telephone ring. Severe Can only hear very loud noises and sounds such as shouting or vacuum cleaner noise. Profound Difficult to perceive any sound.

According to impairment the two main types of hearing loss are: Conductive hearing loss, which is the most common type and results from interference in the conduction pathways through which sound reaches the inner ear. This hearing loss usually affects the volume of sound reaching the inner ear. People

13 with conductive hearing loss may benefit from the surgical insertion of grommets or from hearing aids. It is commonly a temporary hearing loss. Sensorineural hearing loss, which is caused by

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damage to the hair cells lining the inner ear, or the nerves that supply them. This hearing loss can range from mild to profound,

and affects certain frequencies more than others. Consequently, people with sensorineural hearing loss need high quality hearing aids or cochlear implants to gain access to the spoken word and sound in the environment. It is also possible to have a mixed hearing loss, which arises from both the above. Symptoms of Hearing Impairment

The symptoms of children with hearing impairment are: During infancy: 1-3 months old No response to sudden sound such as banging of door or ringing of doorbell. 4-6 months old Unable to locate the sound source. 7-9 months old Do not look at the person being mentioned, e.g. "Where is Papa?" 10-12 months old No response to their names being called or frequently used words or phrases, e.g. "come", "go". During Childhood lllll Delayed response to sound. lllll Can not hear clearly what others are saying lllll Show difficulty in locating the sound source lllll Pay more than usual attention to speakers' facial expression and lip movement while listening lllll Give irrelevant answers or misinterpret instructions lllll Request for repetition during conversation lllll Show poorer ability to understand speech in a noisy environment lllll Tend to turn up the sound volume of television

14 lllll Incorrect pronunciation lllll Delayed language development lllll Poor attention in class lllll Frequent use of gestures to express themselves, e.g. pointing to what they want lllll Easily irritated as a result of communication difficulty

Parents should be alert to the possibility of hearing impairment if their child shows the above signs, and seek medical advice as soon as possible. Causes of Hearing Impairment Two factors are involved in various causes of hearing impairment. These are Congenital factors and Acquired factors. Congenital factors mean those factors which are innate by birth. Such as Ø Heredity Ø Viral infection during pregnancy, e.g. rubella infection Ø Congenital defects such as anomalies of the ear, nose or throat Ø Premature birth, birth asphyxia, excessive bilirubin etc. Acquired factors mean those factors which are acquired after birth. Such as Ø Excessive ear wax Ø Eardrum perforation Ø Middle ear effusion or infection Ø Otitis media or ear ossicle dislocation Ø Sequel of childhood disease such as meningitis Ø Head or ear trauma Ø Prolonged exposure to loud noise Ø Medication that may lead to hearing damage Ø Accident. Above causes of hearing impairment are affecting the children's development in different side. Mainly problem arises in language development. Except this problem

15 Emotion and behaviour problem, lack of self-confidence, problems of social interaction, academic performance etc. People who are profoundly deaf can hear nothing at all. In order to communicate spontaneously and rapidly with people, they are totally reliant on lip reading and/or sign language. People who are born deaf and lip-reading much harder to learn compared to those who became hearing impaired after they had learnt to communicate orally (with sounds).

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Some diseases or circumstances can cause deafness, including: Chicken Pox Cytomegalovirus Mumps Meningitis Sickle cell disease

AIDS- Offspring of mothers who had aids during pregnancy have a much higher risk of being deaf by the age of 16 years. Syphilis Lyme disease Diabetes- Studies have shown that upto 40% of diabetes patients suffer from some kind of hearing loss. Tuberculosis (TB)-Expert believe that the medication, streptomycin, used to treat TB may be the key risk factor Hypothyroidism and underactive thyroid gland Arthritis Some Cancers Second hand smoke exposure can increase hearing loss in teenagers Many people globally have untreated hearing loss The impact of hearing impairment on the child is determined by a variety of factors. Generally speaking, early treatment and training can help to minimize the developmental problems caused by hearing impairment.

16 1.1.5.2 Visual impairment (VI) This term covers varying degrees of vision loss including those who are registered severely sight impaired (blind). Even the latter may have some vision, such as being able to tell the difference between light and dark. There are many conditions that cause different kinds of vision loss; the main distinction between conditions is whether the impairment is ocular (eye) or cerebral (brain). Visual impairment is considered as the most severe and traumatic physical handicap. Since more impressions are conveyed to the brain through the eyes, the visual anomalies may influence the life of the individual in physical, mental, social, vocational and educational aspects. Visual impairment (VI) refers to a significant functional loss of vision that cannot be corrected by medication, surgical operation, or ordinary optical lenses such as spectacles. Meaning of Visual Impairment

It is an interesting phenomenon that visual impairment tends to evoke more awkwardness from us than any other disability.

Why are we so uncomfortable about of blindness?

For one thing blindness is visible. The blind person is usually not one who can easily weave himself into the fabric of a crowd. Unlike any other exceptional people he stands out.

We often don't realize a person has impaired hearing until we talk to him. There are two prevailing ways of describing visual impairment-the legal definition and the educational definition. Legal definition of visually impaired—the legal definition involves assessment of visual acuity and field of vision.

The American Medical Association (AMA) proposed the definition. This definition is now accepted by the American Foundation for the Blind (AFB) and other Blind Association in different countries. "

A legally blind person is said to be one (1) who has visual acuity 20/200 or less in the better eye even with correction, (ii) whose field of vision is so restricted that it subtends an angle of 20° or less in the better eye after correction." Visually impaired are those who suffer from either of the following conditions (Ministry of Social Welfare 1987) - a)

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Total absence of sight, 17 b) Visual acuity not exceeding 6/60 or 20/200(Snellen) in the better eye correction lenses, c) Limitation of the field of visual subtending an angle of 20 degree or worse.

Within this broad definition, visually impaired children are differentiated into two categories, the blind and the partially seeing or low-visioned. Educational definition of visually impaired- educationally defined, the blind child is defined as one whose visual loss indicates that he/she should be educated chiefly through the use of Braille and other tactile and auditory materials. The partially seeing child is defined as one who has some remaining useful vision and can use print and other visual materials as part of the educational programme. Sensory Training and Mobility In a visually impaired individual, the loss of sight is compensated by sense of touch and hearing. Sense of touch enables the persons to determine his position and direction. Hearing play a dominant role in mobility. Explorations of an object through touch determine the definiteness of the object and help the individual to form a neat conception of them. Sense of touch also has a lot to do with reading. During his travel the smell of a gutter, the smell of smoke of a chemical industry (like paper factory, sugar factory etc.), smell of kitchen products etc. are source of information for the person to locate where he is, this leads to a greater level of confidence in mobility. Daily living skills These are also called as 'survival skills'. These build up confidence specially among visually impaired children. These are necessary for day to day living. Some of the common daily living skills are eating manners using toilet, dressing body hygiene, cleanliness, taking bath, washing cloth, handling money, shopping, shaving, proper use of electrical appliances, food preparation, cleaning of place, using medicine etc. learning daily living skills of a visually impaired child are means of his proper social development also. These skills are difficult but not impossible to learn.

18 Classification The degree of visual impairment can be classified into three levels: Mild llll Can read relatively larger characters. llll No difficulty in identifying shapes ,colours and brightness contrast Moderate llll Can tell shapes and colours of objects and can distinguish between brightness and darkness llll Can only read characters with larger size and broader strokes Severe llll Can only distinguish more obvious changes in brightness and darkness llll May not see anything(completely blind) The visually impaired children have been classified medically which are shown in the following table: Category/ Level Better Eye Worse Eye Percentage of Impairment Level D 6/9-6/18 6/24-6/36 20% Category I 6/18-6/36 6/60-nil 40% Category II 6/60-4/60 3/60-nil 75% or Field of Vision 100-20 3/60-1/60 F.C. at 1 ft. To 100% Category III or nil Field of Vision 100 Category IV F.C. at 1 ft. To nil Field of or Vision 100 Field of Vision 100 There are two major categories of visually impaired children : (i) The partially sighted are those who require large print or magnified print materials. Their visual acuity is very low (20/70 in the better eye).this means that the child sees at 20ft when a normal child sees at 70 ft. Their eyesight may be weak

19 due to short sightedness, long sightedness, Such astigmatism need , glaucoma or muscle detachment. (ii) The blind are those who need to be taught through Braille or through aural methods their visual acuity may fall to 2/200.Such children must be prepared in preacademic skills like braille reading and use of cane for mobility before integration. Symptoms of Visual Impairment The symptoms of children with visual impairment are: During infancy: llll Lack of eye contact llll Blinking to bright light llll Do not look at his /her hands llll Do not visually follow moving objects in front of his /her face llll Slow response to voiceless toys or parents' faces; respond only to sound llll No imitation of others' expressions and actions llll Do not actively reach out for his /her favourite toys llll Fear of gross motor activities ,such as crawling During early childhood llll Often keep his/her head down; lack eye contact with others llll Limited facial expression and body language llll Tend to hold objects very close to the eyes when looking at them llll Abnormal responses to bright to light (gazing at light excessively or trying to avoid it) llll Often bump into objects or fall over , and get confused with directions llll Search for his/her way using hands llll May press on eyeballs with fingers llll Jerky movements of the eyeballs

20 Causes of Visual Impairment Loss of vision or impairment of vision is caused due to many reasons. Injury to the eye, inherited conditions, infections etc. are the main common causes that lead to vision loss or visual impairment. Generally causes of Visually Impairment are divided into two parts. One depends on systematic conditions and another is specific eye conditions. SYSTEMIC CONDITIONS lllll Diabetes lllll Hypertension (high blood pressure) lllll Cerebrovascular (brain blood vessel) disease or stroke lllll Atherosclerotic disease (cholesterol deposits in blood vessels, including those of the eye) lllll Human immunodeficiency virus (HIV) usually due to infection with cytomegalovirus, a virus that affects the eye lllll Vitamin A deficiency lllll Infections involving the eyes Some eye infections, including those caused by parasites, are more common in developing countries. Infections in a pregnant woman can affect the foetus. This type of vision loss, present from birth, is called congenital blindness. SPECIFIC EYE CONDITIONS lllll Macular degeneration-deterioration of the central part of the retina lllll Cataracts-clouding of the lens of the eye lllll Glaucoma-damage to the nerve connecting the eye to the brain caused by increased pressure inside the eye lllll Eye injuries lllll Tumours involving the eye or surrounding structures in the head and neck Now some causes of visual impairment are discussed briefly Injury to the eyes · Eye injury may happen while playing or at work or due to accidents which may result in vision loss and impairment.

21 lllll The commonest cause of vision loss is injuries to the cornea. Inherited conditions of blindness and vision impairment lllll The most common cause of inherited blindness is retinitis pigmentosa. Infections of the eyes lllll The baby may be born with blindness or visual impairment if the mother has had a viral infection like German measles that is transmitted from the mother to the developing foetus during pregnancy. lllll Trachoma of the eyes caused by contagious microorganism called Chlamydia trachomatis may also damage eye sight. This is seen in the developing and underdeveloped countries with poor water and sanitation facilities. Amblyopia lllll Generally Amblyopia means impaired vision in one eye due to lack of its use in early childhood. lllll It is seen in squint or "lazy eye" since both the eyes project differently and send in different messages to the brain the brain may then turn off or suppress images from the weaker eye. This stops development of the weaker eye leading to amblyopia in that eye. Cataract lllll Cataract means clouding of part or the entire lens of the eye. lllll Normally, the lens is clear to let in the light that focuses on the retina. Cataracts prevent light from easily passing through the lens, and this causes loss of vision. lllll Due to cataract cloudy or blurry vision, difficulty in seeing in dimly lit areas and bright lights, colours appear faded, double vision etc. happen. This condition usually affects the elderly. lllll Cataract is the leading cause of blindness in the world compared to other eye disorders. Diabetic retinopathy lllll The small blood vessels in the retina are affected due to diabetes for which impairment of vision is caused.

22 lllll This is the commonest cause of blindness and visual impairment in the United States. Glaucoma lllll Raised pressure within the eyes is caused due to Glaucoma. The increased pressure impairs vision by damaging the optic nerve. lllll This may be seen in older adults and in some babies as well who are born with the condition. Age related Macular Degeneration lllll The progressive loss of the visual acuity due to damage to the macula that is the most sensitive part of the retina is called Age related Macular Degeneration or AMD. lllll Due to AMD the center of the visual field appears blurry or opaque. The patient is unable to focus clearly. This mainly occurs in the elderly. lllll Those who are exposed to excess sunlight and those who smoke excessively may suffer from AMD. AIDS related visual impairment lllll Viral infections of the eyes called Cytomegalovirus or CMV retinitis may cause AIDS related visual impairment. Cancer of the eyes lllll The most common eye cancer of children is called Retinoblastoma. 1.1.5.3 Dual Sensory Impairment (Deaf-Blindness) Meaning of

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dual sensory impairment It is the combination of both hearing and sight impairment. It is not necessarily a total loss of both senses - indeed the majority of dual sensory impaired people do have some degree of sight and/or hearing. Those with a less severe degree of both sight and hearing impairment may also be referred to as having a dual sensory impairment or loss. The words dual sensory impaired and deaf-blind are generally accepted as inter- changeable words. 23 When a person has difficulties seeing and hearing then the person can be termed

deaf-blind.

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Although it is more common to refer to someone as being deaf-blind if their combined sight and hearing loss causes difficulties for them with communication, mobility and access to information. The combination of the two sensory impairments intensify the impact of each other, which usually means that a deaf-blind person will have difficulty, or find it impossible, to utilise and benefit fully from services for deaf people or services for blind people. Meeting the needs of

deaf-blind people therefore requires a separate approach. Deaf-blindness is a unique and extremely complex disability that often requires specialist communication methods and systems being introduced to the person and those around them to enable communication to take place. Deaf-blindness has adverse effects on all areas of development, in particular the language acquisition process, conceptual development, motor development, behaviour and personality of a person. People who are deaf-blind can generally be separated into two groups: Congenital Deaf-blindness - People who were born with a hearing and vision impairment. This category may also include individuals who are born hearing-sighted, but who become deaf-blind through accident or illness within the first months of their lives. The important factor being that they become deaf-blind before they had the opportunity to gain formal language skills. Acquired Deaf-blindness - People who develop deaf-blindness later in life. Three combinations are possible : a) Individuals who are born blind and later develop a hearing impairment. b) Individuals who are born deaf and later develop vision impairment. c) Individuals who are born sighted and hearing, but later develop a vision and hearing impairment. Every deaf-blind person is an individual and may not fit neatly into any of the above categories, or use the suggested means of communication. Their situation may be complicated by the existence of other factors such as physical and/or learning disabilities etc.

24 Symptoms of deafblindness Levels of hearing and sight loss vary between individuals who are deafblind. Hearing loss In deafblindness, hearing loss can occur from birth or may develop later after an infection or injury. In other cases, a person's hearing may gradually deteriorate over time. Someone with impaired hearing may find that speech and other noises sound muffled and indistinct and they may not be able to follow and understand conversations, particularly when there's background noise. A person with a hearing problem may also need

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to turn up the volume on the television or radio

and ask others to speak loudly, slowly and more clearly. Sight loss A person who is deafblind may have developed a condition that gradually causes their vision to deteriorate. For example, they may have an eye condition such as: lllll cataracts - cloudy patches that form on the eye's lens lllll glaucoma - pressure changes inside the eye that damage the optic nerve (the nerve that transmits images from the eye to the brain) lllll retinopathy - a number of eye disorders that damage the blood vessels of the retina (light-sensitive tissue at the back of the eye) and can lead to vision loss Common symptoms of conditions that cause progressive sight loss include: lllll eye pain lllll blurred vision lllll halos around light sources lllll reduced night vision lllll difficulty seeing in bright sunlight or well-lit rooms Causes of Deaf-Blindness There are many causes of deaf-blindness. Those that are present or occur around the time a child is born include prematurity, childbirth complications, and numerous congenital syndromes, many of which are quite rare. Deaf-blindness may also occur

25 later in childhood or during adulthood due to causes such as meningitis, brain injury, or inherited conditions. Congenital deafblindness is when people are born deafblind. Some people become deafblind later in life and this is called acquired deafblindness. Many people who are deafblind have rare and varied causes of their sight and hearing loss. They may experience other disabilities and health conditions, meaning that diagnosis and the identification of sight and hearing loss are difficult. Causes of deafblindness include: llll Infections during pregnancy llll Prematurity llll Rare syndromes, such as Usher and CHARGE llll Illness and accidents llll Sensory loss in old age Many children with profound and multiple learning disabilities will experience limited communication skills and impairments of vision and hearing. Congenital rubella syndrome is no longer a significant cause of deafblindness, but other infections during pregnancy are a factor, for example cytomegalovirus and toxoplasmosis. One in ten babies born prematurely will develop a permanent disability such as cerebral palsy, blindness, deafness or lung disease, or a combination of these. Illness and accidents can lead to sensory loss in children and adults, and a number of conditions lead to a loss of sight and / or hearing over time. Sensory loss is just one more effect of old age. A hearing and vision loss may have crept up slowly on a person, so they only gradually realise something is wrong. As a result the everyday difficulties a person describes are not just to do with ageing but are the typical effects of deafblindness. Below is a list of potential causes of deafblindness with links to websites containing additional information. Please note that the information on these pages is for information purposes only. It should never be used for diagnostic or treatment purposes.

26 If you have questions regarding a medical condition, always seek the advice of your general practitioner or other qualified health professional. Rubella Rubella is a mild and preventable disease caused by a virus. If you catch it you may feel unwell, with

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swollen glands, a slight temperature, or a sore throat and

rash. But some people have no symptoms at all and so are unaware that they may be infectious and may be passing on the disease. Rubella is very serious if a pregnant woman catches it in the early stages of her pregnancy because it can profoundly damage the development of her unborn child. It can result in deafblindness or raise the possibility of a termination. Ensuring that children are routinely vaccinated helps to protect pregnant women and their babies. Congenital rubella syndrome A baby born affected by rubella is said to have congenital rubella syndrome (CRS). Many will have hearing loss, cataracts, other eye conditions, and heart problems that require significant hospital treatment and will affect the child throughout their life. A baby's brain can also be affected. The risk of congenital rubella syndrome affecting the baby and the extent of the birth impairments it causes depends on how early in the pregnancy the mother is infected. The earlier in the pregnancy the greater the risks. German measles is a common term used to describe rubella. 1.1.6 Let us sum up 90% of the information about the world around us comes from sight and hearing. Medically there are four senses, viz. visual, auditory, gustatory and olfactory, which give special information about the environment; hence these are named as special senses. Some people live with some major impairment which is related to vision, auditory, mental & physical. Sensory impairment has two types- Single & Dual. Hearing and visual impairment is under single sensory impairment and deaf-blindness is under dual

27 sensory impairment.

A person suffering from hearing impairment has difficulty in perceiving or identifying sound clearly due to auditory problems

which prevent a person from receiving sounds through ear. Visual impairment is considered as the most severe and traumatic physical handicap and it may influence the life of an individual in physical, mental, social, vocational and educational aspects.

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Dual sensory impairment is the combination of both hearing and sight impairment (

Deaf-Blindness). 1.1.7 "Check your progress" Q.1. What are the two types of sensory impairment?

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..... Q.2. Which type of impairment comes under single sensory impairment?

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..... Q.3. What do you mean by Congenital Factors for causing Hearing Impairment?

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..... Q.4. What are the two conditions that cause visual impairment?

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28 Q.5. Write the name of two diseases which affect all types of sensory impairment?

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29 1.2 p Importance of hearing Structure 1.2.1 Introduction 1.2.2 Objectives 1.2.3 Why hearing is important 1.2.4 What are the consequences of hearing loss? 1.2.5 Effect of hearing in living 1.2.6 How hearing loss can affect in everyday situations 1.2.7 How hearing works 1.2.8 Anatomy of the Ear 1.2.9 Hearing Loss Impacts 1.2.10 Tips for parents 1.2.11 "Check your progress" 1.2.1 Introduction "Blindness separates people from things. Deafness separates people from people." There is no better way to describe why hearing is of such great importance in our lives than the words of the philosopher Immanuel Kant. Hearing helps us to establish contact with other people, holding an intimate conversation or simply laughing together - hearing means communication and is an irreplaceable component of our social lives. An unborn child already picks up sounds, voices, and even music. Hearing is used round the clock. It is key to communication and hence to social interaction. The ear is man's most efficient but also most sensitive sensory organ. However, proper importance is not given to it by our modern, visually-oriented world. Considering the importance of hearing to one's career, interpersonal relationships, achievement, and safety, it is not surprising to find that the costs of hearing loss are widespread and grave. Readiness is disrupted by noise-induced hearing loss and result in decreased efficiency. For service member, hearing is considered as the most important survival sense. Sound is often the first source of information a warrior has before direct contact with the enemy. As such, hearing is vital for both lethality and survivability. In the military, hearing is fundamental to the instruction, teamwork and reporting skills that are necessary for mission accomplishment. Moreover, hearing is essential for forging relationships and connections with friends and family, fully participating in team and community activities, and experiencing life events. 1.2.2

Objectives After going through this subunit the learners will be able to ● know about the importance of hearing ● understand the effect of hearing in living ● know about the process of hearing ● know about the impacts of hearing loss 1.2.3 Why is hearing important? Hearing empowers us and enriches our lives. Hearing enables us to socialise, work, interact, communicate and even relax. Good hearing also helps to keep us safe, warning us of potential danger or alerting us to someone else's distress. Hearing is very much important for us to be able to live and participate in life more effectively. Hearing problems may lead to feelings of isolation and even depression. Our hearing provides us with an enormous source of information, which forms the bridge between the worlds and how we interact with it. The ability to hear is an integral part of our lives. The importance of good hearing and the consequences of hearing loss are still underestimated. Due to the demographic aging of our society and the growing noise pollution in our environment, the number of people affected by hearing loss continues to rise.

31 1.2.4 What are the consequences of hearing loss? Serious consequences are often faced by the people with untreated hearing loss. These range from disadvantages at work, relationship problems and social isolation, which may even lead to depression. Since the development of speech and language of children is fundamentally dependent on the sense of hearing, the consequences are severe for the children with an untreated hearing loss. 1.2.5 Effect of Hearing in living Every part of our life is influenced by hearing. Hearing accompanies us throughout our life. Hearing enables us to communicate with others. Sounds are there with us in our daily life - some relax us, others cause stress. Much of what we hear we enjoy. There are everyday sounds we no longer even notice, and other noises we would rather just avoid. Our ears help us to communicate with other people, to listen to music or make music ourselves. Our hearing is partly responsible for how well we sleep at night. The quality of our hearing also affects our personal relationships and happiness in our partnerships. Two important things of hearing in living The first important thing is that so many areas of our everyday life are influenced by hearing. that improved hearing has one benefit above all others: enhanced quality of life. Better hearing means better communication - in our relationships with our partners, as well as toward friends and family. Good hearing is not merely of benefit to ourselves : its positive effects are also directly measurable among family, relatives and partners. The second important thing is that we are able to experience life in a more active, healthier way, and with fewer restrictions with better hearing. Stress is reduced, or may be avoided in the first place, concentration is improved, and relaxation is easier. Moreover good hearing also contributes to enhanced personal wellbeing and general health. Healthy hearing allows us to communicate. to socialize with friends, to alert us trouble and work more effectively. Healthy hearing even helps us to relax. So when our hearing declines which happens for most people at some point -it can feel like much of our life is going downhill. The fact is, hearing loss doesn't just affect us physically. It can impact our emotional and social health, too.

32 Left untreated, hearing loss is often related to: lllll Negative attitudes, anger and irritability lllll Stress, fatigue and tension lllll Depression lllll Loneliness lllll Desire to avoid social scenes lllll Unsafe situations due to decreased alertness lllll Lower job performance lllll Trouble remembering things or following directions Many people chalk these symptoms up to old age. But in truth, hearing loss occurs in every age group. It's especially important to catch hearing loss in children since hearing is so essential to language development and hearing skills. But adults young and old also need to watch for signs of hearing loss so that they can make the most of their quality of life. Hearing helps us to lead our everyday lives without limitations. 1.2.6 Everyday situations that can be affected by hearing loss Hearing is important... ... at work lllll Participating in group meetings. lllll Talking on the telephone. lllll Following a conversation in a busy office. ... at social occasions lllll Chatting to friends. lllll Participating in dinner conversation at a restaurant. lllll Interacting with grandchildren. lllll Talking on the telephone. lllll Watching TV together with others.

33 ... for our own safety lllll When walking near busy roads. lllll To be able to hear sounds that alert us to danger like sirens and other traffic signals. lllll So we can be alert to a cry for help. ... when we learn lllll Allowing us to maintain a high level of concentration with little effort. lllll So we are able to communicate with instructors. lllll So we are able to register information accurately. 1.2.7 How hearing works The ear, despite its small size, is a highly complex organ. Acting as sound filter, the ear transforms every sound audible to us into accurate information the brain can prioritise. Each ear consists of delicate and highly complex mechanisms. In "the inner" ear, a sea of tiny sensory cells and nerve fibres pick up sound vibrations and transform them into electrical impulses for the brain to process. The sensory cells and fibres can become damaged if the ear is exposed to strong vibrations over time. If these are unable to heal or be replaced, this can lead to permanent hearing loss. Hearing works in six steps. These are 1. Sound funnels into the ear canal and causes the eardrum to move. 2. The eardrum vibrates with sound. 3. Sound vibrations move through the ossicles to the cochlea. 4. Sound vibrations cause the fluid in the cochlea to move. 5. Fluid movement causes the hair cells to bend. Hair cells create neural signals which are picked up by the auditory nerve. Hair cells at one end of the cochlea send low pitch sound information and hair cells at the other end send high pitch sound information. 6. The auditory nerve sends signals to the brain where they are interpreted as sounds.

34 1.2.8 Anatomy of the ear The ear is made up of three parts: lllll the outer ear (the external ear and the ear canal) lllll the middle ear (the ear drum and three very small bones) lllll the inner ear (the cochlea and auditory nerve) lllll Sound travels through the air in waves resulting in a series of vibrations within the ear. The brain then interprets those signals into meaningful sounds such as speech. Our ears are small but highly complex amplifiers. OUTER EAR At the end of the ear canal, the sound waves hit the ear drum. The ear drum is a thin membrane between the outer ear and middle ear. MIDDLE EAR The ear drum is connected directly to the hammer. The three tiny bones - hammer, anvil and stapes-are the smallest bones in human body, and transmit the mechanical vibrations of the ear drum into the inner ear. INNER EAR The stapes transmits the vibrations via the oval window to the inner ear. In this way, the sound waves arrive in the cochlea, which is filled with fluid. 1.2.9 Hearing Loss Impacts: Health: Hearing loss has been linked to feelings of social isolation, depression, and chronic disease. Safety: Hearing loss can cause threat so far as safety of our service members is considered since it diminishes their ability to send, receive, and respond to commands and warning signals and can result in the misinterpretation, or miscommunication, of critical information.

35 Quality of Life : Hearing helps us to enjoy our life fully which helps to shape the quality of our life. The impact of hearing loss for our military personnel is not only significant on the battlefield but also at home and in their interpersonal lives. It still impedes one's ability to participate in and experience many of life's cherished moments, such as hearing a loved one's voice or laughter, participating in meaningful conversations with friends and family, hearing birds chirping or waves crashing on the beach, or enjoying one's favorite shows or sports on TV. Mission accomplishment : For effective operational planning and execution communication is a must. Hearing loss can disrupt communication and therefore substantially impede a service member's ability to carry out his or her mission. Miscommunication or misinterpretation of a command/order/ instruction, may happen due to hearing loss which can have dire consequences for the service member and the unit at large. Hearing loss also contributes to a hefty economic toll. In addition to the indirect and direct costs associated with veteran compensation for hearing loss and related injuries, which accounts for billions of dollars annually, these injuries also result in expenses in the form of decreased productivity, loss of qualified service members, and recruitment and retraining costs. 1.2.10 Tips for parents Of babies with hearing loss lllll Above all, babies with hearing loss need exactly the same as all children: the love, patience and attention of their parents. lllll Even when their baby is still an infant, parents should try to maintain eye contact when speaking to them. Their facial expressions and gestures should match what they are saying. lllll Hearing loss in your baby should not be a taboo subject: if it is spoken about openly from early on, it is easier for the parents, and later also the child, to treat it as something natural. When children learn to speak lllll Parents should treat their children as normally as possible.

36 lllll Parents should speak as clearly as possible, maintain eye contact with their child when speaking, and teach their child to always look at the person talking to them. If the child does not understand everything they say, they should repeat what they said using different words. lllll Even at a very young age, children should be encouraged to ask if there is anything they have not understood correctly. lllll Parents should make sure that background noise is kept to a minimum when speaking to their child. lllll If parents read picture books to young children, they should bring the pictures to life with sounds as well as reading the text provided (e.g., imitating animal noises). This will enable children to imitate sounds and learn from an early stage how to participate verbally in communal reading. How to successfully master school life lllll Parents should get to the bottom of unusual behaviour at school or concentration difficulties as soon as possible: hearing loss could be the cause. lllll If opting for a mainstream school, a few points should first be clarified with the classroom teacher: the student in question should sit as close to the front as possible (for better comprehension / lip reading where applicable) and the teacher should use an FM/Roger system. lllll Speech or music therapy can also provide additional support for the child. As well as enhancing the child's verbal and communication skills, this can also promote reading and writing skills. 1.2.11 Let us Sum up Blindness separates people from things and deafness separates people from people. Hearing means communication & is an important component of our social lives. The ear is man's most efficient & sensitive sensory organ. If we consider the importance of one's career, interpersonal relationships, achievement & safety, it is not surprising to find the costs of hearing loss are widespread & grave. Operational effectiveness is decreased due to Noise Induced Hearing Loss. Sound is often the source of information a warrior has before direct contact with enemy. As such, hearing is very vital for lethality & survivability. Hearing enables us to socialise, work, interact, communicate & even relax. Safety of an individual as well as other depends on good hearing capacity. Problems

37 of hearing may lead to feeling of isolation & even depression. If treatment is not done for hearing loss, people may face with serious consequences like disadvantages at work, relationship problem, social problem which may lead to depression. There are two important things of hearing in living. Firstly, better hearing means better communication effects in relationship with partners, friends and family. Secondly, better hearing helps us to reduce stress, improve concentration and easy relaxation. On the other hand, effect of hearing loss is observed in our emotional & social life. Hearing helps us lead our everyday life without limitations. Impact of hearing loss is observed at work, at social occasions, safety on road & workplace and in learning practices. Our ear consists of three parts - Outer ear, Middle ear & Inner ear. Sound travels through the air in waves resulting in a sense of vibration within the ear. The brain then interprets those signals into meaningful sounds such as speech. Care is required to be taken for the children having hearing loss problem since the development of speech and language of children is fundamentally dependent on sense of hearing.

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..... Q.2 How many steps are involved in hearing process?

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..... Q.3 How many parts are there in the ear?

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38 Q.4 Write the name of three tiny bones of middle ear.

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..... Q.5 Write one of the important things of hearing in living.

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39 1.3 p p p p

90%	MATCHING BLOCK 12/108	W
Process of hearing & its impediment leading to different types of hearing loss Structure 1.3.1 Introduction 1.3.2 Objectives 1.3.3		

Process of Hearing 1.3.3.1 Anatomy of the Ear lllll External Ear lllll Middle Ear lllll Inner Ear lllll Auditory Pathway 1.3.3.2 Physiology of the Ear lllll Function of the External Ear lllll Function of the Middle Ear lllll Function of the Inner Ear lllll Function of the Auditory Pathway 1.3.4

52%	MATCHING BLOCK 14/108	SA	SED-14 Final.docx (D93662759)
Types of hearing loss 1.3.4.1 On age of onset 1.3.4.2 On the location of the problem 1.3.4.3 Nature of hearing impairment 1.3.4.4 Degree of hearing impairment 1.3.4.5			

On the basis of cause 1.3.5 Impediment caused by different types of hearing loss 1.3.6 "Check Your Progress" 1.3.1. Introduction Hearing comes first and then speaking. Learning process of most students starts with

40 their hearing. One of the earliest link infants develop is between what they hear and what they see. Our speaking vocabularies depend on our hearing vocabularies (the words we understand). Hearing enables us to know more than we can say. Language acquisition and the knowledge of the world that comes with it are naturally occurring process for all students. Deaf or hearing impaired students experience their world in a markedly different way than do their hearing peers. Without early and special help they may not acquire spoken language. For effective education and socialization speech and language are critical avenues in our society. Hearing impaired students may be cut off this processes and become isolated unless early identification is done and helped to compensate for their hearing loss by undergoing corrective medical treatment or learning to use amplification, normal ways of receiving and expressing language, or various types of assistive devices. So, it is very much important to know the process of hearing, types of hearing loss and its impediments leading to different types of hearing loss if we want to know regarding hearing impairment. 1.3.2

Objectives After going through this subunit the learners will be able to

llll know about the Process of hearing llll know the different parts of the Ear llll state the functions of the Ear llll know about the types of hearing loss 1.3.3 Process of Hearing Through our organ- Ear, we are able to acquire hearing, auditory perception, or audition to perceive sound by detecting vibrations, changes in the pressure of the surrounding medium through time, we may hear sound through solid, liquid, or gaseous matter. It is one of the traditional five senses; partial or total inability to hear is called hearing loss. For humans and other vertebrates, hearing is performed primarily by the auditory system. Vibrations (mechanical waves,) are detected by the ear and transduced into

41 nerve impulses which are perceived by the brain (primarily in the temporal lobe). Like touch, audition requires sensitivity to the movement of molecules in the world outside the organism. Both hearing and touch are types of mechanosensation. During hearing, sound waves enter the auditory canal and strike the eardrum, causing it to vibrate.

The sound waves are concentrated by passing from a relatively large area (the eardrum) through the ossicles to a relatively small opening leading to the inner ear. Fig 1 For knowing the hearing process it is necessary to know about the anatomy of the Ear. Anatomy of the Ear To understand properly about the hearing loss, it is necessary to first understand the anatomy of the ear. The ear has three main parts: the outer ear, the middle ear and the inner ear External Ear llll Pinna (auricle) - collects and funnels sound into the ear canal llll Ear canal (external auditory meatus) - directs sound into the ear

42 Middle Ear llll Eardrum (tympanic membrane) - changes sound into vibrations llll Ossicles or Hammer, anvil and stirrup (malleus, incus and stapes) - this chain of three small bones (ossicles) transfers vibrations to the inner ear Inner Ear llll Inner ear (cochlea) - contains fluid and highly sensitive "hair" cells. These tiny hair-like structures move when stimulated by sound vibrations llll Vestibular system - contains cells that control balance llll Auditory nerve - leads from the cochlea to the brain

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External Ear The external or outer ear is the outer most portion of the ear. It has two parts- (i) Pinna and (ii) Ear canal. (i) Pinna (auricle) The Pinna or Auricle is that part of the ear which we can see from outside. The pinna is of conical shaped structure and is attached to the head, on either side, at an angle of 30 to 40 degree. The various portions of pinna play an important role in human 43 hearing.

The entire pinna or auricle is made up of

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an elastic cartilaginous structure and it has no bones. The pinna remains live and active due to the blood and nerve supply. Ear canal (external auditory meatus) The external auditory Canal/Meatus is "S" shaped

tube that opens at the pinna but closed inside by the tympanic membrane or eardrum. The length of an adult auditory canal is about 25 to 40 mm and has a volume of about 2 cc. The outer two third portion of the ear canal is cartilaginous one while the inner one third portions is bony i.e., has bony base. The entire canal is lined with skin and epithelial cells. The outer portion of the ear canal also has hair follicles on the skin. A pair of glands namely cerumenous and sebaceous glands is present on the both sides of the external auditory Canal/Meatus. The ear canal carries out its functions in smooth and appropriate manner due to the blood and nerve supply. Middle Ear The middle ear is a small air filled cavity of about 2cc. It is located between

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the external ear and the inner ear. The middle ear is that portion of the ear, which plays a very vital role in "Bio medical Engineering" activities of the human ear. The

middle ear has two important parts - (i) Eardrum and (ii) Ossicles. . Eardrum (tympanic membrane) It forms the outer wall of the middle ear cavity. The tympanic membrane is commonly known as eardrum. It is a

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very thin membrane and its thickness is about 1/10th mm. The normal tympanic membrane is pinkish in colour. It is roundish oval in shape. It is also concave. It has an area of about 85 to 90 sq.mm. The

conical shape of the tympanic membrane transmits maximul sounds into the middle ear. Ossicles or Hammer, anvil and stirrup (malleus, incus and stapes) The middle ear has three small bones known as the ossicles. These three bones are the smallest bones in human body, which are joined to one another and thus form a chain. The chain is commonly known as ossicular not only transmits sound waves from the middle ear to inner ear but also helps to amplify sound. Malleus: It is a hammer shaped bone which has two handle, its

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long handle is attached to the tympanic membrane and short handle is free. For its typical hammer shape, it is known as "malleus". Incus : This is second smaller bone of the ossicular chain .

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It is an anvil shaped bone 44 with the head and two handle like structures. The head of the malleus is attached to the head of the incus. The long handle of the incus is attached to the third ossicle called Stapes, while the short handle is free. Stapes: This is the smallest bone not only in the middle ear but also in the whole body. It is a stirrup shaped bone with a small head and an oval shapped footplate.

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Among all three ossicles, stapes plays very vital role in both transmission and amplification of sound waves from middle ear to inner ear.

Inner Ear Inner ear is also known as an internal ear. It is also referred to as Bony Labyrinth as it consists of a set of complicated tubes in it. It is also called as vestibule since it has a passage to the other portions of the auditory system and brain. Both the organs of hearing as well as the organ of the balance are situated in the inner ear. The main three parts of the inner ear are Cochlea, Vestibular system and Auditory nerve. Cochlea: Cochlea, the organ of hearing is a snail shaped bony structure. It is made up of a twisting bony shell, which is about 1cc wide and 5 mm broad from base to apex. The cochlea is divided into three fluid-filled parts. Two canals are for the transmission of pressure and the third one is the sensitive organ of Corti, which detects pressure impulses and responds with electrical impulses which travel along the auditory nerve to the brain. It is divided lengthwise by the organ of Corti, which is the main organ of mechanical to neural transduction. Inside the organ of Corti is the basilar membrane, a structure that vibrates when waves from the middle ear propagate through the cochlear fluid - endolymph. The basilar membrane is tonotopic, so that each frequency has a characteristic place of resonance along it. Characteristic frequencies are high at the basal entrance to the cochlea, and low at the apex. Basilar membrane motion causes depolarization of the hair cells, specialized auditory receptors located within the organ of Corti.[5] While the hair cells do not produce action potentials themselves, they release neurotransmitter at synapses with the fibers of the auditory nerve, which does produce action potentials. In this way, the patterns of oscillations on the basilar membrane are converted to spatiotemporal patterns of firings which transmit information about the sound to the brainstem Vestibular system In most mammals, the vestibular system, is the sensory system that provides the leading contribution about the sense of balance and spatial orientation for the purpose of coordinating movement with balance. Together with the cochlea, a part of the auditory system, it constitutes the labyrinth of the inner ear in most mammals, situated in the vestibulum in the inner ear (Figure 1). Since movements consist of rotations and translations, the vestibular system comprises two components: the semicircular canal system, which indicates rotational movements; and the otoliths, which indicates linear accelerations. The vestibular system sends signals primarily to the neural structures that control eye movements, and to the muscles that keep an animal upright. The projections to the former provide the anatomical basis of the vestibulo-ocular reflex, which is required for clear vision; and the projections to the muscles that control posture are necessary to keep an animal upright. The brain uses information from the vestibular system in the head and from proprioception throughout the body to understand the body's dynamics and kinematics (including its position and acceleration) from moment to moment. Auditory nerve The cochlear nucleus in the brainstem receives the sound information from the cochlea which travels via the auditory nerve . From there, the signals are projected to the inferior colliculus in the midbrain tectum. The inferior colliculus integrates auditory input with limited input from other parts of the brain and is involved in subconscious reflexes such as the auditory startle response. The inferior colliculus in turn projects to the medial geniculate nucleus, a part of the thalamus where sound information is relayed to the primary auditory cortex in the temporal lobe. Sound is believed to first become consciously experienced at the primary auditory cortex. Around the primary auditory cortex lies Wernickes area, a cortical area involved in interpreting sounds that is necessary to understand spoken words. Hearing problems may be caused due to the disturbances (such as stroke or trauma) at any of these levels, especially if the disturbance is bilateral. Auditory hallucinations or more complex difficulties in perceiving sound may also occur for the same in some instances. 1.3.4 Types of hearing loss Hearing loss have been classified under various subgroups from various angles. Some categories are as follow: 1.3.4.1 Age of onset Hearing impairment may occur since birth or it may be acquired at any age in life. 46 Thus depending

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on the age of onset we have two groups of hearing loss such as- (A) Congenital hearing loss (B) Adventitious hearing loss (A) Congenital hearing loss It refers to any hearing loss occurring prior to birth or at the time of birth. It may be hereditary or may develop during prenatal or natal period. (B) Adventitious hearing loss

It means that who is born with normal hearing and has acquired speech but later lost hearing ability due to infection, disease or some damage to the hearing mechanism. Another two types of hearing loss can be mentioned here. These are: i)

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Pre-lingual hearing loss- The term pre-lingual hearing loss refers to that hearing loss

developed prior or before the language

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development or language acquisition or language age. The hearing loss developed during the first three years of life is considered as pre-lingual. ii) Post-lingual hearing loss- The term post-lingual hearing loss refers to that hearing loss developed after the language had developed significantly. Post-lingual hearing loss can be sudden or progressive in nature. The person with post-lingual hearing loss finds it more difficult to adjust and adapt to deafness as compared to pre-lingual deafened persons. 1.3.4.2

On the location of the problem Hearing loss is also classified into three types depending upon the location of the hearing problem or defect. There are three types of problems- (A) Conductive hearing loss (B) Sensorineural hearing loss and (C) Mixed hearing loss (A) Conductive hearing loss Hearing problems when are located in the outer ear and middle ear it is called Conductive hearing loss. Conductive loss of hearing is curable. (B) Sensorineural hearing loss and Sensorineural hearing loss takes place when hearing problems arise out of the defects in the inner ear.

47 (C) Mixed hearing loss Combination of conductive loss and sensorineural loss is called Mixed

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hearing loss. 1.3.4.3 Nature of hearing impairment On the basis of nature, hearing impairment can be classified as: A) Gradual hearing impairment B) Sudden hearing impairment A) Gradual hearing impairment- Gradual hearing impairment is also termed as "progressive hearing loss". This refers to a slow deterioration of hearing sensitivity with time. This may be due to any infection or hereditary disorder or aging. Conductive or mixed or sensori-neural hearing impairment can be gradual or progressive in nature. B) Sudden hearing impairment In Sudden hearing impairment, the patient

over night

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may suffer partial or complete hearing loss in either one or both ears. This hearing loss results due to onetime insult to the auditory system. Usually the damage to the auditory system results in a permanent hearing loss. Sudden hearing impairment is usually always of sensori-neural type. 1.3.4.4 Degree of hearing impairment An important consideration of any hearing loss is the degree of impairment. On the basis of

degree hearing impairment

classified into the following sub-groups. Hearing loss or hearing sensitivity is measured in decibels (dB). Normal hearing sensitivity is -10 dB to 25 dB. Degree of Hearing Loss as per the Ministry of Welfare (Govt. of India), Notification No.4283HW, dt. 6.9.86 are given in the following table:

48 Level Types of Impairment dB Levels Speech Percentage of Impairment discrimination Impairment I. Mild dB 26 to 40 100% in better Less than 40% Hearing dB in better ear Impairment ear II. Moderate 41 to 55 dB 50% to 80% in 40% -50% Hearing in better ear better ear Impairment III. Severe 50 to 70 dB 40 % to 50 % 50 % -75% Hearing hearing Impairment impairment in better ear IV. (a) Total No hearing no 100% deafness discrimination (b) Near 91 dB & total above in - do- 100% deafness better ear 75%-100% (c) Profound 71 to 90 dB Less than 40% hearing Loss in better ear Decibel (dB) means a unit of relative loudness of a sound. Zero decibels (0 dB) designate the point at which people with normal hearing can detect even the faintest sound. Each succeeding number of dB indicates a certain degree of hearing loss. 1.3.4.5 On the basis of

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cause Hearing loss can be classified as Exogenous Hearing Impairment, Endogenous Hearing Impairment and Idiopathic hearing impairment. (a) Exogenous Hearing Impairment This refers to hearing loss caused by all factors other than heredity. These factors include: • Prenatal causes (Cause before birth) • Natal causes (Causes at the time of birth) • Post natal causes (Causes after birth) • Infections 49 • Noise • Aging (b) Endogenous Hearing Impairment This includes only "heredity" as the causative factor for hearing loss. Hereditary hearing loss may be transmitted as a dominant or recessive characteristic. (c) Idiopathic Hearing Impairment This refers to hearing loss of an unknown pathology or cause i.e., the causes of hearing loss is unknown. 1.3.5

Impediment caused by different types of hearing loss Due to different types of hearing loss, an individual faces various types of profound consequences life which are restricted below- 1. Socially handicapped 2. Problems in Personal & Social Development 3. Personality Problems 4. Psychological Problems 5. Linguistic Problems 6. Abnormal Emotional Behaviour

1. Socially handicapped Hearing impaired children find it very difficult to adjust with the environment of the society. They suffer from personality disorders & slow temperament, withdrawl or submissiveness etc. They very often fail to understand what other people say due to which they face communication difficulties. 2. Problems in Personal & Social Development Personal & social development problem is very common with the hearing impaired children. The main barrier for them for communicating with other is language-which affects the socialisation process and plays a vital role in their personal & social development. The most significant aspect of these children is their increased dependence on others which causes sense of inferiority. 50 3. Personality Problems Studies show that hearing impaired children face some personality problems. Partial hearing children face more problem than the totally deaf children since partially deaf child gets more frustrated as he tries to reach the level of normals. 4. Psychological Problems Hearing impaired children suffer from behavioural problems. They suffer from inferiority complex since they find themselves helpless in adapting to circumstances that require verbal communication. They compare themselves with their peers and also judge the attitude of society towards them. They feel that they are different from the normal children which hampers the growth and development of their personality. 5. Linguistic Problems The deaf children face difficulty for acquisition of language since language is an auditory vocal process which leads to very slow linguistics development in them. These children have to receive visually while the normal children receive orally. They differ significantly from the normal children so far as language development is considered. These children have a limited vocabulary; they lack comprehension of complex word and words with multiple meaning and concept. Moreover, they are faced with difficulty in understanding complex structure of language and sometimes they have no language exposure. 6. Abnormal Emotional Behaviour Young hearing impaired children very often show abnormal emotional behaviour like throwing something to attract to attention to them. Lack of comprehension may invite tension and resistance in them. They get irritated when they cannot make them understood.

1.3.6 Let us sum up In our society, speech and language are critical avenues for effective education and socialization. To know about Hearing Impairment, it is very much essential to know the process of hearing, types of hearing loss and causes leading to different types of hearing loss.

51 Through our organ- Ear, we are able to acquire hearing, auditory perception, or audition to perceive sound by detecting vibrations, changes in the pressure of the surrounding medium through time, we may hear sound through solid, liquid, or gaseous matter. It is one of the traditional five senses; partial or total inability to hear is called hearing loss. To understand properly about the hearing loss, it is necessary to first understand the anatomy of the ear. The ear has three main parts: the outer ear, the middle ear and the inner ear. To understand properly about the hearing loss, it is necessary to first understand the anatomy of the ear. The ear has three main parts: the outer ear, the middle ear and the inner

100%	MATCHING BLOCK 29/108	SA	8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)
ear. The external or outer ear is the outer most portion of the ear.			

It has two parts-(i) Pinna and (ii) Ear canal. The middle ear has two important parts - (i) Eardrum and (ii) Ossicles. The main three parts of the inner ear are (i) Cochlea, (ii) Vestibular system and (iii) Auditory nerve. Hearing loss has been classified under various subgroups from various angles. Some categories are as follow: (i) On age of onset (ii) On the location of the problem (iii) Nature of hearing impairment (iv) Degree of hearing impairment (v) On the basis of cause. Hearing loss or hearing sensitivity is measured in decibels (dB). Decibels (dB) mean a unit of relative loudness of a sound. Zero decibels (0 dB) designate the point at which people with normal hearing can detect even the faintest sound. Each succeeding number of dB indicates a certain degree of hearing loss. Normal hearing sensitivity is -10 dB to 25 dB. Due to different types of hearing loss, an individual faces various types of profound consequences which are restricted below- 1. Socially handicapped 2. Problems in Personal & Social Development 3. Personality Problems 4. Psychological Problems 5. Linguistic Problems 6. Abnormal Emotional Behaviour

52 1.3.7 "Check your of progress" 1 How many parts are there in the Ear?

.....

..... 2 What is the function of ossicle?

.....

..... 3 Write the name of main parts of the inner ear.

.....

..... 4 What is the structure of cochlea?

.....

..... 5 What is the value of normal hearing?

.....

53 1.4 p

86%	MATCHING BLOCK 28/108	W	
Definition of hearing loss, demographics & associated terminologies: deaf/deafness/hearing impaired/disability/handicapped Structure 1.4.1 Introduction 1.4.2			

Objectives 1.4.3 Definition of hearing loss 1.4.4 Different terminologies used in hearing impaired 1.4.5 "Check your progress" 1.4.1 Introduction

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Hearing is the main sensory pathway through which speech and verbal communication develop. A child is likely to speak incorrectly

if he/she hears imperfectly. Hearing also influences learning and other aspects of maturation. So it is important for us to know about the normal hearing sensitivity .A normal hearing sensitivity means the person has no known pathology or known history of infection or any kind of disorder and without any kind of significant difficulties, is able to hear even the softest sound or whisper. Generally a normal hearing sensitivity level is -10 dB HL to 25 dB HL. the implications of an auditory impairment change due to change of situation and person. Different types of terms are used to describe the persons who are suffering from hearing problem. Speech and hearing experts generally use these terms interchangeably. This is not correct, because meaning of each term is different. So it is essential for us to know the meaning of these terminologies 1.4.2

Objectives After going through this subunit the learners will be able to •
know the definition of

hearing loss • know about the different terminologies of hearing impairment • know the steps involved in hearing process 54 1.4.3 Definition of hearing loss Any degree of impairment of the ability to apprehend sound is called

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hearing loss. Hearing loss, also known as hearing impairment, is a partial or total inability to hear. It may occur in one or both ears .

Hearing impaired are those in whom the sense of hearing is non functional for ordinary purposes of life. They do not hear/understand sound at all even with amplifier. Hearing loss exists when there is diminished sensitivity to the sounds normally heard. The people who have relative insensitivity to sound in the speech frequencies come under the terms hearing impairment or hard of hearing. According to the increase in volume above the usual level necessary before the listener can detect it the severity of a hearing loss is categorized.

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Deafness is defined as a degree of loss such that a person is unable to understand speech even in the presence of amplification.

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In profound deafness, even the loudest sounds produced by an audiometer (an instrument used to measure hearing by producing pure tone sounds through a range of frequencies) may not be detected. In total deafness, no sounds at all, regardless of amplification or method of production, are heard.

Description Sound can be measured accurately. The term decibel (dB) refers to an amount of energy moving sound from its source to our ears or to a microphone. A drop of more than 10 dB in the level of sound a person can hear is significant. Sound travels through a medium like air or water as waves of compression and rarefaction. These waves are collected by the external ear and cause the tympanic membrane (ear drum) to vibrate. The chain of ossicles connected to the ear drum, the incus, malleus, and stapes carries the vibration to the oval window, increasing its amplitude 20 times on the way. There the energy causes a standing wave in the watery liquid (endolymph) inside the organ of Corti. (A standing wave is one that does not move. A vibrating cup of coffee will demonstrate standing waves.) The configuration of the standing wave is determined by the frequency of the sound. Many thousands of tiny nerve fibers detect the highs and lows of the standing wave and transmit their findings to the brain, which interprets the signals as sound. To summarize, sound energy passes through the air of the external ear, the bones of the middle ear and the liquid of the inner ear. It is then translated into nerve impulses, sent to the brain through nerves and understood there as sound. It follows that there are five steps in the hearing process:

55 • air conduction through the external ear to the ear drum • bone conduction through the middle ear to the inner ear • water conduction to the Organ of Corti • nerve conduction into the brain • interpretation by the brain. If any problems arise in the ear in these steps due to anatomy and physiology of the ear or any problems in brain then comes hearing loss. Hearing can be interrupted in several ways at each of the five steps. Ear wax, foreign objects, infection, and tumors can block the external ear canal. Overgrowth of the bone, a condition that occurs when the ear canal has been flushed with cold water repeatedly for years, can also narrow the passage way, making blockage and infection more likely. The ear drum is so thin a physician can see through it into the middle ear. Sharp objects, pressure from an infection in the middle ear, even a firm cuffing or slapping of the ear, can rupture it. It is also susceptible to pressure changes during scuba diving. Several conditions can diminish the mobility of the ossicles (small bones) in the middle ear. Otitis media (an infection in the middle ear) occurs when fluid cannot escape into the throat because of blockage of the eustachian tube. The fluid that accumulates, whether it be pus or just mucus and dampens the motion of the ossicles. A disease called otosclerosis can bind the stapes in the oval window and thereby cause deafness. All the conditions mentioned so far, that occur in the external and middle ear, are causes of conductive hearing loss. The second category, sensory hearing loss, refers to damage to the Organ of Corti and the acoustic nerve. The leading cause of sensory hearing loss is prolonged exposure to loud noise. A million people have this condition, many identified during the military draft and rejected as being unfit for duty. The cause is often believed to be prolonged exposure to rock music. The other leading cause of noise induced hearing loss (NIHL) is occupational noise exposure and is ample reason for wearing ear protection on the job. A third group of people over 65 have sensory hearing loss due to aging. Both NIHL and presbycusis are primarily high frequency losses. In most language, it is the high frequency sounds that define speech, so these people hear plenty of noise, they just cannot easily make out what it means. They have particular trouble selecting out speech

56 from background noise. Brain infections like meningitis, drugs such as the aminoglycoside antibiotics (streptomycin, gentamycin, kanamycin, tobramycin), and Meniere's disease also cause permanent sensory hearing loss. Meniere's disease combines attacks of hearing loss with attacks of vertigo. The symptoms may occur together or separately. High doses of salicylates like aspirin and quinine can cause a temporary high frequency loss. Prolonged high doses can lead to permanent deafness. There is a hereditary form of sensory deafness and a congenital form most often caused by rubella (German measles). Sudden hearing loss—at least 30dB in less than three days is most commonly caused by cochleitis, a mysterious viral infection. The final category of hearing loss is neural. Damage to the acoustic nerve and the parts of the brain that perform hearing are the most likely to produce permanent hearing loss. Strokes, multiple sclerosis, and acoustic neuromas are all possible causes of neural hearing loss. Hearing can also be diminished by extra sounds generated by the ear, most of them from the same kinds of disorders that cause diminished hearing. These sounds are referred to as tinnitus and can be ringing, blowing, clicking, or anything else that no one but the patient hears. 1.4.4 Deferent terminologies used in hearing impaired

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The term "hearing loss" is used whenever specific reference is being made to a hearing impairment, which is of a particular intensity magnitude. It is measurement made on an audiometer and reported in decibels (dB). Hearing Impairment is a genetic term referring to any organic hearing problem regardless of etiology or degree. It is a deviation or change for the worse in either structure or function which

is

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usually outside the range of normal .It generally includes a broad range of hearing disability, which ranges in severity from mildly hearing impaired to profoundly deaf.

There is often confusion over the terms "hearing impaired," "hard of hearing," "deaf," and "deafened," both in definition and appropriateness of use. 'Hearing impairment', 'hearing disability' and 'hearing handicap' are not synonymous term. The term "hearing impaired" is often used to describe people with any degree of hearing loss, from mild to profound, including those who are deaf and those who are hard of hearing. Many individuals who are deaf or hard of hearing prefer the terms "deaf" and "hard of hearing," because they consider them to be more positive than the 57 term "hearing impaired," which implies a deficit or that something is wrong that makes a person less than whole. "Deaf" usually refers to a hearing loss so severe that there is very little or no functional hearing. "Hard of hearing" refers to a hearing loss where there may be enough residual hearing that an auditory device, such as a hearing aid or FM system, provides adequate assistance to process speech. "Deafened" usually refers to a person who becomes deaf as an adult and, therefore, faces different challenges than those of a person who became deaf at birth or as a child. Deaf, deafened, and hard of hearing individuals may choose to use hearing aids, cochlear implants, and/or other assistive listening devices to boost available hearing. Alternatively, or in addition, they may read lips, use sign language, sign language interpreters, and/or captioning. People who are deaf or hard of hearing may have speech that is difficult to understand due to the inability to hear their own voice. The term "Deafness" refers to hearing disabilities that preclude successful processing of linguistic information through audition, with or without a hearing aid.

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The term "hearing handicap" refers to the effect of the hearing impairment on the person's everyday situations and the disadvantages imposed by the impairment sufficient enough to affect one's personal efficiency in the activities of daily living. Thus in other words, the influence of the hearing impairment is the hearing handicap. According to the definition adopted by Ministry of Social Justice and Empowerment, Govt. of India and Persons with Disability Act (P.W.D. - 1995-96), "hearing handicap" refers to hearing loss of 60dB HL or more on the better ear. 1.4.5

Let us sum up Hearing is the main source of development of speech and verbal communication. So it requires perfect hearing to develop a child properly. Normal hearing sensitivity means a person has no infection or disorder and is able to hear properly. Its level is -10dB HL to 25dB HL. Auditory impairment varies due to change of situation and person. Hearing loss means any degree of impairment. Hearing impaired person does not hear at all with the amplified speech. The severity of the hearing loss is categorized according to the increase in volume above normal level. Profound deafness means unable to detect the

58 loudest sounds and total deafness means no sounds at all. Unit of sound is decibel (dB). Sound energy passes through the air of the external ear, the bones of the middle ear and liquid of the inner ear. It is then translated into the nerve impulses which are sent to the brain through nerve. If any problem comes in the ear, hearing loss arises. The external ear canal can be blocked with ear wax, foreign objects, infections and tumor. Several conditions like Otitis media or otosclerosis can diminish the mobility of the ossicles in the middle ear and can cause deafness. Conductive hearing loss is caused due to all above conditions. Sensory hearing loss refers to damage to the organ of Corti and acoustic nerve which is caused due to prolonged exposure to loud noise, aging, brain infection like meningitis, drugs like aminoglycoside, Meniere's disease, High doses of salicylate like aspirin and quinine etc. Neural hearing loss is caused due to strokes, multiple sclerosis and acoustic neuromas. Depending upon the hearing loss, different terms are – (i) hearing impaired, (ii) hard of hearing, (iii) deaf, (iv) deafened, (v) deafness and (vi) hearing handicap.

- 1.4.6 "Check your progress" 1. What is the value of normal hearing sensitivity level?
-
-
- 2. What is hearing loss?
-
-
- 3. How many steps are involved in hearing process?
-
-
-
- 59 4. What is Otitis Media?
-
-
- 5. What do you mean by 'Hard of hearing'?
-
-
-

60 1.5 p

62%	MATCHING BLOCK 36/108	W
Challenges arising due to Congenital and acquired hearing loss Structure 1.5.1 Introduction 1.5.2 Objectives 1.5.3 Congenital hearing loss 1.5.3.1 Congenital causes 1.5.3.2 Types of Congenital		

causes 1.5.4 Acquired hearing loss 1.5.4.1 Acquired Causes 1.5.5 Challenges 1.5.5.1 Impact of hearing loss 1.5.5.2 Challenges arising due to congenital hearing loss 1.5.5.3 Challenges arising due to acquired hearing loss 1.5.6 "Check your progress" 1.5.7 References 1.5.1 Introduction

100%	MATCHING BLOCK 38/108	SA	SED-14 Final.docx (D93662759)
The main sensory pathway through which speech and verbal communication develop			

is hearing. Due to imperfect hearing

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a child is likely to speak incorrectly. Again, hearing also influences learning and other aspects of maturation.			

Our knowledge of the world around us is reduced because of hearing impairment.

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It also adversely affects the child's performance in learning.

The types of hearing loss are discussed in previous chapter. It is seen that congenital and acquired hearing loss comes under one type of hearing loss. 1.5.2 Objectives After going through this sub unit, the learners will be able to: • Understand the meaning of congenital and acquired hearing loss
61 • Understand the types of congenital hearing loss • Understand the impact of hearing loss • Know the challenges arises due to congenital and acquired

82% **MATCHING BLOCK 40/108** **W**

hearing loss 1.5.3 Congenital hearing loss Congenital hearing loss is any hearing loss that is present at birth.

The cause can be genetic and hereditary, caused by issues during pregnancy or caused from an issue during the birthing process.

93% **MATCHING BLOCK 41/108** **W**

The causes of hearing loss and deafness can be divided into congenital causes and acquired causes. 1.5.3.1 Congenital causes Congenital causes may lead to hearing loss being present at or acquired soon after birth. Hearing loss can be caused by hereditary and non-hereditary genetic factors or by certain complications during pregnancy and childbirth, including: • maternal rubella, syphilis or certain other infections during pregnancy; • low birth weight; • birth asphyxia (a lack of oxygen at the time of birth); • inappropriate use of particular drugs during pregnancy, such as aminoglycosides, cytotoxic drugs, antimalarial drugs and diuretics; • severe jaundice in the neonatal period, which can damage the hearing nerve in a newborn infant.

Hearing loss may occur if any part of the ear is defected. It may be before birth or after birth. If it is shown in birth time then it is called congenital hearing loss. There is a range of congenital ear, nose and throat problems - some occurring alone and others as part of a syndrome. The underlying causes are varied but, as with any congenital disorder, they can be broadly divided into chromosomal abnormalities (mutations and inherited problems), diseases associated with prenatal infection, maternal drug abuse, environmental factors, iatrogenic causes and abnormalities of unknown aetiology.

62 1.5.3.2 Types of Congenital causes An abnormality of the External Ear, Middle Ear & Inner Ear may lead to congenital hearing loss. Various types of abnormality are shown in these types. Such as: Anotia/microtia Anotia is the total absence of the auricle, most often with narrowing or absence of the external auditory meatus. Strictly speaking, in microtia, there is some degree of malformation of the external ear (\pm narrowing or absence of the external auditory meatus) in contrast to a 'small ear' which is normally formed, as seen in Down's syndrome. These conditions may be unilateral or bilateral - the latter is less common. Macrotia This is a large but normally formed auricle, not usually associated with functional abnormality. It is defined as an ear which is two or more standard deviations from the mean. True macrotia is rare but may be seen in association with vascular malformations, hemihypertrophy, neurofibromatosis and secondary to haemangioma. It is more conspicuous if the ear is prominent too. Surgical correction can be carried out. The Antia-Buch technique, which involves freeing the helical flap and repositioning it, is the most commonly used procedure. External auditory meatus atresia Congenital atresia of the external auditory canal is caused by a failure of canalisation of the epithelial plug portion of the first branchial cleft. This results in the formation of a membranous or bony (or both) plate at the level of the tympanic membrane. There may be associated ossicular malformations. Abnormalities of the middle ear In the absence of other problems, hearing loss associated with these abnormalities is often picked up during the course of routine infant and childhood audiological assessments. More specialist assessment and management is carried out in the ENT department. Tympanic membrane abnormalities The tympanic membrane may be small (eg, congenital rubella syndrome), distorted (eg, VATER syndrome [Vertebral anomalies, Anal atresia, Tracheo-oesophageal fistula, (o) Esophageal atresia and Renal anomalies and radial dysplasia]) or replaced by fibrous tissue or a bony plate.

63 Ossicular abnormalities • There are a number of different ossicular abnormalities, which may affect one or more of the ossicles. • There may be absence of part or all of these bones and there can also be varying degrees of fusion. • The associated intratympanic muscles are often affected and there can be an aberrant course of the facial nerve. • Surgery can go some way towards correcting this. Abnormalities of the tympanic cavity Congenital cholesteatoma (2-3% of all cholesteatomas) It is usually unilateral, may be bilateral, and presents as conductive hearing loss. The tympanic membrane is intact and overlies a white mass (this varies from a small pearl size to filling the entire middle ear) which can act as a source of infection. CT scanning to assess the lesion is advisable as this will dictate the surgical approach. Vascular abnormalities These include the presence in the middle-ear cavity of internal carotid artery aneurysms, jugular bulb abnormalities and very rare cases of an anomalous internal carotid artery. These vascular abnormalities tend to present with limited functional problems but a pulsatile red, smooth mass may be seen behind the tympanic membrane on examination. Their presence should be confirmed in a specialist unit, as it will have implications in considering any future intervention in. Congenital perilymph fistula This may occur, linking the perilymphatic space of the inner ear to the middle-ear cavity. There are often associated deformities. Children present with fluctuating and progressive sensorineural hearing loss \pm tinnitus, vertigo and, occasionally, recurring meningitis. Diagnosis is confirmed on CT scanning and surgical correction can be carried out. Abnormalities of the inner ear The inner ear is the collection of structures within the bony labyrinth: the semicircular canals, the vestibule and the cochlea. Congenital abnormalities here are rare and will result in deafness in addition to possible dizziness, and account for up to 20% of children with sensorineural hearing loss.

64 People with abnormalities of the inner ear are at increased risk of developing recurrent meningitis or a perilymphatic fistula. Middle-ear infections should therefore be treated aggressively. There is also increased risk of developing cerebrospinal fluid leaks after minor head injuries and therefore it is advisable to avoid contact sports. These deformities are typically classified according to embryonic developmental stages. Any of the structures can be involved.

Cochleosaccular dysplasia is probably the most common form of inner-ear congenital deformity and is characterised by a collapse of the cochlear duct and saccule. 1.5.4 Acquired hearing loss Acquired hearing loss is a hearing loss that appears after birth. The hearing loss can occur at any time in one's life due to illness or injury. The problems may occur in any part of the ear. Following are examples of conditions that can cause acquired hearing loss in children: 1.5.4.1 Acquired causes Following are the

63% MATCHING BLOCK 42/108

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acquired causes which may lead to hearing loss at any age : • infectious diseases such as meningitis, measles and mumps, Encephalitis, • Chicken pox, Flu; • chronic ear infections; • collection of fluid in the ear (otitis media); • use of particular drugs, such as

some antibiotic and antimalarial medicines; •

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injury to the head or ear; • excessive noise, including occupational noise such as that from machinery and explosions, and recreational noise such as that from personal audio devices,

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concerts, nightclubs, bars and sporting events; • ageing, in particular due to degeneration of sensory cells; • wax or foreign bodies blocking the ear canal. Chronic otitis media is

the leading cause of hearing loss among children, In the previous unit it is known that on the location of the problem, hearing loss is also classified into three types. These are • Conductive loss
65 • Sensorineural hearing loss and • Mixed hearing loss These three types of hearing losses are common for congenital hearing loss and acquired hearing loss. It can vary in degrees of severity and occur in all age groups; however, the elderly are most commonly the hearing impaired. Hearing is broken up into two different parts: • The conduction of the sound and • The nerve processing of the sound. On the basis of anatomy and the place of problem the distinction is made. • Conductive Loss: Problems with sound waves travelling to the cochlear (the external and middle ear) • Sensorineural Loss: Nerve related problems involving the cochlear and the inner ear • Mixed hearing loss: Is a combination of both conductive and sensorineural hearing loss at the same time. Both the middle and inner ear are involved. 1.5.5 Challenges Hearing and speech are essential tools of learning, playing and developing social skills for a child. Children learn to communicate by imitating the sounds they hear. If they have a hearing loss which is undetected and untreated, they can miss much of the speech and language around them. This results in delayed speech/language development, social problems and academic difficulties. These children score a relatively low score on IQ testing. In general their performance in academic subjects of the school is also poor. They face difficulty in personal-social adjustment. 1.5.5.1 Impact of hearing loss Functional impact Individual's poor ability to communicate with others is

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one of the main impacts of hearing loss. Spoken language development is often delayed in children with

deafness. On the academic performance of children

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hearing loss and ear diseases such as otitis media can have a significantly adverse effect.

However, when opportunities are provided for people with hearing loss to communicate, they can participate on an equal basis

66 with others. The communication may be through spoken/-written language or through sign language. Social and emotional impact Limited access to services and

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exclusion from communication can have a significant impact on everyday life, causing feelings of loneliness, isolation and frustration, particularly among older people with hearing loss.

If a person with congenital deafness has not been given the opportunity to learn sign language as a child, he or she may feel excluded from social interaction. Economic impact

100% MATCHING BLOCK 48/108

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Children with hearing loss and deafness rarely receive any schooling

in developing countries.

86% MATCHING BLOCK 49/108

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Adults with hearing loss also have a much higher unemployment rate. A higher percentage of people with hearing loss

66% MATCHING BLOCK 50/108

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among those who are employed, are in the lower grades of employment compared with the general workforce. Unemployment rates among this group will decrease by improving access to education and vocational rehabilitation services, and raising awareness especially among employers about the needs of people with hearing loss.

Hearing loss substantially affects social and economic development in communities and countries also in addition to the economic impact of hearing loss at an individual level. 1.5.5.2 Challenges arising due to congenital hearing loss In congenital hearing loss child has not acquired the basic language and speech patterns which are required in intellectual functioning, academic success and social adjustment. Congenital hearing loss is associated with certain behavioural problems. In adapting to circumstances that requires verbal communication the H.I (hearing impaired) children feel invariable inferior and helpless. They have a poor self concept which damages the development of personality (Loeb and Saregiani, 1986). Language development of the congenitally deaf children differs markedly from that of the normal. In fact, the normal child learns the language, but the HI child is taught language. They process language and linguistic utterances visually. In congenital hearing loss cognitive functioning also does not develop. They face difficulty in understanding abstracts concepts. They possess poor comprehension ability because of limited vocabulary. 67 In case of congenital hearing loss of mild or moderate level, child can achieve his/her goal with the help of proper guidance, treatment and use of proper devices. But in case of severe or profound level child cannot progress according to his/her goals. In case of congenital sensori-neural hearing loss, child faces many problems in various areas such as academic, social etc. 1.5.5.3 Challenges arising due to acquired hearing loss In addition to the challenges discussed in the case of congenital hearing loss, acquired hearing loss children may face following challenges. Acquired hearing loss is of two types- (i) Pre-lingual and (ii) Post-lingual. If a child suffers from hearing loss before he/she has achieved basic competency in his or her primary language (i.e. occurring before age 3 years (Schein, 1987) then it is called Pre lingual hearing loss. Whereas post lingual hearing loss is that which occurs after the basic acquisition of language i.e.in later childhood or adulthood (Vernon and Andrews, 1990). At the age of one year or a little more, a child with normal hearing begins to speak and he or she acquires many pre-verbal skills (skills that are learned by the child before acquiring speech and language). Also develops a significant amount of receptive language (understanding of language) in the first year of life. A child with hearing impairment does not get a chance to learn many of the pre-verbal skills (for e.g. imitation of voice) since the development of these skill is related to hearing and thus begins to lag behind average children of the same age. As the development of many of the pre-verbal skills (for e.g. imitation of voice) is related to hearing ,a child with hearing impairment does not get a chance to learn these skills and thus begins to lag behind average children of the same age. After the stage of learning basic language if a child develops a hearing loss he or she would have an advantage over a child who has had hearing loss pre-lingually. However, children with post –lingual hearing loss is at risk for losing language and speech skills that they have acquired if proper care is not taken for him in advance. 1.5.6 Let us sum up Speech and verbal communication of a child is developed on the basis of hearing capacity. Effect of poor hearing may affect his speaking, learning and performance. Congenital hearing loss is any hearing loss being present or acquired soon after the birth due to

68 genetic factors or by certain complication during pregnancy and child birth. An abnormality of the external ear, middle ear and inner ear may lead to congenital hearing loss. Acquired hearing loss is a hearing loss that appears after birth which may occur at any time in any part of the ear due to illness or injury. Hearing loss is classified into three types – (i) Conductive loss, (ii) Sensorineural loss and (iii) Mixed hearing loss. If a child is having any hearing loss problem which is not detected and treated, then there may be great impact which may result in delayed speech/ language development, social problems and academic difficulties. He may face personal – social adjustment. Moreover, there may be functional impact, emotional impact as well as economic impact on his life due to this. In addition to different impacts of hearing loss at an individual level, hearing loss substantially affects the social and economic development in communities and countries. In congenital hearing loss, child does not acquire language and speech patterns which are required in intellectual functioning, academic success and social adjustment. Due to this he/she suffers from inferiority complex and feels helpless which affects his/ her day to day life. Acquired hearing loss is of two types – (i) Pre- lingual and (ii) Post- lingual. Pre- lingual hearing loss is that which occurs before the child has achieved basic competency in his/ her primary language. Post- lingual hearing loss is that which occurs after the basic acquisition of language. Apart from speaking at the age of one year, a normal hearing child acquire many pre- verbal skills which is not possible for a child with hearing loss and thus lag behind the average child of his age. However, child with post –lingual hearing loss is at risk for losing language and speech skills that acquired if proper care is not taken for him in time.

1.5.6 “Check your progress” 1. What do you mean by congenital hearing loss?

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- 2. Write two types of abnormality for congenital causes.
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- 69 3. What do you mean by tympanic membrane abnormality?
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- 4. What is the leading cause of hearing loss among children?
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- 5. Write down one challenge arising due to acquired hearing loss?

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70 Unit : 2.1
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Characteristics of learners with hearing loss and impact of different degree of hearing impairment on communication.
Structure 2.1.1 Introduction: 2.1.2
Objective: 2.1.3 What are Symptoms of children with Hearing Impairment? 2.1.4
Characteristics of learners with Hearing Loss. 2. 1.5 Characteristics of learners. 2.1.5.1 “Check your progress” - 1 2.1.6
Impact of different degree of Hearing Impairment on communication. 2.1.6.1
Importance of Hearing: 2.1.6.2 The process of hearing: 2.1.6.3 Types of Hearing Loss: 2.1.7 Let us Sum Up 2.1.7.1 “Check your progress” 2.1.8 Answer to Check Your Progress. 2.1.9 Unit-End Exercises 2.1.1 Introduction Hearing is the ability to perceive sound.

A person suffering from hearing impairment has difficulty in perceiving or identifying sound clearly due to auditory problems. The impairment may be unilateral or bilateral ears. Due to this problem child can face problem in verbal communication skill and It can affect several development areas personal-social, cognitive and academic. Unit : 2 ppppp Impact of Hearing Loss

71 2.1.2

Objective: lllll To understand symptom of hearing loss during infancy and child hood. lllll To understand characteristics of learners having hearing loss. lllll To understand different degrees and communication of hearing loss. lllll To understand, and address the challenge in educating student with hearing loss. lllll To understand different terminology in hearing loss.

2.1.3 What are the symptoms of children with hearing impairment? During infancy: lllll 1-3 months old no response to sudden sound such as banging of door or ringing of doorbell. lllll 4-6 months old unable to locate the sound source. lllll 7-9 months old do not look at the person being mentioned, e.g. "Where is Uncle Joy?" lllll 10-12 months old no response to their names being called or frequently used words or phrases. During childhood: lllll Delayed response to sound lllll Cannot hear clearly what others are saying lllll Show difficulty in locating the sound source lllll Pay more than usual attention to speaker's facial expression and lip movement while listening. lllll Give irrelevant answers or misinterpret instructions lllll Request for repetition during conversation lllll Show poorer ability to understand speech in a noisy environment lllll Tend to turn up the sound volume of television lllll Incorrect pronunciation

72 lllll Delayed language development lllll Poor attention in class lllll Frequent use of gestures to express themselves, e.g. pointing to what they want lllll Easily irritated as a result of communication difficulty. 2.1.4 Characteristics of learners with hearing loss lllll Deaf/Deafness refers to a person who has a profound hearing loss and uses sign language. lllll Hard of hearing refers to a person with a hearing loss who relies on residual hearing to communicate through speaking and lip-reading. lllll Hearing impaired is a general term used to describe any deviation from normal hearing, whether permanent or fluctuating, and ranging from mild hearing loss to profound deafness. lllll Residual hearing refers to the hearing that remains after a person has experienced a hearing loss. It is suggested that greater the hearing loss, the lesser the residual hearing. 2.1.5

Characteristics of learners: lllll Language and speech- The ability to learn language and speech is the most severely affected area of development of hearing impairment. lllll Intellectual ability- Thinking process of normal and deaf children are found to be similar. Also cognitive abilities of deaf children are essentially unimpaired expect in those cases which involve language experience. But deaf children are retarded in intellectual task which requires verbal skill and highly performance in non- verbal intelligence. lllll Academic Performance- Hearing impaired children are frequently handicapped in various degree of hearing loss and it effect on educational performance and particularly and particular handicapped in reading which relies heavily upon language skill. lllll Adjustment of social interaction Our social interaction, depends upon communication. So deaf children have communication problems that's why they have problem of social interaction such children live in a world of isolation and

73 from a group of their own an association of the deaf for their common interest and interaction. lllll Behavioral problem- Deaf learners feel invariably inferior and helpless in adapting to circumstances that require verbal communication. So regard non-verbal communication absence of verbal/they have poor self concept which damages the development of personality. lllll Socially handicapped - Learners with hearing loss can not adjust with society because they suffer from communication difficulty and fail to understand what others hearing people say. lllll Problem in personal and social development- Language becomes a barrier for deaf learner for purpose of communication with others so this affects the socialization process and plays a vital role in the personal and social development of hearing loss learner. lllll Personality problem- Hearing difficulty may create more personality problem because a deaf learner is more frustrated as he/she tries to reach the level of the normal and a totally deaf child seems reconciled to his take. 2.1.5.1 "Check your progress" - 1 l) During infancy what are the symptoms of children with hearing impairment?

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..... 2) What is hard of hearing?

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..... 3) What is deafness?

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74 4) What is Residual hearing?

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..... 5) What is Hearing impairment?

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..... 6) Mention any three

characteristics of learners with hearing loss?

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..... 2.1.6 Impact of different degree of hearing impairment on communication.

Hearing impairment results from a number of causes and is usually characterized by the type and degree of hearing loss. Type of hearing loss is related to the site of the disorder within the auditory system, and degree of loss is related to the extent that the disorder is infringing on normal function. Defining both the type and degree of hearing loss is a cornerstone of audiology. 2.1.6.1. Importance of Hearing: The sense of hearing is essential as: lllll It is the foundation for development of verbal language lllll It helps the person to live effectively in the environment lllll It helps in better communication even over long distances. 2.1.6.2 The process of hearing: lllll The physical processing of hearing occurs in three groups of structures, commonly known as the outer, middle, and inner ears.

75 The outer ear has three main components: the auricle, the ear canal or meatus, and the outer layer of the eardrum or tympanic membrane. The outer ear serves to collect and resonate sound, assist in sound localization, and function as a protective mechanism for the middle ear. The middle ear is an air-filled space located within the temporal bone of the skull. It contains the ossicular chain, which consists of three contiguous bones suspended in space, linking the tympanic membrane to the oval window of the cochlea. The middle ear structures act as an impedance matching device, providing a bridge between the airborne pressure waves striking the tympanic membrane and the fluid-borne traveling waves of the cochlea. The inner ear contains the cochlea, which is the sensory end organ of hearing. The cochlea consists of fluid-filled membranous channels within a spiral canal that encircles a bony central core. The sound waves, transformed into mechanical energy by the middle ear, set the fluid of the cochlea into motion in a manner consistent with their intensity and frequency. Waves of fluid motion impinge on the membranous labyrinth and set off a chain of events that result in neural impulses being generated at the VIIIth cranial nerve which is perceived by the auditory cortex in the temporal lobe in the brain. Impediment to sound across any of the three structures can result in loss in hearing acuity called as hearing loss.

2.1.6.3 Types of hearing loss: According to anatomical origin, hearing loss are of three major types :

- Conductive hearing loss - pertaining to the outer and middle ear
- Sensorineural hearing loss - pertaining to the inner ear only.
- Mixed hearing loss -pertaining to the outer/middle and inner ear.

According to the perceived loudness, hearing loss can be categorized as :

- Hearing sensitivity loss
- Suprathreshold hearing disorders
- Functional hearing loss

Hearing sensitivity loss is the most common form of hearing disorder. It is characterized by a reduction in the sensitivity of the auditory mechanism so that sounds need to be of higher intensity than normal before they are perceived by the listener. Suprathreshold disorders are less common, may or may not include hearing sensitivity loss, and often result in reduced ability to perceive speech properly.

76 Functional hearing loss is the exaggeration or fabrication of a hearing loss. In addition to type of loss, a hearing disorder can be described in terms of time of onset, time course, and whether one or both ears is involved. A hearing disorder can be described by the time of onset:

- Congenital: present at birth
- Acquired: obtained after birth
- Adventitious: not congenital; acquired after birth; coming by chance/accidental

Hearing disorder can also be described by its time course:

- Acute: of sudden onset and short duration
- Chronic: of long duration
- Sudden: having a rapid onset
- Gradual: occurring in small degrees
- Temporary: of limited duration
- Permanent: irreversible
- Progressive: advancing in degree
- Fluctuating: aperiodic change in degree

In addition, hearing disorder can be described by the number of ears involved:

- Unilateral: pertaining to one ear only
- Bilateral: pertaining to both ears

Sensitivity Loss Degree of hearing sensitivity loss is commonly defined on the basis of the audiogram. Normal sensitivity ranges from -10 to +25dBHL. All other classifications are based on generally accepted terminology. These terms might be used to describe the pure-tone thresholds at specific frequencies, or they might be used to describe the puretone average or threshold for speech recognition. Pure-tone average is the mean of thresholds at 500, 1000, and 2000 Hz.

General guideline for describing degree of hearing loss

Degree of loss Range (in dB HL) Normal -10 to 25 Mild 26 to 40 Moderate 41 to 55 Moderately severe 56 to 70 Severe 71 to 90 Profound >90

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Communication Speech is normal and normal pattern of development with good auditory perceptive skills. Speech and language developments are within normal limits. May exhibit occasional auditory perception problems some educational retardation likely. Language development and speech are mildly affected. Difficulty with rarely used words, minor differences in meaning of words and idioms, defective articulation but still intelligible speech loss quality and inflection almost normal. Reading and writing delayed. Vocabulary training, reading and writing to be special attended train addition to schooling. Grammar, vocabulary, articulation and voice are affected understand in loud speech .Early speech is unintelligible. Even with hearing aids show difficulty in understanding. Reading and writing need special assistance. Speech and language donot developments spontaneously. Sound produced very loudly at a distance of 1ft. and near of the ear. The voice will be high-pitched and articulation distorted. They donot rely on hearing for their communication. Language and speech develop only by training and they are educationally deaf. Communicate mostly through gestures, voice, inflection, articulation greatly affected. Required regular speech and language training regarding subject's expert. Type of Impairment Ability to perceive Speech dB level sound discrimination 0 to 25 dB HL Normal Hearing Normal Normal 26-40 dB HL Mild Hearing Loss Difficult to identify 100% better ear soft sound such as whispering and others. "41-55 dBHL Moderate Hearing Loss Unable to hear clearly 50% to 80% what others are saying better ear during conversation. Hearing aids are necessary. 56-70 dB HL Moderatey-Severe Hearing Unable to clearly hear 40% to 50% loud noises such as better ear telephone ring Severe 71-90 dBHL Severe Hearing Loss Can only hear very No loud noises and discrimination sounds such as shouting or vacuum cleaner noise. &t;90 dB HL Profound Hearing Loss Difficult to perceive No any sound discrimination

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Let us Sum Up lllll

Hearing ability suffer it leads from hearing difficulty. lllll Problem will be unilateral and bilateral. lllll Symptom of hearing loss infancy or it will be childhood. lllll It will be several characterstics hearing loss and also learner activities lllll It will be impact in different egree of hearing loss and it affected communication of speech and language. 2.1.7.1 "

Check Your Progress" - 2 l) What is the difference between normal hearing communication and profound hearing loss communication?

..... 2) What is the meaning of Unilateral and Bilateral hearing loss?

..... 3) According to anatomical origin how many type of hearing loss are there?

..... 4) Mention the type of physical processing of hearing?

79 5) Where is the Ossicular chain situated?

..... 6) What is the name of VIIIth crenial nerve in brain?

..... 7) Write the full form of the P.T.A.

..... 2.1.8

Answer to Check Your Check Progress "Check Your Check Progress" - 1 1) 1-3 months old No response to sudden sound such as banging of door or ringing of doorbell. 4-6 months old Unable to locate the sound source. 7-9 months old do not look at the person being mentioned, e.g. "Where is Uncle Joy?" 10-12 months old No response to their names being called or frequently used words or phrases, e.g. "No". 2)

Hard of hearing refers to a person with a hearing loss who relies on residual hearing to communicate through speaking and lip-reading. 3)

Deaf/

Deafness refers to a person who has a profound hearing loss and uses sign language. 4)

Residual hearing refers to the hearing that remains after a person has experienced a hearing loss. It is suggested that greater the hearing loss, the lesser the residual hearing. 5)

Hearing impaired is a general term used to describe any deviation from normal hearing, whether permanent or fluctuating, and ranging from mild hearing loss to profound deafness.

80 6)

Academic Performance- Hearing impaired children are frequently handicapped in various degree of hearing loss and it effect on educational performance and particularly and particular handicapped in reading which relies heavily upon language skill. Adjustment of social- Our social inter action depend upon communication so deaf children have communication problems that's why it should have problem of social inter action such children live in a world of isolation and from a group of their own ,an association of the deaf for their common interest and interaction. Behavioral problem- Deaf learners feel invariable inferior and helpless in adapting to circumstances that require verbal communication. So regard non-verbal communication absence of verbal they have poor self poor concept which damages the development of personality. "Check Your Progress" - 2 1) In normal hearing communication speech is normal and normal pattern of development with good auditory perceptive skills. In profound hearing loss donot rely on hearing for their communication. Language and speech develop only by training and they are educationally deaf. Communicate mostly through gestures, voice, inflection, articulation greatly affected. Required regular speech and language training regarding subject's expert. 2) Unilateral means pertaining to one ear only and Bilateral means pertaining to both ears. 3) There are of three major types of hearing loss. These are lllll Conductive hearing loss - pertaining to the outer and middle ear lllll Sensorineural hearing loss - pertaining to the inner ear only. lllll Mixed hearing loss - pertaining to the outer/middle and inner ear. 4) There are three physical processing of hearing.Outer Ear,Middle Ear and Inner Ear. 5) Middle Ear. 6) Auditory nerve is VIIIth cranial nerve in brain. 7) Pure Tone Audiometry.

81 2.1.9 Unit End Exercises 1. Discuss the details about characteristics with of learner/ksf hearing loss 2. Discuss the details about different type of hearing impairmet and their communication.

82 Unit : 2.2 ppppp Language and

communication issues attributable to hearing loss and need for early Intervention Structure 2.2.1 Introduction: 2.2.2 Objective: 2.2.3 Language issues attributable to hearing loss. 2.2.3.1 "Check your progress" - 1 2.2.3.2 Deafness creates language issues attributable to hearing loss. 2.2.3.3 Different degree of hearing loss and Language issues attributable 2 2.3.4 "Check your progress" - 2 2.3.5 Different degree of hearing loss and on communication issues attributable 2 2.3.6 "Check your progress" - 3 2.2.4 Early intervention 2.2.4.1 Early Intervention for the Identified Population 2.2.4.2 "Check Your Progress" - 4 2.2.5 Let us Sum Up 2.2.6 Answer to Check Your Progress 2.2.7 Unit End Exercise 2.2.1 Introduction Man is a social animal, without society human just being is like animal. So human interaction with society with the help of verbal interaction and that involves speech, language and communication. Speech, language and communication depend upon our

83 hearing ability which is to perceive the sound about nature. But if suffering from hearing ability it has difficulty to perceiv the sound about nature and it affects verbal interaction and also affects speech, language and communication. Due to this problem child can face problems in several development areas these are personal-social, cognitive and academic. You will realize that language and communication are the two of such concepts and also including speech which are core issue in the special education. Hence a clear and descriptive idea of language and communication issues attributable to hearing loss and need for early intervention is necessary to know it in a better way as a teacher trainee and also as a human being. 2.2.2 Objective lllll To understand meaning of communication lllll To know about different communication system, language and communication lllll To know about different degrees of hearing loss and type. lllll To understand to given in formation while language issue of hearing loss lllll To understand able to given in formation while communication issue of hearing loss lllll To understand the need for early intervention of hearing loss 2.2.3 Language issues attributable to hearing loss. Language is a part of human life. It gives words to our thought, voice to our idea and expression to our feelings. It is a rich and varied human ability one we can use without a thought that children seems to acquire automatically and that linguists have discovered to be complex yet describe. According to Chomsky, Language is a set of(finite or infinite) sentences, each finite in length and constructed out of a finite set of elements.

84 LANGUAGE COMPONENTS 2.2.3.1 “Check your progress” - 1 What is Language? Mention the component of language?

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..... 2.2.3.2 To see how deafness creates language issues attributable to hearing loss. Speech is an oral manifestation of language. Speech refers to the actual production of sounds making words. These sounds are produced by the coordination of facial muscles and the flow of air through the human voice box (larynx). Language refers to our complex system of symbol used to communicate. Man is the talkative animal that lives in language as a fish lives in water. Speaking is natural activity for a human being. Moreover, the spoken word is the foundation of, all languages. While comparing the various aspects of language, one can conclude that ear language (spoken/oral aspect) and another is

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eye language (writing language). Ear language (spoken aspect) or oral language is the means of communication among people and it is used in daily life because it is the medium for conversation. Deaf student cannot perceive the sound about nature with the help of ear that’s why they are already delayed to ear language which is oral language in spoken aspect. The hearing-loss-children do not learn to listen immediate. After they are provided with the amplification and exposure to speech and language training and with best possible amplification language learning for the hearing-loss-child is possible. This is the major concern of hearing impairment. The system to process speech and language is in place but required raw material for it to enable any processing is inadequate. How to revive the broken link between hearing and speaking? This question may be answered predominantly in two ways: 1) One way to restore the link between hearing and speaking (and language) is to provide the child with ACE (Appropriate Continuous and Early) amplification with training. 2) Another answer is to bypass the link between speaking and hearing by providing the child with ENR (Early Natural Rich) exposure to sign language. The issue of these two answers and their mid points is complex, multi-faceted and challenging. 2.2.3.3

Different degree of hearing loss and Language issues attributable Language issues attributable Normal Misses 50% of class discussions, has problems in suppressing background noise. Articulation deficit, limited vocabulary, learning dysfunction. Delayed language syntax, atonal voice, reduced speech intelligi- bility Speech not developed or deteriorates, learning deficits Speech not developed or deteriorates, learning deficits Missed Sounds Normal 25% - 40% speech signal, distant sounds, unvoiced consonants, plurals and tenses. 50% - 80% speech signal 100% of speech information Ail speech sounds, can hear loud environmental noises All speech sounds, only feels vibrations Hearing Level Degree of Type (dB) Hearing Loss 0-25 Normal Normal 26-40 Mild Conductive Sensorineural 41 -55 Moderate Conductive/ Sensorineural 56-70 Moderately Sensorineural Severe Mixed 71 -90 Severe Sensorineural Mixed <90 Profound Sensorineural Mixed

86 2.2.3.4 “Check your progress” - 2 1) What is the meaning of Ear language?

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..... 2) What is the meaning of Eye language?

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..... 3) What is the difference between children with mild hearing loss and those with profound hearing loss on language issues?

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..... 2.2.3.5 Different degree of hearing loss and communication issues We use the word communication very commonly and casually. What does it mean?

Communication is an intentional two way complex process of sending message from one end to the other via a channel. Have a look at the following examples : 1. Bulti writes a letter to Rishl. 2. Runa is unfolding the story of Shrikrishna through her Bharatnatyam. 3. Ananya saw red light at the signal and stopped her car. 4. Ashoke waves ‘bye’ to Prabir. 5. Saikat says, “Kishore please go to the bank”. 6. Triptesh opens the door when the bell rings. 7. Mita teaches her students the ‘Properties of Air’ using the Indian Sign Language. 8. Sujata listens to the radio.

87 Which of these are examples of communicative events? Yes, all the 8 are examples of communication. So Communication is a two way process of transfer of a message from one end to the other through a channel. What happens in these 8 events, do fit into our definition of communication? Now let us try to identify whether all events can be called language? You are very sure of 1, 5, and 8 for being examples of language. What about 7? Indian Sign Language, (as suggested by its name) is a language and hence communication example number 7 must be categorized along with 1, 5, 8. What about other examples 1, 2, 3, 4, 6 are communicative events but not examples of language. Linguistic communication can take place through following three modes of communication: 1) Aural / Oral (listening / speaking) 2) Visual / Graphical (Reading / Writing) 3) Visual / Manual (Sign Language) Again have a look at the list and point out the examples where speech is involved. Yes, 5 and are examples of speech. While comparing the various aspects of language, one can conclude that ear language (spoken/oral aspect) and another is eye language (writing language) Oral language is the means of communication. So communication is a complex two ways and intentional process of passing the message from one end to the other using a channel Encoder Message Decoder Channel Communication development and behavioral skills are influenced by a child's ability to hear. When hearing loss goes undetected or is detected late (after 6 months of age), language and speech development can be delayed. This delay can affect a child's social interactions, emotional development and academic performance.

88 2.2.3.6 "Check your progress" - 3 l) What is communication, speech and language?

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..... Communication issues attributable Speech and language normal and normal pattern of development with good auditory perceptive skills. Speech and language developments are within normal limits. May exhibit occasional auditory perception problems some educational retardation likely. Language development and speech are mildly affected. Difficulty with rarely used words, minor differences in meaning of words and idioms, defective articulation but still intelligible speech loss quality and inflection almost normal. Reading and writing delayed. Vocabulary training, reading and writing to be special attended train addition to schooling. Grammar, vocabulary, articulation and voice are affected understand in loud speech .Early speech is unintelligible. Even with hearing aids show difficulty in understanding. Reading and writing need special assistance. Speech and language do not develop spontaneously. Sound produced very loudly at a distance of 1ft. and near the ear. The voice will be high-pitched and articulation distorted. They do not rely on hearing for their communication. Language and speech develop only by training and they are educationally deaf. Communicate mostly through gestures, voice, inflection, articulation greatly affected. Required regular speech and language training regarding subject's expert. Type of Impairment

Normal Hearing

Mild Hearing Loss Moderate Hearing Loss Moderately-Severe Hearing Severe Hearing Loss Profound Hearing Loss
dB

level -0 to 25 dB HL 26-40 dB HL 41-55 dBHL 56-70 dB HL 71-90 dBHL <90 dB HL

89 2) Mention the mode of linguistic communication?

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..... 3) What is the difference between children with normal hearing and those with profound hearing loss on communication Issue?

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..... 2.2.4 Early intervention

Many services and programmes will be available to you soon after your child's hearing loss is found. When a child's hearing loss is identified soon after birth, families and professionals can make sure the child gets intervention services at an early age. Here, the term intervention services include any programme; service, help or information given to families whose children have a hearing loss.Such intervention services will help children with hearing loss to

develop communication and language skills. There are many types of intervention services to consider. We will talk about early intervention and about communication and language. Some of the services provided to children with hearing loss and their families focus on these topics.

So early intervention services and choices it means communication and languages available for you and your child. "Early intervention" means getting started as early as possible to address the individual needs of a child with disabilities. This is done to enhance the infant or toddler's development, to minimize the potential for developmental delay, and to enhance the family's capacity to meet the child's needs. Early intervention is a system of services established by the states through grants from the federal government to help eligible children from birth until their third birthday. If your child was born with a hearing loss or has developed one before turning three, you may want to get in touch with personnel in the early intervention system in your area. The hospital staff may have already connected you with these services. If not, you may wish to ask your child's doctor.

90 Early intervention may be of help to your child and your family in many ways, including learning to communicate with each other. Early intervention programme will be assigned a service coordinator to help you understand the intervention system and make sure that your child gets the services to which he or she is entitled. Valuable service systems available to you and your family are: lllll State services such as early intervention (for eligible children up to the third birthday) and special education and related services (for eligible preschoolers and school-aged children). lllll Organizations specializing in hearing loss and deafness that provide information and support. lllll Resource and information centers that can offer information about national and state resources and education rights. lllll Parent groups in which you can talk with other parents who also have children with hearing impairments or deafness. 2.2.4.1-Early Intervention for the Identified Population The services/facilities available for early intervention in the country are covered under the following: lllll Medical intervention lllll Aids, appliances and cochlear implant. lllll Auditory and speech-language training. i) Medical intervention- There

are two conditions that require medical intervention in school children. 1)

Remove the wax. 2) Otitis media. Otolaryn go legists

being available only at the hospitals, the doctor manages the ear/ conductive hearing problem at the primary center.

Anganwadi workers and other grass root level health workers are trained to handle acute ear pain, foreign body in the ear canal, etc. There are about 600 district hospitals in the country but not all may have ENT specialists

or

infrastructure for audiological assessment. The scenario is expected to improve as made budgetary provisions to meet the deficiencies and a 'medical kit' for grass root workers to attend to the ear problems.

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ii)

Aids, appliances and cochlear implant- Fitting appropriate hearing aids are a crucial step in initiating successful intervention especially in children with pre-lingual hearing impairment. The status of availability of 'state-of-art 'hearing aids of all styles, makes and models (digital and analog) in the Indian market have improved to a great extent with the liberalization of the import policies. It is estimated that about 1.85 lakh hearing aids are distributed/sold annually. Of these, about 1.25 lakh body level aids are distributed under the ADIP scheme. The rest are either assembled or imported for sale in the country. The Scheme of Assistance to Disabled Persons (ADIP) of Ministry of Social Justice and Empowerment. Government of India, provides Rs. 8,000 per aid per ear for the beneficiary. Binaural aids are provided to school- going children which may be replaced with new hearing aids every two years. Income for eligibility for fully and partially subsidized aids currently is Rs.6, 500 p.m. and Rs.6, 501 to Rs.10, 000 p.m. respectively. Solar battery chargers with two AA rechargeable batteries are also included for the beneficiaries.

The cost of hearing aids is reimbursed for employees under ESI and CGHS schemes. Some of the State Governments have also made provision for distribution of free/subsidized hearing aids.

Cochlear implant is not an option by choice, but in terms of candidacy and cost (varying from Rs.5 lakhs to Rs.10 lakhs). Among the elite hearing impaired, cochlear implant is picking up well, especially in the prelingually deaf. Marketing strategies and the outcome of cochlear implant in the implanted children seem to have contributed to the popularity. Three popular brands of cochlear implant (Nucleus, Medel and Clarion) are marketed in the country.

INS Ashwini Hospital, Mumbai have made provision for free cochlear implant for their beneficiaries. Certain corporate houses also have donated funds to some private hospitals to help the economically weaker section. The outcome of cochlear implant is good (especially with the pediatric population) wherever a team of professionals is involved. The network of hearing aid dealers of the major hearing aid manufacturers in the country have provision to supply the spares for the hearing aids (such as cords for body level aids, prebent tubes for BTE aids) as well the repair of the hearing aid. Repair facilities are available at the major training institutes, some NGOs and private practitioners. Directory of Services published by AYJNIHH. Mumbai provides more information on this issue. The ear mould is the final link between the hearing aid and the ear. Custom made ear moulds are prepared only at institutions in cities and by some NGOs and private

92 practitioners. District Disability Rehabilitation Centers (DDRC) of Ministry of Social Justice and Empowerment has facilities for custom ear mould (website: www.socialjustice.nic.in). Facilities to make soft ear molds are available at some centers and with the hearing aid manufacturers/distributors. (iii) Auditory and speech-language training- Available services are comparatively more in the urban than the rural sector; the caregivers from the latter sector can avail of demonstration therapy, with the objective of facilitating home training. Several early intervention centers run by parent groups continue to offer quality services. Special educators are also involved in auditory/speech language training though it remains the domain of the speech-language pathologists/audiologists. Recognizing the importance of auditory/speech-language training for the cochlear implant recipients, the team approach has had a positive impact on the caregivers. An increasing number of special educators and caregivers have benefited from the workshops/training programmes in auditory/ verbal therapy organized by the manufacturers/ distributors of cochlear implants. A certificate course for the caregivers (of children with developmental disabilities) has been launched by AISH, Mysore in collaboration with the RCI. To meet the special needs of the age group 0 to 5 years, orientation programmes of one-month duration aimed at manpower development are conducted at seven centers across the country by AYJNIHH, Mumbai in collaboration with Balavidyalaya, Chennai. Availability of affordable educational material such as picture story books, puzzles, audio/video tapes, educational toys, attractive stationery items has improved due to the access, through internet, to pictures/material. Indigenously developed software and websites are also available for auditory training and speech-language training. 2.2.4.2 "

Check your progress" - 4 l) What is Early Identification?

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..... 2) What are the valuable services of early identification?

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93 3) What are the facilities available for early identification of hearing loss?

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..... 4) What is full form of D.D.R.C./A.I.S.H./R.C.I./A.Y.J.N.I.H.H.?

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..... 2.2.5 Let us Sum Up lllll Human interaction with the help of verbal interaction and it involves speech, language and communication. lllll These systems depend upon our hearing ability which perceives the sound about nature. lllll Language is a part of human life and it three stages Form, Content, Use. lllll Student with hearing loss cannot perceive the sound about the nature with the help of ear that's why delay ear language. lllll With the help of best amplification system language learning may be provided children with hearing loss. But it depends on different degrees of hearing loss. So it is the. issue of language attributable. lllll This language issue impact of communication issues of children with hearing loss and it also depends on type of hearing impairment. lllll Early identification means hearing loss identified soon after birth in valuable service system. lllll Early identification of hearing loss services are lllll Medical intervention lllll Aids, appliances and cochlear implant. lllll Auditory and speech-language training

94 2.2.6 Answer to “Check Your Progress” “Check your progress” - 1 1. Acc to Chomsky, Language is a set of (finite or infinite) sentences, each finite in length and constructed out of a finite set of elements. There are three components of language form, content and use. “Check your progress” - 2 1) Ear language means spoken oral language 2) Eye language means written languages 3) In case of mild hearing Loss 50% of class discussions is missed on language issues. They have problems suppressing background noise and is missed 25% - 40% speech signal, distant sounds, unvoiced consonants, plurals and tenses. In profound loss causes only is felt a vibration speech is not developed or learners face learning deficits. “Check your progress” - 3 1) Communication is an intentional two way complex process of sending message from one end to the other via a channel. Speech is an oral and verbal manifestation of language. Language is a set of (finite or infinite) sentences, each finite in length and constructed out of a finite set of elements. There are three component of language form, content and use. 2) Linguistic communication can take place through three modes these are I Aural / Oral (listening / speaking) II Visual / Graphical (Reading / Writing) III Visual / Manual (Sign Language) 3) In normal hearing causes communication issues like speech and language are normal and pattern of development is normal good auditory perceptive skills while in case of profound hearing loss they do not rely on hearing for their communication. Language and speech develop only by training and they are educationally deaf. They communicate mostly through gestures. Voice, inflection, articulation are greatly affected. Regular speech and language training are required with the help of subject’s expert.

95 “Check your progress” - 4 1) Early intervention means getting started as early as possible to address the individual needs of a child with disabilities. 2) There are many valuable service of early intervention. These are I State services such as early intervention for eligible children and also up special education and related services for eligible preschoolers and school- aged children. II Organizations specializing in hearing loss and deafness that provide information and support. III Resource and information centers that can offer information about national and state resources and education rights. IV Parent groups, in which one can talk with other parents who also have children with hearing impairments or deafness. 3) The facilities available for early intervention in the country are covered under the following: (i) Medical intervention (ii) Aids, appliances and cochlear implant, (iii) Auditory and speech-language training. 4) D.D.R.C.-District Disability Rehabilitation Centers A.I.I.S.H.-A11 India Institute of Speech and Hearing. R.C.I.-Rehabilitation Council of India A.Y.J.N.I.H.H.-Ali Yavar Jung National Institute for Hearing Handicapped 2.2.7 Unit End Exercise. 1. Discuss the details about language attributable of hearing loss student. 2. Discuss the details about communication attributable of hearing loss student. 3. What is early intervention? Who are the service provides of early intervention Explain in details. 4. What is language? Discuss the details of language components.

96 Unit: 2.3 ppppp Communication options, preferences and facilitators of individuals with hearing loss. Structure 2.3.1 Introduction 2.3.2 Objective 2.3.3 Communication System 2.3.3.1 “Check Your Progress” - 1 2.3.4 Communication Option. 2.3.4.1 Communication Options Available for Use by Children with Hearing Loss 2.3.4.2 “Check your progress” - 2 2.3.5 Communication Preferences of individual of hearing loss. 2.3.5.1 “Check your Progress” - 3 2.3.6 Communication facilitators of individual of hearing loss. 2.3.6.1 “Check your progress”-4 2.3.7

Let us Sum-up 2.3.8 Answer to

Check Your Progress 2.3.9 Unit End Exercises 2.3.1 Introduction Communication is the process of exchanging and sharing information through idea and opinions. Most often this exchange is via language. Language consists of symbol ordered in particular sequences for the purpose of conveying information. The symbol of language mainly consisting of used communication can be carried out in different ways. The term communication is often used to include only the spoken word that is speech and hearing.

A communication option, mode, modality, or method is the means by which the child and family receive and express language. The choice of a communication modality that facilitates language development and allows the child who is hard of hearing or deaf to readily engage in communication interchanges with

97 family and caregivers is a primary issue throughout childhood.

So in this unit we know about the communication options, preferences and facilitators of individual of hearing loss. 2.3.2 Objective The Student-Teacher will be able to understand I the meaning of communication option II the different communication system-modes and method. III the communication option available for children with hearing impairment. IV the communication preferences available for children with hearing impairment, V the communication facilitators available for children with hearing impairment, 2.3.3 Communication System SPEECH LANGUAGE COMMUNICATION

98 Modes (Four modes) Methods (Three methods) 1 Aural/Oral(Listening/Speaking) 1 Oralism 2 Visual/Graphical(Reading /Writing) 2 Total Communication 3 Visual/Manual(Sign Language) 3 Education Bilingualism 4 Speech reading Modes : There are four modes of linguistic communication. These are Aural/Oral (Listening/Speaking) mode is the common mode used for communication by hearing population. It develops automatically and naturally in the non-impaired and it is acquired in early years in life and its basic purpose is for routine communication. Visual/Graphical (Reading/Writing) mode is the mode secondary mode because it is a learnt skill as against the acquired skill of aural/oral mode. It is learnt, formally and is command is acquired in later years of life and its purpose is official/educational. Visual/Manual (Sign Language) used by people with hearing impaired and is not a mere collection of signs but a rule governed language with its own grammar. Speech reading is fourth mode and play supportive roles to the earlier modes. It does not have the potential to carry the message in totally, hence cannot function on its own independently. Methods: There are three methods of linguistic communication. These are One mode (out of the two) and one type of language (out of two) can be selected and the combination of these two is called the methods of communication. There are three methods of communication possible. Oralism- Oralism is philosophy which desires to develop verbal language through aural/oral mode. Modern oralists believe that that attempts should be made to break through the barrier to communication caused by deafness. Total communication- Total communication in simple words means the use of sign as well as speech in order to develop spoken language of the deaf children. Garretson (1976) defines total communication in the following way a philosophy incorporating appropriate aural, manual and oral modes of communication in order to ensure effective communication with and among hearing impaired persons. Education Bilingualism- Education Bilingualism is generally considered to be a reaction against oralism as well as total communication. Bilingualism with total communication that oralism can never work with profound deaf students but it is equally critical of total communication that combining sign with verbal language will bring speech to child. So fundamentally the bilingual approach is that the first language of all deaf children could be the sign language which belongs to deaf community of the concerned

99 2.3.3.1 "Check your progress" - 1 1. Mention any two modes of linguistic communication?

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..... 2. Mention any two methods of linguistic communication?

..... 3. What is total communication?
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..... 4. What are the meanings of Aural and oral?
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..... 5. What is oralism?
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..... 2.3.4 Communication Option

100 2.3.4.1 Communication Options Available for Use by Children with Hearing Loss Option/Feature Auditory-Verbal Maximizes use of residual hearing to develop spoken language. Auditory channel is primary input mode exclusively during language learning experiences and therapeutic intervention. The stricts use of visual cues, speech reading and signs. Provides only auditory training Auditory-Oral Maximizes use of residual hearing and speech reading to develop spoken language. Use of both auditory and speech reading encouraged during language learning and therapeutic experiences. Provides both auditory and speech reading training Familial Role Serve as spoken language models Provide abundant opportunities for spoken language learning through Auditory- Verbal techniques in the home environment. Seek professionals support from those knowledgeable in AV approach. Ensure appropriate audiologist management. Monitor rigorously the performance of amplification/cochlear implant technology. Desire mainstream educational setting & inclusion in hearing community as primary goal. Serve as spoken language models Provide abundant opportunities for spoken language learning using auditory and speech reading input in the home environment. Arrange for appropriate Auditory -Oral programs/professionals. Ensure appropriate audiology management. Monitor rigorously the performance of amplification/ cochlear implant technology. Desire mainstream educational setting & inclusion in hearing community as primary goal. Amplification Provide early amplification Provide maximum audibility across the speech -frequency range Promote consistent use of hearing aids. FM systems and/or Cochlear Implant Provide early amplification Provide maximum audibility across the speech-frequency range Promote consistent use of hearing aids, FM systems and/or Cochlear Implant.

101 Cued Speech Makes spoken language visible through use of specific hand shapes, positions and lip reading (i.e., cues). Manually Coded English (MCE) Uses sign system and finger spelling to represent spoken English. Often used in conjunction with Total Communication and Simultaneous Communication. Total Communication Uses multiple methods simultaneously (manual, oral, auditory) Uses MCE system Simultaneous Communication Use sign system and finger spelling and speech. Does not require use of audition. Learn and become fluent in Cued Speech Provide abundant opportunities for spoken language learning cueing all communication interactions with the child in the home environment. Support use of Cued Speech by early intervention personnel, teachers and all others communicating regularly with child. Arrange for appropriate educational settings or Cued Speech transl iterator Determine desire for child to use amplification or cochlear implant technology. Learn and become fluent in manual sign system (MCE). Arrange for appropriate educational settings. Professionals who are fluent users of MCE system used by the child or interpreter. Learn and become fluent in manual sign system (MCE). Encourage speech reading and use of audition in combination with sign (MCE). Arrange for appropriate educational setting/TC professionals who are fluent in TC and support use of sign, speech reading and audition. Ensure appropriate audiologist management. Learn and become fluent in manual sign system. Encourage speech and sign. Arrange for appropriate educational setting; may be the same as TC. Ensure appropriate audiology management when required. Amplification not necessary for spoken language acquisition Provide maximum audibility across the speech-frequency range when family desires child to use amplification or cochlear implant Amplification not necessary Provide maximum audibility across the speech-frequency range when family desires child to use amplification or cochlear implant Provide amplification early amplification Provide maximum audibility across the speech-frequency range Promote consistent use of hearing aids, FM systems and/or Cochlear implant. Amplification not generally used for communication as part of approach.

102 2.3.4.2 "Check your progress" - 2 1. Mention any two communication options available children with hearing impairment?

..... 2. What is cuae speech?

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..... 3. What is full from of A.V.T.?

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..... 2.3.5 Communication Preferences of individual of hearing loss. Hearing—Listening capability of our hearing system. So speech, language and communication these systems depend upon our hearing ability which perceives the sound about nature. But if suffering from hearing disability it has difficulty to perceive the sound about nature and it affects verbal interaction and also affects speech, language and communication. Due to this problem child can face problem in several development areas. These are personal-social, cognitive and academic. Conversation – The use of speech and/or sign for informal exchange of views, ideas or information. Alphabetic Principle – The use of letters and letter combinations to represent phonemes and/or signs in a system of writing. Bilingual-Bicultural (Bi-Bi) Philosophy of language learning: first ASL, second spoken language (e.g., English) Combines ASL and form of spoken language (MCE, Cued Speech) Opportunities for experiences in Deaf and hearing communities. Learn and become fluent in ASL Ensure regular interaction with members of Deaf and hearing culture/community Arrange for appropriate educational setting in program supporting Bi-Bi philosophy. Amplification not required for visual language learning. Amplification/CI may be used for alerting, warning, awareness of environmental sounds and for support of spoken language development

103 Vocabulary – The words we must know to communicate effectively. Fluency – The ability to read a text quickly and accurately with ease and expression. Comprehension – The process of constructing meaning from print. Writing – Communicating through the use of written symbols. Gesture – It is the meaning of a movement of parts of the body especially a hand or the head to express an idea or meaning. Singing- It is a large body literature and also composes hand shapes, locations and motions. Addition facial expression and also classifier is a specific hand shapes that can represent a particular person and project. Facial expression- It is facial literature use to non-verbal communication to facial express.

2.3.5.1 “Check your progress” - 3 1. What is conversation?

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- 2. What is gesture?
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- 3. What is singing?
-
- 4. What if facial expression?
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104 2.3.6. Communication facilitators of individual of hearing loss. The Selection of a Communication Option for Children with hearing loss. SL.NO Facilitators Consideration 1 Language used in the home Spoken Bilingual (use of 2 spoken languages) Visual (ASL) Combination of visual and spoken (bilingual) 2 Family Involvement Abundant opportunities for language learning and communication in the home. Level of participation in intervention Home situation/ family membership and other demographic factors Consistency in learning & using MCE. ASL. cued speech Socio-economic circumstances Work schedules 3 Age of Identification & Intervention Before 6 to 11 months of age After 6 to 11 months of age 4 Literacy Speech perception Development of phonological awareness 5 Community resources Availability of certified AV therapists; auditory- oral therapists, sign language interpreters, ASL community, transliterations etc. Availability of EI (Educational Intervention)programs that use above approaches 6 Hearing status Degree of hearing loss Stability of hearing loss Repeated episodes of OME(Ottis Media Infection) 7 Hearing Aids & Cochlear Implants Consistent use of Hearing Aids/FM system Cochlear implant candidacy Financial constraints related to acquiring assistive device technology Expectations regarding benefits of device 8 Speech Intelligibility Access to acoustic speech features through hearing aids/cochlear implant Speech therapy 9 Presence of additional disabilities Visual Motor Cognitive Attention/Behaviour 10 Availability of later educational options Mainstream with support services Self contained classroom Special school Residential facility

105 2.3.6.1 “Check your progress”- 4 1. Mention any three communication facilitators of individual with hearing loss?

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..... 2.3.7 Let us Sum Up lllll Communication is a complex, two way intentional process of transferring a message from one end to the other. lllll There exist several communication systems which could be classifld into human versus animal communication and linguistic versus non-linguistic communication. lllll There are four modes of linguistic communication (listening/speaking, reading/ writing/ sign language/ system, speech reading) lllll There are three methods of communication existing in the education of the deaf and oralism, T.C. and Educational Bilingualism lllll Communication Option of children with hearing loss lllll Communication of preferences for children with hearing loss lllll Communication facilitators of children with hearing loss

2.3.8 Answer to Check Your Progress “Check your progress” - 1 1. Aural/Oral (Listening/Speaking), Visual/Graphical (Reding/Writing), Visual/ Manual (Sign Language) and Speech reading 2. Oralism, Total Communication and Education Bilingualism 3. Total communication in simple words means the use of sign as well as speech in order to develop spoken language of the deaf children. Garretson (1976) defines total communication in the way of philosophy incorporating appropriate aural, manual and oral modes of communication in order to ensure effective communication with and among hearing impaired persons. 4. The meaning of aural listen ear and oral means verbally,

106 5. Oralism is philosophy which desires to develop verbal language through aural/ oral mode that's called as oralism. "Check your progress"-2 1. Auditory- Verbal, Auditory-Oral and Total Communication 2. Cued speech is spoken language visible through use of specific hand shapes, positions and lip reading i.e., cues. 3. Auditory Verbal Therapy. "Check your progress"-3 1. The conversation is use of speech and/or sign for informal exchange of views, ideas or information. 2. It is the meaning of a movement of parts of the body especially a hand or the head to express an idea or meaning. 3. It is a large body literature and also comprises hand shapes, locations and motions. Addition facial expression and also classifier is a specific hand shapes that can represent a particular person and project. 4. It is facial literature use to non-verbal communication to facial express. "Check your progress" - 4 1. Language used in the home, family involvement, age of identification & intervention and literacy. 2.3.9. Unit End Exercises 1. What is communication? Describe the details of communication system. 2. Describe the details of the communication option/feature available for children with hearing impairment and their family role. 3. Describe the details about communication preferences and facilitators of individual with hearing loss.

107 Unit : 2.4 ppppp Issues & measures in literacy develop- ment

and scholastic achievement of students with hearing loss Structure 2.4.1 Introduction 2.4.2

Objective 2.4.3 Literacy development students with hearing loss. 2.4.3.1 "Check your progress" - 1 2.4.4 Issue of literacy development of students with hearing loss. 2.4.4.1 "Check your progress" - 2 2.4.5 Measures for literacy development of students with hearing loss. 2.4.5.1 Tips to develop literacy Skills in students with Hearing Impairment 2.4.5.2 Reading activity: Step-1 (Unseen/ in experienced passage) 2.4.5.3 Reading activities Step- II 2.4.5.4 Does and don'ts for better reading activities: 2.4.5.5 Writing: 2.4.5.5.1 "Check your progress" - 3 2.4.6

Scholastic achievement of students with Hearing Loss. 2.4.6.1 "Check your progress" - 4 2.4.7 Let us Sum Up 2.4.8 Answer to Check Your Progress 2.4.9

Unit End Exercises. 2.4.1 Introduction: Literacy skills are essential for succeeding in our today's society. Everyday examples include accessing the Internet or messages via e-mail; reading instructional manuals for the workplace, for computers, for cars, directions at work, for travel, or for taking

108 medications; and for leisure activities such as reading the newspaper or enjoying a magazine or a book. Literacy is also the key to functioning effectively in school. For most individuals the foundation for reading proficiency begins in infancy, advances with formal reading instruction in school, and continues to increase as the result of quality educational, social and recreational experiences throughout one's lifetime but without well-developed literacy skills students cannot participate fully in classroom learning. Students are at much greater risk for school failure and lifelong problems with employment, social adjustment, and personal autonomy so literacy skills are vital at a national level. But the problems are galore for administrators, educators, and families who work or live with students who are deaf or hard of hearing for the purpose of methods of instruction.

Hearing loss has nothing to do directly with literacy development and functioning; in most of the cases of deafness, literacy does get negatively impacted. This is due to basic inadequacies of language and communication. In this part we are going to see what

are the

issues & measures in literacy development and scholastic achievement of students with hearing loss. 2.4.2

Objective The student and teacher will be able to- • understand issue of literacy development of students with hearing loss. • understand issue of literacy development in reading writing steps in hearing impaired student. • under stand measures for literacy development of students with hearing loss. • understand scholastic achievement of students with hearing loss. 2.4.3 Literacy development of students with hearing loss. The development of literacy hearing impairment children is not a multifaceted issue. It is possible to find a good number of parallels to literacy development in their hearing peers. Current millennium still reports that children with hearing loss are often severely delayed when compared to hearing children, especially in earlier development. Adolescents with hearing loss are still seen to have multifaceted problems involving literacy (reading and writing) and language that can influence their attitude to their ability to access and use academic information. This also has implications for how they regard academic information and whether they are willing to apply it. If adolescents with hearing loss are able to access and use academic information sufficiently, they

109 will be able to fulfil a more significant role in society, as well as 01 to study and work well. The acquisition of academic information will enable adolescents with hearing loss to function in such a way that they will be able to maintain their independence and improve their knowledge base throughout their education years. According to Briggles (2005) some class activities that are beneficial to hearing impaired or deaf children includes: 1) Time to explore writing, drawing, books and environmental print 2) Story time translated in to sign 3) Journal writing using invented spelling. Like hearing peers, hearing impaired or deaf children should have the opportunity to participate in literacy events. They should also use written language in many ways that are typical to their hearing peers. According to Briggles (2005) and Williams (1994) the teacher should provide them with the opportunity of demonstrating the following uses of languages in signed or spoken form: 1) To interact socially with peers and adults while writing. 2) To provide information about written text. 3) To label written creations. 4) To monitor the construction of text. 5) To request assistance with writing tasks from adults and peers, 6) To challenge others' knowledge of literacy, and 7) To evaluate literary works. 2.4.3.1 "Check your progress" - 1.1. What is the multifaceted problem children with hearing impairment?

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110 2.4.4. Issue of literacy development of students with hearing loss. Children with hearing loss now compete favourably with hearing peers in some issues. The following areas are 1) Children with hearing loss who evidence language delays also demonstrate significant delays in development of theory of mind. So theory of mind development is dependent on a child's opportunity for social interaction auditory comprehension, verbal communication and play. 2) Oral language acquisition remains a challenge for children with hearing loss and also affects in reading. (Easterbrooks & Baker, 2002). Reading outcomes are well below average for 96% of children with hearing loss, most reaching only fourth to sixth grade proficiency (Karchmer, M.A. & Mitchell, R.E. 2003). The 19th International Congress on Education of the Deaf (ICED) brought together 1,067 teachers, administrators, and researchers from 46 countries to address topics in education. The publication resulting from the conference noted that while academic outcomes improve with more hearing peers, social language use and the ability to make friends with hearing peers remain as problems for children with hearing loss in mainstream educational settings (Leigh, G & Power, D 2004). 3) Sensory-motor concerns are related about literacy development of students with hearing loss. Children with sensory neural hearing loss appear to experience higher rate difficulty with vestibular processing when compared with their typically developing peers, resulting in delays and/or compensatory strategies in their development, motor skills, such as balance, coordination, and body and spatial awareness (Suarez et al 2007). 4) Kluwin, T.M. Stinson, M.S. and Colarossi, G.M. (2002) identified four main areas of concern for children with hearing loss when compared with hearing peers. They are: a. Social skills, b. Interaction/participation, c. Sociometric status/acceptance, d. Affective functioning.

111 5) Another and most important issue differences between normal and children with hearing loss. Children with hearing loss have been consistently documented areas of balance, complex motor sequencing, sensory, and vestibular processing. 6) Children with hearing loss are more likely to experience co-morbid diagnoses, such as apraxia and attention disorders and also auditory deprivation may lead development of specific motor and language skills that share common cortical processes. 7) Literacy (reading and writing) issue is traditionally regarded as the most important skill area needed to obtain academic information and also involved in the communication of thoughts and process of learning through conversation, reading, writing and the conceptualization of the reading process. 8) The educational outcomes for hearing impairment in secondary schools in normal mainstreaming after leave the school prepared to live and function independently should be able to independent living skills, employment readiness, and a set of 'learning how to learn' skills. 2.4.4.1 "Check your progress" - 2.1. What do/mean by vestibular processing?

.....

..... 2. Mention any two issues of literacy development of students with hearing loss?

..... 2.4.5. Measures for literacy development of students with hearing loss.

Language based reception / expression of ideas and thoughts achieved by the medium of a shared script, which reflect shared language, context and the world knowledge. This means, reading / writing is

not mere understanding and creation of script. Reading / writing is not conversion of spoken thoughts into a graphical thought. It is understanding and creation of independent thoughts. Sharing the script in itself is extremely essential but is not the only essential prerequisite in the process of writing

112 (and reading). Writing is much more than penning down a set of alphabets on paper. For example, read the following sentence: Ich bin Lehrerin Van Beruf This sentence uses Roman (English) script, which you already know. Could you understand the meaning? No, because sharing a script with the writer is not enough for you as a reader. You do not share German language with the writer and hence meaning is inaccessible for you. If a sentence is: I am a teacher by profession You will be able to read (understand) the sentence because you not only know the script but also share the language. Thus reading and writing is not possible without the adequate, age appropriate knowledge of the language for which the script is used. Hearing loss impacts language development and language functioning. As a result, very often the student with hearing loss

has inadequate language. This inadequacy of language in turn impacts the literacy skills of the student with hearing loss. 2.4.5.1. Tips to develop Measures for

literacy Skills in Students with Hearing Impairment Literacy means independent reading (comprehension and not mere loud pronunciation of the text) and independent writing (expression of thought and not mere copying or penning down memorized lines).

Student with hearing impairment

have to be taken from guided / assisted literacy skills to independent literacy skills. Languages in the first point are true with literacy and

literacy is experience and context bound. If it is developed through pleasurable activities / games / exercises students / with hearing impairment learn it more readily. The best method to develop reading / writing in student with hearing loss is

to expose them to written material which is graded as per their levels.

This

material should be able to take them one step ahead in complexity. Reading / writing material may include readymade and custom-made materials like: • Text books (of all the school end examination boards); • Story books / comic books; • News paper, magazines; • Personalized notes to teachers / parents / classmates; • Captioned movies; • Greeting cards; 113 • Advertisements • Manuals of phones, ovens, washing machines etc; • SMS text messages; • Rules of games; • Road maps; • Recipes; • Railway / airplane / bus tickets; • Matter on packed food / grocery; • Menu card • Joke books; • Encyclopedia; • Bill boards / banners / hoardings; • Instruction boards at gardens, theatres etc.; • Telephone / electricity bills; • Purchase receipts; • Registers and records; • Specially created albums with written material; • Specially created scrap books / experience books; • Specially created vocal books; • Daily diary etc.

Although reading and writing are closely linked but these cues are separate process. 2.4.5.2.

Reading activity: Step-1 (Unseen/ in experienced passage) • Sit with the student. • Read a particular number of lines as per the level of the students

and

either read together silently or let the student read after you. • Discuss the matter and encourage him / her to ask, answer, describe, comment, agree / disagree etc. on the matter

and it will be produced on total communication system.

114 • Explain new concepts with the help of real object and dramatization. • Show similar and smaller examples of sentence types. • Ask questions to ensure he / she has not missed the details. • Link the information with previous knowledge. • Repeat the steps with next few lines. 2.4.5.3-Reading activity Step- II In step I we made the student with hearing impairment read the lines first and then explained the content. In step II the teacher first develops the context by telling what the lines are about

in.

Explain a few concepts discuss with the child and then let him / her read the lines. Both step I and step I and step II are good tools of learning and

both have strengths and hence students should be exposed to both. 2.4.5.4. Dos and Don'ts for better reading activities: • Reading material should not restrict to word level, it should be in sentence form and

key word could be highlighted with underline, colouring etc. • Never work on vocabulary lists without context. • Never over-do speech correction while the focus of the activity is reading. • Be tolerant of mistakes.

When students hesitate going on to complex level. •

Reading does not always mean understanding every bit of the written matter. Overall understanding too helps many times. •

In pre-school level Children should be encouraged

the habit of scanning picture books, flipping comic books, sitting together to read magazines etc. This builds readiness before the child starts learning the actual reading. • Link reading activities with school subjects. Reading activities can be used in both the ways to reinforce learnt knowledge or to build readiness for the knowledge to be learnt. This is important for

student/with hearing loss

since it helps him/her in understanding school subjects and also in developing reading. 2.4.5.5-

Writing: (1) To provide ample opportunity to the child to write his/her own thought.

115 (2) Link development of writing with reading, listening - speaking (or signing), context and experiences. Teachers always want to make tasks simpler for students and simplest way to make tasks simpler is to link it with meaning and context. Teaching writing for that matter, teaching anything without context or pragmatic background cannot have good results in the long run. (3) In order to facilitate learning use of feedback is an essential factor. This in turn needs to be responded with feedback comprising • Clear • In detail • Indicative of higher expectation • Appropriate • Immediate • In writing • Consistent • Objective • Pro-active (4) Writing should be enjoyable and communication oriented rather than task-oriented. (5) Develop the habit of self-editing. Many times, looking at the writings of the children one can hardly know his / her current level of language competency. The teacher is confused about whether an error committed by the student is an error of accident or is an outcome of incorrect knowledge of language. If the children are made to edit their own writing, correcting their inner language structures becomes possible. Initially teachers can mark the sentences, parts where modification is required. This can work as a clue to help him/her edit the overall write up. (6) Carry out assessment of writing. Separate writing assessment needs to be carried out by the teachers on regular basis. Assessment of language or assessment of language text book cannot be considered as writing assessment. There is a difference between assessment of language through writing and assessment of writing. Like any other ideal assessment, writing assessment too has to be carried out systematically, consistently and objectively.

116 (7) Involve parents in the process of writing development. As said earlier, writing needs to be developed in connection with context and real life situations. Home environment is rich from this point of view. Providing training to parents on follow up activities on development of writing is highly recommended. 2.4.5.5.1 "Check your progress" - 3 1. Mention the steps of reading activity for students with hearing impairment?

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..... 2. What is literacy?

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..... 3. Name two ways for developing reading skill of children with hearing impairment?

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..... 2.4.6 Scholastic achievement of students with Hearing Loss. The scholastic achievement of students with hearing loss is one of the most important determinants of recipient's quality of life after schooling. The scholastic achievement of students with hearing loss attending the mainstream schools and to compare their scholastic performance to their normal hearing peers. So scholastic performance in mainstream school is a most important factor. The factors are: • Language and speech- The ability to learn language and speech is the highest development of children hearing impaired. • Intellectual ability- Process of thinking of deaf children and that normal peers are found to be (& similar also cognitive abilities and develop verbal intelligence. • Academic Performance- Hearing impaired children are frequently handicapped in various degree of hearing loss and it affects educational performance and particularly reading which relies heavily upon language skill. So after scholastic achievement hearing loss student can develop the academic performance.

117 • Adjustment of social Our social inter action depends upon communication. So deaf children have communication problems. That's why it should have problem of social inter action. Such children live in a world of isolation and form a group of their own, an association of the deaf for their common interest and interaction. So after scholastic achievement student with hearing loss can develop on adjustment in social inter-action. • Behavioural problem- Deaf learners feel invariably inferior and helpless in adapting to circumstances that require verbal communication. So regard non- verbal communication absence of verbal they have poor self poor concept which damages the development of personality but with the help of mainstream education which is scholastic achievement they develop the personality and is reduced the problem behaviour regard various social academic aspect. • Socially handicapped - Learners with hearing loss cannot adjust with society because they suffer from communication difficulty and fail to understand what others hearing people say. But after scholastic achievement with the help of mainstream they develop communication skill and mixing the oral social which is social of communication and reduced of socially handicapped. • Problem in personal and social development- Language becomes a barrier for deaf learner for purpose of communication with others. So this affects the socialization process and plays a vital role in the personal and social development of hearing loss learner. So with the help of scholastic achievement in mainstream in regular class room it develops the normal peer acceptance and reduces the problem in personal. • Personality problem- Hearing difficulty may create personality problem. A becomes deaf learners more frustrated as he/she tries to reach the level of the normal and a totally deaf child seems reconciled to his fate But given well provided adequate facility of language and communication regard literacy development in regular school they develop their personal adjustment and well developed scholastic achievement in hearing impaired studens. • Provided in natural and social environment-For a child with hearing loss to scholastic achieve developmental synchrony even development across the developmental domains programs need to provide a richer, more natural social environment and consistent exposure to hearing peers who can model age- appropriate language and social development.

118 • Mainstream Placement- Another choice commonly made for children with hearing loss is mainstream placement. The term mainstreaming is used to refer to the placement of regular education classes based on their skill level. Mainstream education does seek to educate the "whole child" and provide exposure to many preschool programmes. However, many schools turn to more directive teaching models by kindergarten wherein children sit at desks, teachers instruct, and children acquire facts, skills, and concepts through drill and practice. 2.4.6.1 "Check your progress"-4 1. Mention any two issue scholastic achievement of students with Hearing Loss?

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..... 2.4.7

Let us Sum Up •

Hearing loss is a disability which affects literacy and it is a multifaceted issue. • Literacy issue is the most important skill area to obtain academic information of hearing impaired studens. • Literacy issue depends on communication and communication is the most significant process. • After literacy development students with hearing loss should achieve in the respected of different formal area in mainstream placement. 2.4.8 Answer to "Check Your Progress" "Check your Progress" - 1 1. The multifaceted problem children with hearing impairment involvement literacy issue which are reading, writing and also language that can influence their attitude to their ability to access and use academic information. "Check your progress" - 2 1. Vestibular processing means the areas of balance motor coordination, complex motor sequencing. 119 2. Children with hearing loss who evidence language delays also demonstrate significant delays in development of theory of mind so theory of mind development is dependent on a child's opportunity for social interaction auditory comprehension, verbal communication and play. Sensory motor concerns are also related about issue literacy development of students with hearing loss. Children with sensor neural hearing loss appear to experience higher rates of difficulty with vestibular processing when compared with their typically developing peers, resulting in delays and/or compensatory strategies in their development of gross motor skills, such as balance, coordination, and body and spatial awareness. "Check your progress" - 3 1. Class room situation and teachers should develop the contents of text books. 2. Literacy means independent reading (comprehension and not mere loud pronunciation of the text) and 3. • Discuss the matter and encourage him / her to ask, answer, describe, comment, agree / disagree etc. on the matter

and it will be produced on total communication system. • Explain new concepts with the help of real object and dramatization. • Show similar and smaller examples of sentence types. "Check your progress" - 4 1. Language and speech- The ability to learn language and speech is the mostly development of the hearing impairment. Academic Performance- Hearing impaired children are frequently handicapped in various degree of hearing loss and its effect on educational performance and particularly and particular handicapped in reading which relies heavily upon language skill so after scholastic achievement hearing loss student can develop the academic performance. 2.4.9 Unit End Exercises. 1. Describe the details about issue of literacy development and scholastic achievement of students with hearing loss.

120

Unit : 2.5

pppp Restoring techniques using human (interpreter) & technological support (hearing devices)

Structure 2.5-1 Introduction 2.5-2

Objective 2.5.3 Students who are hard of hearing face obstacles in most areas of their lives 2.5.4 Restoring Techniques Using Human Support 2.5.4.1 "Check your Progress" - 1 2.5.4.2 Description and facts 2.5.4.3 Possible Barriers. 2.5.4.4 Interaction with an individual with Hearing Impairment. 2.5.4.5 "Check your progress" - 2 2.5.5 Restoring Techniques Using Technological Support (Hearing Device) 2.5.5.1 Amplification options 2.5.5.2

Types of hearing aids 2.5.5.3 Behind-

the-Ear Aids 2.5.5.4 In-the-Ear Aids 2.5.5.5 In-the-Canal

Aids 2.5.5.6

Body Aids 2.5.5.7 Bone Vibrator Aid 2.5.5.8 Cochlear Implants: 2.5.5.9 FM Systems 2.5.5.10 "Check your progress"-3 2.5.6

Auditory Training 2.5.6.1 Important 2.5.6.2 When Start Auditory Training

121 2.5.6.3 Pre requisite issue for auditory training 2.5.6.4 Conditioning Sounds 2.5.6.5 Stages of Auditory Training 2.5.6.6

Auditory Training Material 2.5.6.7 "Check your progress" - 4 2.5.7 Let us Sum Up 2.5.8 Answer to "Check Your Progress"

2.5.9 Unit End Exercises 2.5.10 References 2.5.1. Introduction The modern world presents many challenges of very different types. Our senses are constantly being assailed with new sensations, environments, and experiences. We have to develop coping strategies that allow us to move with confidence and deal with these challenges without becoming overwhelmed. For many of us, that is a significant task. For others, particularly those with a disability, it is a monumental challenge. Deafness is often described as 'the silent disability' because it is not noticed, not visible and not discussed, yet it is a condition growing in importance and prevalence. People who are hearing impaired and hard of hearing face many challenging hearing environments every day. They face obstacles in most areas of their lives. These are education settings, the workplace and social situations. • In education settings, miscommunication can result in poor grades. Educators can be unaware that students have not heard the correct instructions, and mislabel children with hearing loss as 'lazy' or 'stupid.' • In the workplace, people with hearing loss have more difficulty in finding employment and struggle with certain practical aspects, such as attending group meetings or answering the telephone. • In social situations, hearing people cannot see that a person with hearing loss has difficulty hearing others, and also forget that hearing aids and cochlear implants are only aids. They need to be constantly reminded to consider the hearing difficulty, which can be tiring, frustrating and embarrassing. It can become easier

122 for a person with hearing loss to withdraw from social events and isolate themselves. 2.5.2. Objective: The student -teacher able will be able to understand- • Restoring techniques using human (interpreter). • Restoring techniques using Technological Support (Hearing Device). • Auditory training. 2.5.3. Student who are hard of hearing face obstacles in most areas of their lives Deafness refers to the inability to hear, either totally or partially. Symptoms may be mild, moderate, severe or profound. Deafness may occur at birth or may be acquired due to various diseases, infections and or ageing. There are various strategies to enable these people to compensate for their deafness so that they can communicate with human interpreter such as lip-reading, sign language and use hearing devices such as hearing aids and also cochlear implant. When they use lip-reading, sign language and use hearing devices that means loss of normal hearing (normal hearing is restored) and using the restoring technique (human interpreter) & technological support (hearing device) and also auditory training. So restoring techniques are (1) Human interpreter (lip-reading, sign language, communication worker) (2) Technical support (hearing device/amplification option) (3) Auditory training. 2.5.4. Restoring Techniques Using Human Support: Ø Attract the student's attention before speaking and make sure you are facing him/ her. Ø Speak clearly; but avoid speaking artificially slowly, exaggerating your lips, or shouting as this affects the natural rhythm of speech. Ø Make use of natural gesture and facial expression as a clue to meaning.

123 Ø Make sure that there is adequate light on your face. Do not stand with your back to windows. Ø Position the student so that he/she can lip-read you easily and see the projector or board and as much of the class as possible if there is to be a group discussion. Ø Make use of visual material, i.e. handouts, key vocabulary, diagrams, written instructions. Ø Indicate when you are changing the subject. Ø Check comprehension; encourage and direct questions. Ø Keep background noise to a minimum. Ø Write important new words on the board to fix their form. Ø If using DVD/video for teaching purposes, be aware that the student will not be able to follow the soundtrack and will need to borrow the DVD/video or have access to subtitles or a transcript. Ø Direct the student towards any relevant course materials on Blackboard. Ø Ensure that members of the group raise their hand before speaking, so that the deaf student is alerted to a change of speaker. Ø Do not allow more than one person to speak at a time. Ø Be aware that a deaf person cannot read or take notes at the same time as lip-reading-allow time for a student to look at the relevant section of a handout, then make sure you have his or her attention before you comment on it. Lip speakers are useful for those who do not use sign language but who find a tutor or lecturer difficult to lip-read. A lip speaker repeats the words of the speaker without voice. They produce clearly the shape of words, the flow, rhythm and phrasing of natural speech and repeat the stress as used by the speaker. The lip speaker also uses facial expression, natural gesture and finger spelling (if requested) to aid the lip reader's understanding. Lip speakers are used by people who use lip-reading extensively and who have a good command of English language. Interpreters are used by students who prefer to communicate through British Sign Language (BSL) or Sign Supported English. The interpreter will translate what is said by the lecturer or tutor into sign and will provide a voice over for the deaf student's own signed contribution if required. It is helpful to employ an interpreter who has some knowledge of the subject matter, especially if the vocabulary is highly specialized.

124 Communication Support Workers provide an interpreting service and may also provide a lip speaking or note-taking service and a voice-over for the deaf student's contributions, but will not yet have reached interpreter level (They will usually be qualified to Level I/II Certificate in BSL). 2.5.4.1 "Check your progress" - 1 1. Mention any four restoring techniques using humans support?

..... 2. Write the full form of BSL?
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..... 2.5.4.2. Description And Facts A student with hearing impairment may be hard to recognize in the classroom. Some students use hearing aids and have learned to lip-read or sign. A person with no hearing is deaf. "Hard of hearing" defines a hearing impairment in which the sense of hearing, although diminished, is functional. The following list describes some facts about individuals with hearing impairment: • Not all people with hearing impairment are good lip readers. Lip reading skill has no correlation to a person's intelligence. • Not all people with hearing impairment know how to sign. Not all students with hearing impairment use interpreters. Some prefer to communicate through lip reading and some prefer sign language. • A hearing aid does not correct hearing loss like glasses correct vision problems. Most persons with hearing impairment have sensory neural hearing losses and the clarity of speech is affected. The hearing aid does not make speech more clear; it merely amplifies the sound. • Many people with hearing impairments are easily understood. Others cannot monitor the volume and tone of their speech and may be initially hard to understand. • Students who have hearing impairment, just like students who do not have hearing impairment, vary to some degree in their communication skills. 2.5.4.3. Possible Barriers: • Lack of interpreters or people who understand sign language • Decreased awareness of auditory cues in communication

125 2.5.4.4. Interaction with An Individual with Hearing Impairment : Each and every student is functionally different. So interactions with an individual with hearing impairment following suggestion are that: • Get the individual's attention before speaking. • Look at the individual when you speak. • Do not block the area around your mouth as it may inhibit lip reading. • Speak naturally and clearly. Slowing down slightly may help. Do not exaggerate lip movement and do not shout. • Try to avoid standing in front of windows or other light sources. The glare from behind makes it difficult to read lips and other facial expressions. • Do not hesitate to ask the student to repeat if you do not understand. If repeating does not work, use a pen and paper. Communication is the goal; the method is unimportant. • If a student is using an interpreter, speak directly to the student, not the interpreter. • Short sentences are easier to understand than longer sentences with several clauses. • If the student does not understand, try repeating, and if the student still does not understand, rephrase a thought or use a different word order rather than repeating the same words. • It is impossible to lip-read a word that the student has never seen before. If time permits, it helps to write the word and then let him or her see how it looks on the lips. • Facial expressions, gestures and other body language help convey the message. • If a sign language interpreter is present, request him or her to interpret - even for social and non-academic conversations. 2.5.4.5 "Check your progress" - 2 1. Mention any two facts of hearing loss?

126 2. Mention any five ways of interactions with an individual having hearing impairment?
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..... 2.5.5. Restoring Techniques Using Technological Support (

Hearing Device) If you think you might have hearing loss and could benefit from a hearing aid, visit your physician, who may refer you to an otolaryngologist or audiologist. An otolaryngologist is a physician who specializes in ear, nose, and throat disorders and will investigate the cause of the hearing loss. An audiologist is a hearing health professional who identifies and measures hearing loss and will perform a hearing test to assess the type and degree of loss.

Aural Rehabilitation: The professional efforts designed to help a person with hearing loss. This includes services and procedures for lessening or compensating for hearing impairment and specifically involves facilitating adequate receptive and expressive communication. (ASHA, 1984; WHO, 2000). 2.5.5.1-Amplification options The most important tool to help the hearing impaired person surmount the hearing handicap is a hearing aid or educational amplification unit. No system of amplification can restore hearing, but it can make useful residual hearing which could not otherwise be reached. Using amplifications the clients will be able to achieve goals unattainable without it. 2.5.5.2-Types of hearing aids: All hearing aids consist of four basic parts: 1. Microphone - picks up the sound and sends it to the amplifier 2. Amplifier - makes the sound louder 3. Receiver - sends the amplified sound into the ear canal 4. Battery - supplies the power to the hearing aid

127 2.5.5.3-Behind-

the-Ear Aids The behind-the-ear (BTE) hearing aid is the device most used by children. The components

are all contained in a plastic case which sits behind the ear. The case is connected to an earmould by a piece of clear plastic tubing. The earmould is specially designed to fit inside of the user's ear. A BTE hearing aid may be used with any degree of hearing loss and can be very flexible for use with a telephone or assistive listening device. 2.5.5.4-In-the-Ear

Aids The in-the-ear (ITE) hearing aid is smaller than the BTE hearing aid. All of the components fit inside of the plastic case which is made to fit the user's ear. The ITE hearing aid is not always the most appropriate choice for pediatric amplification because the aid must be replaced as the child grows. 2.5.5.5-In-thc-Canal Aids The in-the-canal (ITC)

hearing aid is even smaller than the 1TE hearing aid, fitting entirely inside of the ear canal. The ITC is used primarily with mild-to-moderate hearing losses. It is not recommended for pediatric use because of its size, and because it must also be replaced as the child grows. 2.5.5.6-Body Aids A body aid consists of a rectangular case and an earmould. The rectangular case contains the microphone, amplifier, and batteries and may fit into a pocket or "fannypack". There is a cord which connects the case to the button receiver. The button receiver is snapped into an earmould which is placed in the ear. The body aid is often used by people who have a severe-to-profound hearing loss. 2.5.5.7-Bone Vibrator Aid The bone vibrator hearing aid is primarily used by patients with conductive losses, or those who cannot wear traditional hearing aids, such as patients with atretic or microtic ears. The vibrator sits on the mastoid bone and is held in place by a headband. 2.5.5.8-Cochlear Implants: This is not a hearing aid but an implantable device, which stimulates the auditory nerve directly with help of intra-cochlear electrodes. The cochlear implant is a relatively new

128 device. It consists of internal parts, which go under the skin behind the ear and in the cochlea, and external parts worn behind the ear and on the body. The internal component, which is inserted during a surgical procedure, is made up of an electrode array, a receiver, and a magnet. The electrodes are inserted into the cochlea and the receiver and magnet are set into the bone behind the ear. The external component is made up of a transmitter coil, a microphone, and a speech processor. Both the transmitter coil and microphone are worn behind the ear, while the speech processor may be fit into a pocket or fanny pack. There are several criteria which a child must meet in order to be considered an implant candidate. The child must have a severe-to-profound bilateral loss, and receive little or no benefit from hearing aids. Medical, psychological, and educational status are also taken into consideration prior to implantation. 2.5.5.9 FM Systems FM systems, or auditory trainers, are primarily used in the school setting; however, they may be useful in a variety of listening situations. The system consists of two parts: a transmitter and a receiver. The speaker wears the transmitter and speaks into a microphone attached to it. The listener wears the receiver which picks up the signal from the microphone and delivers it to the ear through an earpiece on the child's hearing aid. The size and shape of the two components may vary; but the purpose remains constant: to raise the level of the speaker's voice above the background noise (increase the signal-to-noise ratio). 2.5.5.10 "Check your progress" - 3

1. Write the basic parts of hearing aids?
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2. What are the different types of hearing aids?
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3. What are the full form/of C.I. and P.M.
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129 2.5.6 Auditory Training Hearing mechanism plays a very vital and important role in the development of speech and language ability for purpose of communication. We are always surrounded by various types of sound and through experience and exposure and we learn to select and response to the sound which are important. So hearing serves as the primary sensory modality through which we maintain an awareness of our surrounding. 2.5.6.1 Importance Auditory training is essential and important for the hearing impaired child. Auditory training is required to make use of his/her residual hearing and to listen and understand the sound and acquire the speech and language skills gradually. Auditory training for hearing impaired child must be designed to serve mainly two purposes. (a) To perceive a wider variety of environmental sounds which will allow the child to be at least to unexpected change in his/her environment and thus ensure his safety well being for his/her life. (b) To perceive verbal signal, to acquire the linguistic role of language and develop speech skills and it is able to exchange idea and use oral communication. 2.5.6.2 When to start Auditory Training As early as possible. Auditory training should be started when routine audiometric assessment is completed. Then the hearing impaired child wearing hearing aid in both ears and speech therapist as teacher gives speech stimuli and teacher should be given study) 2.5.6.3 Pre requisite issue for auditory training The auditory training is very important for the development of speech and language. Few essential requirements given the auditory training start. The requirements are: (1) Fitted suitable hearing aid. (2) Suitable reinforcement may be given and co-operation of the child and the family member in the auditory training programme. (3) Child's response to different kinds of sounds and intensities need to be checked carefully.

130 (4) Always remember that the sound which is exposed to child often might be listed in hierarchical manner. (5) The activities and the material required for training the child should be prepared in advance and it is available normally in home. (6) It is better not to give auditory training when the child is likely to sleep or is involved other in activity. 2.5.6.4 Conditioning Sounds Conditioning is an important stage in auditory training. So, sound visual and tactile clues should be provided to show the child from where and how the sound is coming. The condition may be started with sound. These sounds are rubbing the finger, marble sound etc. Auditory training may be carried out at different levels as per the following steps. (1) Introduce the sound one by one and make a note at which levels child gives the response. (2) Vary the intensity of sounds and distance between the child and sound and note the lowest intensity and longest distance from where the child can detect the sounds. (3) Train the child to say how many times he/she has heard the sounds. (4) Train the child to say if the sound is of shorter or longer duration like /a/ and /aa/, /e/ and /ee/ etc. (5) The child may be trained to localize the sound i.e. to detect from which direction the sound is coming. (6) Train the child to listen and repeat the number or words in proper sequence. 2.5.6.5 Stages of Auditory Training The auditory training consists of 4 major stages of development such as: (1) Sound awareness training (2) Sound discrimination training (3) Discrimination of gross sound (4) Fine discrimination of speech sound (1) Sound awareness training: Introduce to different sounds one by one. The child

131 should respond to these sounds and from where the sound comes. Every day add loud sound a little more for the purpose of child's attention and focus on loud sound. Sound awareness training helps to assess hearing ability of the child in terms of the types of sound, intensity level and distance level from which the child can hear or understand. (2) Sound discrimination training: This training involves the child to various auditory sounds produced by noise makers i.e. bells, drum, horns, whistle etc. As the child learns to respond to the presence of the sound and to discriminate between one or more sounds. This training should be given in the following steps. (a) Train to listen to two sounds repeatedly. (b) Child should consistently respond to both the sounds properly. (c) Using conditioning procedure the child should be given auditory visual and tactile clues. (d) Care should be taken in the presentation of the stimulus. (e) Every step should be provided suitable encouragement and connect responses 80-90%. (f) Gradually introduce many more sounds in the training. (3) Discrimination of gross sound: At this stage the child has learnt the skills in recognizing the presence of the sound and perceiving gross difference between vowel sound with grossly dissimilar phonetic elements and between phrases which are closely related to his/her everyday experience e.g. p/g, s/l, pen/table etc. (4) Fine discrimination of speech sound: It is last stage of auditory training. This stage helps the child to recognize suitable difference between similar vowels and consonants sounds as well as integrating the child's expanding vocabulary to permit him/her quick and accurate understanding of connected speech such as p/ b, k/g, pin/bin, /tip/dip, ball/mall etc.

2.5.6.6 Auditory Training Material Drum, Table, Khanjiri, Whistle, Rattle, Bell, Horn, Telephone, Dog bark, Cat's meow, Cow's moo, Crowing the cock, Singing bird, Moving train, Motor sound, Fire engine, Cycle bell, Door bell, Door knock, Laughing, Crying, Running, Dancing, Eating, Clapping, Cooker whistle, Calling name, Dad's Mummy's voice, Aero plane sound, T.V., Radio, Computer etc and other natural and unnatural variety of sound.

132 2.5.6.7 "Check your progress" - 4 1. What is Auditory Training?

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- 2. Mention any four pre-requisites of auditory training?
- 3. How many stages are present in Auditory Training Name them.

..... 2.5.7 Let us Sum Up llll Deafness is a silent disability and is either partial and total. llll In the hearing world deaf people face many challenges in hearing environment. llll The challenges are education, communication and employment. llll Hearing impaired people can communicate by lip-reading, sign language and using hearing devices such as hearing aids and also cochlear implant. When they use lip-reading, sign language and hearing devices that means loss of normal hearing and restoring using (human interpreter) technological supports (hearing device) llll Restoring techniques are (1) Human interpreter (lip-reading, sign language, communication worker) (2) Technical support (hearing device/amplification option) (3) Auditory training.

2.5.8-Answer to Check Your Progress "Check your progress" - 1 Ø Speak clearly but avoid speaking artificially slowly, exaggerating your lips, or shouting as this affects the natural rhythm of speech. Ø Make use of natural gesture and facial expression as a clue to meaning.

133 Ø Make sure that there is adequate light on your face. Do not stand with your back to windows. Ø Position the student so that he/she can lip-read you easily and see the projector or board and as much of the class as possible if there is to be a group discussion. Ø Repeat questions asked from the floor.

2. British Sign Language (BSL) or Sign Supported English. "Check your progress" - 2 1- llll A hearing aid does not correct a hearing loss like glasses correct vision problems. Most persons with hearing impairments have sensory neural hearing losses and the clarity of speech is affected. The hearing aid does not make speech more clear; it merely amplifies the sound. llll Many people with hearing impairments are easily understood. Others cannot monitor the volume and tone of their speech and may be initially hard to understand. llll Students who have hearing impairments, just like students who do not have hearing impairments, vary to some degree in their communication skills.

2- llll Get the individual's attention before speaking. llll Look at the individual when you speak. llll Do not block the area around your mouth as it may inhibit lip reading. llll Speak naturally and clearly. Slowing down slightly may help. Do not exaggerate lip movement and do not shout. llll Try to avoid standing in front of windows or other light sources. The glare from behind makes it difficult to read lips and other facial expressions.

"Check your progress" - 3 1. Microphone, amplifier, receiver, battery. 2. Body worn hearing aids, behind the ear, in the ear aids, in the canal aids, bone vibrations aids. 3. Cochlear Implant and Frequency Modulated system.

134 “Check your progress” - 4 1. Auditory Training is a process of listening capacity which improves in hearing impaired child for the purpose of listening his/her residual hearing. 2- • Fitted suitable hearing aid. • Suitable reinforcement may be provided and co-operation of the child and the family member in the auditory training programme. • Child’s response to different kinds of sounds and intensities need to be checked carefully. • Always member that the sound which are exposed to child often might be listed in hierarchical manner 3- The auditory training consists of 4 major stages of development such as: • Sound awareness training • Sound discrimination training • Discrimination of gross sound • Fine discrimination of speech sound 2.5.9 Unit End Exercises 1. What is Auditory Training? Describe the details about Auditory Training. 2. Describe the details about restoring technique human interpreter and technical support. 2.5.10 References 1. Advani, L. & Chadha, A. (2003). *You and Your Special Child*. New Delhi: UBSPD. 2. Auditory-Verbal International. 1991. Auditory-verbal position statement. Virginia. 3. Bench, John, R.(1992).*Communication Skill in Hearing Impaired Children*,Wwhurr Publishers Ltd. 4. Basavaraj, V. & Nandurkar. A. (2007). Neonatal screening module for India - A preliminary report. Paper presented at 39th ISHA Conference, Calicut. 135 5. Clark, J.G.1981.Uses and abuses of hearing loss clasifiction.ASHA 23:493-500. 6. Gushing, S. L., Chia, R., James, A. L., Papsin, B. C., & Gordon, K. A. (2008). A test of static and dynamic balance function in children with cochlear implants. *Archives of Otolaryngology-Head & Neck Surgery*, 134, 34-38. 7. Elias, M. J. (2006). The connection between academic and social-emotional learning. In M. J. Elias & H. Arnold (Eds.),*The educator’s guide to emotional intelligence and academic achievement: Social and emotional learning in the classroom* (pp. 4-14). Thousand Oaks, CA: Corwin Press. 8. eric. ed.gov/fulltext/EJ683441 9. Finitzo T, Crumley WG. 1999. The role of the pediatrician in hearing loss. From detection to connection. *Pediatric Clinics of North America* 15-34:ix-x, Review. 10. Garretson,M.(1976)*Total Communication*.Volta Review 78,4,88-95. 11. Goldberg D. 1997. Educating children who are deaf and hard of hearing: Auditory- Verbal. ERIC Clearinghouse on Disabilities and Gifted Education, (www.eric.ed.gov) 12. Gans, J. (1995, July). The relation of self image to academic place-ment and achievement in hear ing-imp aired students. Paper pre-sented at the 18th International Congress on Education of the Deaf, Tel Aviv, Israel. 13. Geers, A. E. (2002). Factors affecting the development of speech, lan-guage and literacy in children with early cochlear implantation.*Language, Speech and Hearing Services in Schools*, 33, 133-172. 14. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4111478/> 15. <http://www.nurotone.com> 16. Joint Committee on Infant Hearing. 2000 Position Statement. *Pediatrics*, 106,708- 815. 17. Kadar,Fatima,Gorawar Pooja and Huddar Asmita(2002). Communication Option Available for the deaf: The Indian Scenario in the *Journal of the Indian Speech and Hearing Association*. 18. Karchmer, M. A., & Mitchell, R. E. (2003). Demographic and achievement characteristics of deaf and hard of hearing students. In M. Marschark & P. E. Spencer (Eds.), *Oxford handbook of deaf studies, language, and education*(pp. 21-37). New York: Oxford University Press. 136 19. Kluwin, T. N. (1999). Co-teaching deaf and hearing students: Research on social integration. *American Annals of the Deaf*,144, 339-344. 20. Kluwin, T. N., Stinson, M. S., & Colarossi, G. M. (2002). Social pro-cesses and outcomes of in-school contact between deaf and hear-ing peers. *Journal of Deaf Studies and Deaf Education*, 7, 200-213.Koplow, L. (2002). *Creating schools that heal*. New York: Teachers College Press. 21. Leigh, G.. & Power, D. (2004). Education of deaf children at the turn of the 21st century. In D. Power & G. Leigh (Eds.), *Educat-ing deaf children: Across the curriculum, across the world* (pp. 9-21). Washington, DC: Gallaudet University Press. 22. Lynas,Windy(1994). *Communication Option*. Whurr Publication:England. 23. Moeller MP. 2000. Early intervention and language development in children who are deaf and hard of hearing. *Pediatrics* 106:E43. 24. Nikam, S. & Dharmaraj, S. (1971). Infant Screening: Report on a preliminary study. *Journal of AH India Institute of Speech & Hearing*, 2, 65-68. 25.

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Unit-3.1 ppppp

Process of Seeing and Common Eye Disorders

in India Structure: 3.1.1 Introduction 3.1.2 Objectives 3.1.3

Anatomy and Physiology of the Seeing Media 3.1.4 Different Parts of Eye and Their Function in Seeing 3.1.5 Process of Seeing 3.1.6 Common Eye Disorders In India 3.1.7 Symptoms And Teratment Of Refractive Errors 3.1.1 Introduction: There is a kind of perception that takes place as our brain decides what it is we are actually seeing. You can actually watch this process of settling upon the right image if you look for it. It is especially pronounced if the brain can't immediately decide what it's viewing. For example, if you see something in the distance you can't quite make out the gestalt changes from image to image until the brain is satisfied that it is the correct one. Try to catch it sometime. In any case, we see what we have been taught to see. That is, the process of seeing is learned from the time we are infants. This is basically why all of us see the same things, and why anyone who doesn't is considered crazy. Artists have long played on the edge of perceptions that are not readily available to the rest of us. Impressionism is a good example. These artists realized that light affected colour and form in unimaginable ways (at that point in the history of art), and painted impressionistic scenes so the rest of us could also see them. Of course, now most of us do, if we allow ourselves to. This really is the essential point—allowing ourselves to. We are much more resilient and stable than we imagine. We can all handle more uncertainty than we imagine. Just because we see or think something out of the ordinary does not mean we're insane. It's a normal part of perception.

Unit-3 ppppp Visual Impairment–Nature and Assessment

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Objectives: After going through this unit you should be able to: 1. Draw the structure of seeing media 2. Describe the functions of the media 3. Explain the process of seeing 4. Describe the disorders of eye 5. Explain the treatment procedure of refractive errors 3.1.3 Anatomy And Physiologhy Of Seeing Media The process of perception is done through eye which

is the predominant sense organ of human being. It is

a very sensitive organ in our body to be taken care of properly. Around 85% of the information is received through our eyes. Sight is the sense through which the brain received approximately 75% of its information. The eye is essentially formed from both ectoderm and mesoderm.

The eye collects information about size, shape and colour and transmits those to brain where these are interpreted.

So it must be said that eye is the apparatus for seeing. The structure of the orbit, the ocular adnexa, the ocular muscles, the nerves and the blood supply system are so as to help the eyeball to see and to protect it from injury. To understand the mechanism of vision we have to understand the function of the eyeball, the ocular adnexa (the eyelids, the conjunctiva and the lacrimal system) and the ocular muscles.

3.1.4 Different Parts of Eye And Their Function in Seeing:

The eyeball: The eyeball rests in a soft cushion of fat protected by the bony orbit of the skull. It is almost a perfect sphere with clean window in front of cornea. The parts of eyeball are as follows-

Cornea The cornea has an important role in image formation; it forms a primary refractive element in the eye. So it says that cornea is a clear front window of the eye which transmits and focuses (i.e., sharpness or clarity) light into the eye.

140 Iris: The coloured part of the eye which helps regulate

the amount of light entering the eye. When there is bright light, the iris closes the pupil to

let in less light. And when there is low light, the iris opens up the pupil to let in more light. **Pupil:** The dark centre opening in the middle of the iris. The pupil changes size to adjust for the amount of light available (smaller for bright light and larger for low light). This opening and closing of light into the eye is much like the aperture in most 35 mm cameras which lets in more or less light depending upon the conditions.

Lens: Focuses light rays onto the retina. The lens is transparent, and can be replaced if necessary. The lens is not noticed normally because it is hidden within the dark cavity of the inner eye. **Intraocular lenses** are used to replace lenses clouded by cataracts. **Sclera:** The white outer coat of the eye, surrounding the iris. It is similar to the cornea, except that it is vascular, and has dense, irregular, fibrous connective tissue. **Choroid:** Layer containing blood vessels that lines the back of the eye and is located between the retina (the inner light-sensitive layer) and the sclera (the outer white eye wall).

Retina: The nerve layer lining the back of the eye. The retina senses light and creates electrical impulses that are sent through the optic nerve to the brain.

Macula: The area in the retina that contains special light-sensitive cells. In the macula these light-sensitive cells allow us

to see fine details clearly in the centre of our visual field. **Fovea:** The centre of the macula which provides the sharp vision.

Ciliary Body Structure containing muscle and is located behind the iris, which focuses the lens. **Aqueous Humour :**

Produced by ciliary processes of ciliary body. It provides nutrients for lens and cornea. It also maintains intraocular pressure (25mm.Hg), and is replaced several times a day 2 F 1/min).

141 Vitreous Humour: The, clear, gelatinous substance filling the central cavity of the eye secreted by the ciliary body up to the time of maturity. It has very loose connective tissue: contains water, hyaluronic acid and collagen. Pressure from the vitreous humour prevents retinal detachment. It supports the lens anteriorly and the retina posteriorly. It contains a

hyaloid canal, which is a remnant of blood vessels during development. **Optic Nerve:** A bundle of more than a million nerve fibers carrying visual messages from the retina to the brain. (In order to see, we must have light and our eyes must be connected to the brain.) Your brain actually controls what you see, since it combines images. The retina sees images upside down but the brain turns images right side up. This reversal of the images that we see is much like a mirror in a camera.

Ocular adnexa: Accessory structures of the eye, including the eyelids, conjunctiva and the lacrimal apparatus. **The eyelids:** The chief function of the lids is to

protect the eyes from injury and excessive light. The eyebrow and eyelashes also participate in protective role.

Conjunctiva: It is continuous

with the skin of the eyelids. The palpebral Conjunctiva is the part of the conjunctiva that covers the inner surface of the Eyelid; the bulbar conjunctiva covers the surface of the eyeball. It is lined by stratified squamous epithelium, and contains goblet cells, which secrete the deepest, mucus, layer of tear film, which adheres to the surface of the globe. It is highly vascular. The conjunctive blends with the skin of the lid margins as well as with the corneal epithelium. It is also continuous, via the lacrimal puncta and canaliculi with the mucosa of the nasolacrimal sac and duct and hence nose. The

lacrimal system: The two main part of lacrimal system are (a) the lacrimal gland which secretes tears and (b) the lacrimal ducts which carry the tears from the eye into cavity of the nose. It also contains three layers of the tear film: 1. Deep mucous: from conjunctival goblet cells, adheres tears to the conjunctiva a. Middle aqueous: from main and third eyelid lacrimal glands; it cleanses, oxygenates and fills optimal defects. 3. Superficial oily layer: from tarsal glands prevents

evaporation

evaporation

evaporation

142 Extra ocular muscles: The muscles which control the movements of eye ball are six in number, all named by their positions with regard to eyeball. These are as follows- 1. Dorsal rectus muscle 2. Ventral rectus muscle 3. Medial rectus muscle 4. Lateral rectus muscle 5. Dorsal oblique muscle 6. Ventral oblique muscle Usually carrying out the eye movements two or more muscles work together. In addition to the co-ordinated action of muscles in one eye, it is essential for proper vision that there be perfectly co-ordinated muscular action in both eyes. 3.1.5 Process of Seeing: From the above discussion we can compare the eye with a camera. Vision is a complex function that requires more than the eye alone.

The act of seeing requires light to see by and the brain to interpret what is seen. The light rays reflect from an object in a person's field of vision, fall on the eyes. The rays pass through the cornea through the aqueous humour and through the pupil of the colour iris

which dilates or contracts to control light in accordance to the brightness of the object.

In addition the pupil contracts when it looks something small in order to increase the sharpness. Vitreous body Lens Conjunctiva Optic nerve Yellow spot Papilla Sclerotic coat Choroid coat Retina Cornea Iris

143 The rays then pass through the crystalline lens when the eye is relaxed and looking into the far distance the rays of light are focused on to the retina. When we wish to look at something nearer say at 6ft the focus of the lens is automatically adjusted by the surrounding ciliary muscles. The fluid in the aqueous humours in front of the lens and the vitreous body behind the lens allow it to expand or contract easily. This

process of focusing is called accommodation. The cornea and the lens combine to bend the light rays as they pass through. The rays pass through the vitreous body and penetrate the retina, where they set up a photochemical response in the outer most layers, there stimulating the rods and cones. The impulse is picked by the retinal nerve fibres and pass along the optic nerve to the brain where upside down image is formed. Based on experience, the inverted image is psychologically transposed.

The eyes move together and send the brain almost identical images. The brain then joins these two images into a single mental picture. The slight difference in the images is needed to produce stereographic vision. By this long process we are able to see. 3.1.6 Common Eye Disorders in India:

Eyesight is one of the most precious gifts that nature has given to mankind. It's only because of the eyes; one can enjoy the beauty of this world. It's impossible to imagine life without sight. Though a very small part of body, eye is one of the most complex human organs. It has various parts, all of which are responsible for normal vision. Smallest structural or functional alteration in the functioning of an eye can cause tremendous visual disturbances.

This type of visual disturbance makes people helpless and also dependable. The other name of visual disturbance is called visual disorder .on the other hand it is also known as refractive error. In India maximum cause of the adult blind is refractive error or injury or accident. If they are identified at first time there is a chance for curing. But due to lack of knowledge or person's negligence most of the time these disorders are not properly treated or identified. To see external object clearly, it is necessary that sharp images of objects must be formed upon the retina. The cornea, the aqueous humour, the crystalline lens and the vitreous body act together as refractive media to bring parallel rays of light reflected from external object to a focus on the retina. The images become sharp in the macula. The normal eye is called emmetropic while the abnormal condition is called errors of refraction or ametropia.

Refractive error or need of glasses is one of the most common eye problems. It can start at any age. This is due to alteration in length, shape & / or capacity of eyes.

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What is

refraction? Refraction is the bending of light as it passes

through one object to another. Vision occurs when light rays are bent (refracted) as they pass through the cornea and the lens. The light is then focused on the retina. The retina converts the light-rays into messages that are sent through the optic nerve to the brain. The brain interprets these messages into the images we see. What are refractive errors?

Refractive errors occur when the shape of the eye prevents light from focusing directly on the retina. The length of the eyeball (longer or shorter), changes in the shape of the cornea, or aging of the lens can cause refractive errors. Not all eyes are optically perfect and consequently light rays may not be brought accurately to focus on the retina. Faulty optical conditions, or refractive errors may be classified into four basic categories. These are as follows- Hyperopia (farsightedness): It is a common type of refractive error where distant objects may be seen more clearly than objects that are near. When the optics are too weak for the length of the eyeball, one has hyperopia or farsightedness. This can arise from a cornea or crystalline lens with not enough curvature (refractive hyperopia) or an eyeball that is too short (axial hyperopia) However, people experience hyperopia differently. Some people may not notice any problems with their vision, especially when they are young. For people with significant hyperopia, vision can be blurry for objects at any distance, near or far. This can be corrected with convex lenses which cause light rays to converge prior to hitting the cornea.

145 Myopia (nearsightedness) It is a condition where objects up close appear clearly, while objects far away appear blurry. When the optics is too powerful for the length of the eyeball one has myopia or nearsightedness. This can arise from a cornea or crystalline lens with too much curvature (refractive myopia) or an eyeball that is too long (axial myopia). With myopia, light comes to

focus

in front of the retina instead of on the retina

Myopia can

easily be corrected with a concave lens which causes the divergence of light rays before they reach the cornea.

Astigmatism It is a condition in which the eye does not focus light evenly onto

the retina, the light- sensitive tissue at the back of the eye.

This can cause images to appear blurry and stretched out. Cylindrical errors cause astigmatism, when the optical power of the eye is too powerful or too weak across one meridian, such as if the corneal curvature tends towards a cylindrical shape. The angle between that meridian and the horizontal is known as the axis of the cylinder. A person with astigmatic refractive error sees lines of a particular orientation less clearly than lines at right angles to them. This defect can be corrected by refracting light more in one meridian than the other. Cylindrical lenses serve this purpose.

146 Presbyopia It is an age-related condition in which the ability to focus up close becomes more difficult. As the eye ages, the lens can no longer change shape enough to allow the eye to focus close objects clearly. The individual would experience difficulty in near vision, often relieved by reading glasses, bifocal, or progressive lenses. Other type of refractive errors are- Amblyopia: Amblyopia is any reduction in visual acuity in one or both eyes. This condition of mentally shutting out the images of one eye is also known as lazy eye. Amblyopia in young children may not present a permanent reduction in vision since correction may be possible. Treatment may consist of glasses, patching, surgery or a combination of procedures including eye exercises. Squints (strabismus): Defects of eye muscles are cause for eye disorder. If one or more muscles which help rotate the eye become weak or paralysed both eyes then fail to focus on some object at the same time or same angle. The condition is known as strabismus. It means that in coordinated action of the muscles cause the failure of the visual axes of the two eyes to meet at the objective point. Squint is convergent when the eyes turn towards the medial line; it is divergent if the eyes turn outward. Squint in children may some time lead to serious visual impairment as the brain tends to accept only the good images of the weaker or squinted eye. Due to disuse the weak eye may reduce to low vision.

147 Nystagmus: It is the term applied to rapid oscillatory movements of the eye ball. The movements are involuntary. They are usually lateral but vertical, rotator and mixed rotator and lateral or vertical nystagmus occurs. Nystagmus may be congenital, early infantile or it may be acquired. Nystagmus is present in most cases of total colour blindness in which vision is carried out by the rod alone. In some cases head nodding with Nystagmus is congenital or hereditary a condition which persists throughout life. 3.1.7 Symptoms and Treatment of Refractive Error: What are the signs and symptoms of refractive errors? Blurred vision is the most common symptom of refractive errors. Other symptoms may include: Double vision, Haziness, Glare or halos around bright lights, Squinting, Headaches and Eye strain. How are refractive errors diagnosed? An eye care professional can diagnose refractive errors during a comprehensive dilated eye examination. People with a refractive error often visit their eye care professional with complaints of visual discomfort or blurred vision. However, some people don't know they aren't seeing as clearly as they could. How are refractive errors treated? Refractive errors can be corrected with eyeglasses, contact lenses, or surgery.

Eyeglasses: These are the simplest and safest way to correct refractive errors. Your eye care professional can prescribe appropriate lenses to correct your refractive error and give you optimal vision.

148 Contact Lenses: It works by becoming the first refractive surface for light rays entering the eye, causing a more precise refraction or focus. In many cases, contact lenses provide clearer vision, a wider field of vision, and greater comfort. They are a safe and effective option if fitted and used properly. It is very important to wash your hands and clean your lenses as instructed in order to reduce the risk of infection. If you have certain eye conditions you may not be able to wear contact lenses. Discuss this with your eye care professional. Refractive Surgery: It aims to change the shape of the cornea permanently. This change in eye shape restores the focusing power of the eye by allowing the light rays to focus precisely on the retina for improved vision. There are many types of refractive surgeries. Your eye care professional can help you decide if surgery is an option for you.

149 Unit : 3.2 ppppp Blindness and Low Vision-definition and Classification Structure: 3.2.1. Introduction 3.2.2. Objectives 3.2.3. A Brief Historical Review 3.2.4. Definition 3.2.4.1 Blindness 3.2.4.2 Low Vision 3.2.5. Classification 3.2.1 Introduction It is a true phenomenon that visual impairment tends to evoke more awkwardness from us than any other disability. For one thing, blindness is visible. The blind person is usually not one who can easily weave himself into the fabric of a crowd. Unlike many other exceptional people he stands out. The visually impaired person, however, has a variety of symbols. Cane, thick or darkened glasses, a guide dog etc. 3.2.2 Objectives After going through this unit you should be able to: 1. Draw out the position of impairment 2. Know about blind 3. Tell about low vision 4. Also gather knowledge about visual classification

150 3.2.3 A Brief Historical Review: The history of Special Education in general and of visually impaired children in particular had visualized many ups and downs in its progressive phase of development. Globally it evolved through the following five stages. 1) Pre-Christian Era- During this stage, disability was viewed as punishment of past sins and nobody wanted to interfere in the justice meted out to the disabled persons by God. 2) Christian Era- In this stage they are protected and pitied to reduce their pains and miseries. 3) Dawn of 19th century- Institutions were established to provide them separate education. 4) Late 20 th century- The movement started to integrate them in the society. 5) Present age- The concept of special and integrated system of education has been emerged out on the basis of needs of disabled persons. 3.2.4 Definitions: 3.2.4.1 Blindness: The term blindness is used for complete or nearly complete vision loss. Legal/ medical definitions

The current definition does not make a distinction between those who have "irreversible" blindness (NO perception of light) and those that have light perception but are still less than 3/60 in the better eye. The legal definition involves assessment of visual acuity and field of vision. It is used to determine whether or not an individual qualifies for legal benefits. The American Medical Association (AMA) proposed this definition in 1934.this definition is now accepted by American Foundation for the Blind (AFB) and other Blind Association in different countries.

In India, the broad definition of visual impairment as adopted in the Persons with Disabilities Act (PWD), 1995 as well as under the National Programme for Control of Blindness (NPCB) is given as "

Blindness refers to

a condition where a person suffers from any of the following conditions:

151 Total absence of sight or

Visual acuity not exceeding 6/60 or 20/200 (Snellen) in the better eye even with correction lenses or limitation of the field of vision subtending and angle of 20

degree or worse.”

Educational/functional definition Many educators are disinterested in the legal or medical definition of blindness. Their argument that visual acuity is not very accurate prediction of how one will function or effectively use the remaining sight he has. A common misconception is that legally blind having absolutely no vision, the vast majority are able to see. Recognizing the limitations of the legal definition of blindness and partially sightedness, many have favoured an educational definition. For educational purpose, “the blind are those who are so severely impaired that they must be taught to read by Braille, while the partially sighted can read print by using magnifying glasses or books with large print.” The educational definition of visual impairment considers the extent to which the child’s vision affects learning and makes special methods or materials necessary. Educators often differentiate between blind and low vision students. For deciding the blindness, the visual acuity as well as field

of vision has been considered. Visual acuity: It refers to the ability of the eye to see details.

The visual acuity for distance is measured as the maximum distance at which

a person can see a certain object, divided by the maximum distance at which a person with normal eyesight can see the same. Thus a visual acuity of 6/60

means that the person examined cannot see, at a distance of 6 meters, the object, which a person with normal eyesight would be able to see at 60 meters.

Visual

efficiency: Visual efficiency is the extent to which available vision is used effectively. The term visual efficiency includes visual acuity at long and at short, control of eye movements, accommodative ability etc. this also includes the processing ability of the brain. Visual efficiency is unique to each child.

The visual efficiency can be developed by training but cannot be measured

or predicted clinically with any accuracy by medical, psychological, or educational personnel. As defined by Barrage, Visual efficiency includes such skills as controlling eye movements, adapting to the visual impairment, paying attention to visual stimuli and

152 processing visual information rapidly. The fundamental premise in developing visual efficiency is that children learn to see and must be actively involved in using their own vision.

Field vision It refers to the field which both the eyes can easily see in the front. The normal field of vision is 150 degrees in front of eye. Visual functioning

The visual functioning refers to the degree to which ability of a person to use vision for all activities. 3.2.4.2

Low vision Low vision is a term often used interchangeably with visual impairment and refers to a loss of vision that may be severe enough to hinder an individual’s ability to complete daily activities such as reading, cooking, or walking outside safely, while still retaining some degree of useable

vision. The Person with Disabilities Act, 1995 also recognizes LOW VISION as a category of disability and defines it as follows: “Person with

low vision means a person

with

impairment of visual functioning even after treatment or standard refractive correction

but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device.”

This definition is incomplete as it inadvertently omits quantification of the acuity as well as the field of vision as is done in the case of the WHO definition. It is desirable to modify this definition and the following quantification should be added: “Low vision are those who suffer visual acuity between 20/200 to 70/200(Snellen) or 6/18to 6/60 in the better eye after the best possible correction or a Field of vision between 20 to 30 degrees.”

In

the practice of eye care “LOW VISION” has a specific meaning as defined by WHO. This

is

as follows: “

A person with low vision is one

who has impairment of visual functioning even after treatment and/

or standard refractive correction, and has a visual acuity of less than 6/18 to light perception, or a visual field of

less than 10 degree from the point of fixation,

153 but who uses, or is potentially able to use, vision for planning

and/or execution of a task.”

The points emphasize are that there is significantly reduced vision visual performance is affected but there still is vision that can be used.

For deciding the low vision, the residual vision as well as functional vision has been considered. Residual vision The use of remaining vision by the visually impaired individuals to perform their daily activities is known as residual vision.

Functional vision Functional vision is the use of vision for particular activities. Functional visual skills are required to carry out every day activities.

Central Scotoma A hazy or dark hole appears in the centre of objects. Causes include macular degeneration and optic atrophy. Tunnel vision

Loss of peripheral vision causes a restricted field of vision, Objects in the centre remain visible. Causes include glaucoma and retinitis pigmentosa.

Accommodation If while looking at an object situated at infinity, the gaze be transferred to an object near at hand, some readjustment of the power of the crystalline lens will have to occur, otherwise the image will fall behind the retina. This adjustment of the power of the lens is called accommodation. 3.2.5 Classification:

The importance of functional definition lies in the 'label' people are given. Someone with visual acuity of 2/60 can have useful vision, for example, for mobility. However, he or she will be labelled blind person. The consequence is this person is then treated as if he

or

she is blind. This ignores the usable vision. There should be a difference between legal blindness and functional blindness or low vision. The

World Health Organization uses the following classifications of visual impairment. When the vision in the better 154 eye with best possible glasses correction is: 20/30 to 20/60 : is considered mild vision loss, or near-normal vision

20/70 to 20/160 : is considered moderate visual impairment, or moderate low vision 20/200 to 20/400 : is considered severe visual impairment, or severe low vision 20/500 to 20/1,000 : is considered profound visual impairment, or profound low vision

More than 20/1,000 : is considered near-total visual impairment, or near total blindness No light perception : is considered total visual impairment, or total blindness. Blindness is defined by the World Health

Organization as vision in a person's best eye of less than 20/500 or a visual field of less than 10 degrees Category

Corrected Visual WHO's Working Indian acuity in the better Defmition(standard) Definition Definition eye 0 6/6-6/18

Normal Normal Normal 1 >6/ 18-6/60 Visual impairment Low vision Low vision 2 >6/60-3/60 Severe visual Low

vision Blind impairment 3 >3/60-1/60 Blind Low vision Blind 4 >1/60-PL Blind Low vision Blind 5 NPL Blind Total

Blindness Total Blindness

The WHO standard definition defines blindness

as visual acuity of less than 3/60 in the better eye with the

best possible correction as compared to that of 6/60 in India. The WHO functional definition however considers

blindness starting at light perception or when a person has no usable vision. Similarly a person with visual acuity better than 3/60 but equal or less than 6/60

is graded as "blind" in India, while WHO grades him as low vision. In India

a person with a visual acuity >6/60 is legally blind, which enables to receive certain services and financial benefits.

However a person who is legally blind can still have useful vision to do certain tasks as can be seen in the working

definition. This refers to the fact that they still have functional vision which is the use of vision for a particular purpose. For India or other developing countries, it is essential to maintain the legal definition of blindness at the level of visual acuity of

6/60(20/200 Snellen) or less and field of vision of 20 degree or less. Already the travel concessions scholarship and other benefits are very meagre, if 'perception of light' to 'no perception of light' is considered blindness, a large

number

of persons who are at present availing these

155 concessions would fall outside the eligibility criteria and thus remain bereft of these benefits. Alternatively, if these concessions are extended to all the persons with low vision in the acuity range of 6/18 to 'perception of light' as defined by WHO the appropriate Government may not be able to meet demand due to financial constraints. For India and other developing countries it is desirable to maintain the definition of blindness as adopted in the Persons with Disability Act 1995 i.e. visual acuity of 6/60(20/200) or less and field of vision of 20 degree and less and to consider all the persons in the range of acuity of 6/18 to 6/60(20/60 to 20/200) as persons with low vision.

According to above discussion visually impaired are classified as follows- Partially Sighted The generally accepted definition for educational purposes now includes: 1. Those students with visual acuity of 20/70 or less in the better eye after the best possible correction, who can use vision as the main channel of learning. 2. Those students, who in the opinion of eye specialist and educational authorities will benefit by the use of special facilities provided by the programme for partially sighted students. One eyed

The definition of blindness adopted in India excludes people with impairment only in one eye from the purview of blindness.

Generally the impairment of 40% or more is considered a handicap but in the case of one eyed person it is only 30% according to the approved definition in medical parlance, a person with one good eye is not a blind person.

Vision loss It refers to individuals who have trouble seeing, even when wearing glasses or contact lenses, as well as to individuals who are blind or unable to see at all. Monocular vision impairment "Monocular vision impairment" or "Monocular Blindness"; are used both eyes separately. By using the eyes in this way, as opposed by binocular vision, the field of view is increased, while depth perception is limited. The fellow eye in these need not necessarily to be "normal".

156 Self-reported vision loss It is determined on an individual basis based on that person's perceived visual ability and its effect on daily functioning. Functional limitation It refers to the interaction of visual functioning and ability to perform activities of daily living/instrumental activities of daily living. Common daily activities affected by vision loss are reading, safe pedestrian travel, self-care, cooking, and recreational activities. Visual impairment It is often defined clinically as a visual

acuity of 20/70 or worse in the better eye with best correction, or a total field loss of 140

degrees. Additional factors influencing visual impairment might be contrast sensitivity, light sensitivity, glare sensitivity, and light/ dark adaptation. Legal blindness It is a level of vision loss that has been legally defined to determine eligibility for

benefits. The clinical diagnosis refers to a central

visual acuity of 20/200 or less in the better eye with the

best possible correction, and/or a visual field of 20 degrees or less. Often, people who are diagnosed with legal blindness still have some useable vision. Total blindness It refers to an inability to see anything with either eye.

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Unit : 3.3

ppppp Demographic Information-NSSO and Census 2011 Structure: 3.3.1 Introduction 3.3.2 Objectives 3.3.3

Demographic Information 3.3.4 Nssso 3.3.5 Census-2011 3.3.1 Introduction: It is a constitutional obligation of the government to promote the welfare of people by securing and protecting as possible a social order in which social, economic and political justice shall inform all the institution of national life. For this reason census is necessary. There are several estimates about the size of the disabled population in India with reference to the world situation. 90% of the world's blind people live in developing countries. Visually impaired people account for 48.5% of more than 2 core figure in India. To give them proper prevalence demographic information has great importance. 3.3.2 Objectives: After studying this unit, you should be able to: 1. Explain the need of census 2. Discuss the role of census 2011 3. Explain the services provided by NSSO 4. Write about demography 3.3.3 Demographic Information Demography is the statistical study of human population. As a very general science, it can analyze any kind of dynamic living population, i.e., one that changes over time or

158 space. It encompasses the study of the size, structure, and distribution of these populations, and spatial and/or temporal changes in them in response to time, birth, migration, ageing, and death. The word demography taken from Greek word where demos, means "the people" and -graphy means description or measurement. Demographics are quantifiable characteristics of a given population. Demographic analysis can cover whole societies, or groups defined by criteria such as education, nationality, religion and ethnicity. Educational institutions usually treat demography as a field of sociology, though there are a number of independent demography departments. Formal demography limits its object of study to the measurement of population processes, while the broader field of social demography or population studies also analyzes the relationships between economic, social, cultural and biological processes influencing a population. Demographic thoughts can be traced back to antiquity, and are present in many civilisations and cultures, like Ancient Greece, Ancient Rome, India and China. There are two types of data collection — direct and indirect — with several different methods of each type.

Direct methods Direct data comes from vital statistics registries that track all births and deaths as well as certain changes in legal status such as marriage, divorce, and migration (registration of place of residence). In developed countries with good registration systems (such as the United States and much of Europe), registry statistics are the best method for estimating the number of births and deaths. A census is the other common direct method of collecting demographic data. A census is usually conducted by a national government and attempts to enumerate every person in a country. However, in contrast to vital statistics data, which are typically collected continuously and summarized on an annual basis, censuses typically, occur only every 10 years or so and thus are not usually the best source of data on births and deaths. Analyses are conducted after a census to estimate how much over or undercounting took place. These compare the sex ratios from the census data to those estimated from natural values and mortality data. Censuses do more than just count people. They typically collect information about families or households in addition to individual characteristics such as age, sex, marital status, literacy/education, employment status, and occupation, and geographical location. They may also collect data on migration language, religion, nationality and citizenship. In countries in which the vital registration system may be incomplete, the censuses are also used as a direct source of information about fertility and mortality.

Indirect methods Indirect methods of collecting data are required in countries and periods where full data are not available, such as is the case in much of the developing world, and most of 159 historical demography. One of these techniques in contemporary demography is the sister method, where survey researchers ask women how many of their sisters have died or had children and at what age. With these surveys, researchers can then indirectly estimate birth or death rates for the entire population. Other indirect methods in contemporary demography include asking people about siblings, parents, and children. Other indirect methods are necessary in historical demography. There are a variety of demographic methods for modelling population processes. They include models of mortality, fertility, marriage disability, population projections and population momentum.

3.3.4 NSSO

The NSSO (National Sample Survey Organisation), now known as National Sample Survey Office, is an organization under the Ministry of Statistics of the Government of India. It is the largest organisation in India conducting regular socio-economic surveys. It was established in 1950. Employees of NSSO belong to Indian Statistical service and Subordinate statistical service. NSSO has four divisions: 1. Survey Design and Research Division (SDRD), 2. Field Operations Division (FOD), 3. Data Processing Division (DPD) and 4. Co-ordination and Publication Division (CPD)

The Survey Design and Research Division (SDRD) It is a professional organ of NSSO, mandated to do the job of: Planning of the survey, Formulation of sample design, Drawing up of schedules of inquiry, Formulation of concepts and definitions, Preparation of instruction manual for survey field work, Survey Design and Research Division (SDRD). Training of field and data processing personnel on survey Methodology Formulation of scrutiny check points Drawing up of tabulation programme Preparation of survey reports Analysis and presentation of survey results and Undertaking studies for the improvement of survey methodology

SDRD, NSSO is located at Mahalanobis Bhavan, Kolkata and is headed by an Additional Director General - a Higher Administrative Grade (HAG) level officer, and has sanctioned strength of three SAG (Senior Administrative Grade), fifteen JAG (Junior Administrative Grade), eight STS (Senior Time Scale) and four JTS (Junior Time Scale) level officers of Indian Statistical Service besides one Deputy Director (Administration) and the supporting staff members.

The Field Operations Division (FOD) The one of the four Divisions of the National Sample Survey Office, is responsible for conducting surveys in the field of Socio- Economic, Industrial Statistics, Agricultural

160 Statistics, Prices, etc. as per the approved programmes. It is also responsible for updating the frame for conducting Socio-Economic Surveys in urban areas. This Division with its Headquarters located at New Delhi and Faridabad functions through a network of 6 Zonal Offices, 49 Regional Offices and 116 Sub-Regional Offices spread throughout the country and have staff strength of about 4000. The Division is headed by Additional Director General (ADG), an Additional Secretary Level Officer. In Headquarters, four Deputy Director Generals as well as other officers in the rank of Director/ Joint Director/ Deputy Director/ Assistant Director assist him. All the Zonal Offices are headed by Deputy Director Generals while the head of Regional Offices are Deputy Director General/ Director level officers except for Port Blair which is headed by Assistant Director. Field Operations Division (FOD). The Data Processing Division (DPD) This department of NSSO with Headquarters at Kolkata and five Data Processing Centres outside Kolkata at Ahmadabad, Bangalore, Delhi, Giridih and Nagpur are primarily mandated to undertake the processing, the tabulation and the dissemination of data collected through Nation Wide Large Scale Sample Surveys on various Socio-economic issues conducted by National Sample Survey Office (NSSO) under the Government of India. This task of transforming large volume of raw data into the final form of Key Indicators or Estimates in Tabular Format with due process of scrutiny and validation is carried out by a large number of trained and experienced technical officials in Electronic Data Processing Cadre under the overall supervision and guidance of the officers of Indian Statistical Service. The role of DPD starts from the initial stage of formulation of the Sample Design for NSS Surveys by SDRD wherein apart from providing input for the formulation it has to undertake the job of sample selection. Later on DPD undertakes the job of software development for Data Entry, Data Verification, Computer Edit, Other Data Validations, Howler Checks, Tabulation, etc. DPD also assists the States by providing complete IT solutions in all their data processing related activities and also through periodic training/workshop and other interactive methods. With the advent of Information Technology, DPD is now introducing modern technology to reduce time and effort in data capturing and transmission besides improving quality of unit level data. It also helps other countries/organizations in enhancing their capacity building particularly in data processing/analysis by conducting various need based training programmes. Main Functions are as follows

1. Selection of samples and preparation of Sample lists. Data Processing Division (DPD)

- 161 2. Manual checking of identification particulars and pre data entry scrutiny.
3. In-house development of validation and tabulation software.
4. Data Entry & Verification of filled-in schedules.
5. Validation of data through various stages covering both content check and coverage check.
6. Preparation of Directory and Multiplier files for estimation of parameters.
7. Tabulation of validated data as per approved tabulation plan.
8. Processing & tabulation of monthly Rural retail price data and release of Quarterly Rural Price Bulletin.
9. Assistance to state statistical agencies in processing of NSS state sample data.
10. Providing training in application of computer and on data processing.
11. Undertaking special data compilation and tabulation work for: Various analytical studies, Methodological studies etc. undertaken by NSSO in support of Working Group/Steering Committee Special users/Committees/Ministries/Depts./Orgs.
12. Organising scrutiny feedback workshop for FOD.
13. Providing technical guidance/assistance to NSS Data Users.
14. Meeting Data requirements (Adhoc tabulation/drawing of Samples etc.) and User's queries.

Co-ordination & Publication Division (CPD) It is located at New Delhi and is responsible for:

1. coordinating the activities of all the Divisions of NSSO.
2. Dissemination of survey results and analysis through the biannual technical journal 'Sarvekshana' and 'National Seminars' to discuss the survey.
3. Providing technical and secretarial assistance to Steering Committee of National Sample Surveys.
4. Supplying survey data of various rounds to individuals, researchers, research institutions and other private and govt. bodies.
5. Liaison with other Departments/ Ministries on various matters concerning NSSO.
6. Providing the technical and secretarial assistance to DG& CEO of NSSO.

3.3.5 Census 2011

The 15th Indian Census was conducted in two phases, house listing and population enumeration. House listing phase began on 1 April 2010 and involved collection of

162 information about all buildings. Information for National Population Register was also collected in the first phase, which will be used to issue a 12-digit unique identification number to all registered Indians by Unique Identification Authority of India. The second population enumeration phase was conducted between 9 to 28 February 2011. Census has been conducted in India since 1872 and 2011 marks the first time biometric information was collected. According to the provisional reports released on 31 March 2011, the Indian population increased to 1.21 billion with a decadal growth of 17.64%. Adult literacy rate increased to 74.04% with a decadal growth of 9.21%. The motto of census 2011 was 'Our Census, Our future'. Spread across 29 states and 7 union territories, the census covered 640 districts, 5,767 tehsils, 7,933 towns and more than 600,000 villages. A total of 2.7 million officials visited households in 7,933 towns and 600,000 villages, classifying the population according to gender, religion, education and occupation. The cost of the exercise was approximately 2200 crore— this comes to less than 0.50 per person, well below the estimated world average of 4.60 per person. Conducted every 10 years, this census faced big challenges considering India's vast area and diversity of cultures and opposition from the manpower involved C. Chandramauli is the Registrar General and Census Commissioner of India of 2011 Indian census. Census data was collected in 16 languages and training manual was prepared in 18 languages. The census was conducted in two phases. The first house listing phase began on 1 April 2010 and involved collection of data about all the buildings and census houses. Information for National population register was also collected in the first phase. The second population enumeration phase was conducted from 9-28 February 2011 all over the country. The eradication of epidemics availability of more effective medicines for the treatment of various types of diseases and the improvement in the standard of living these are the main reason for the high growth of population in India.

163 Census 2001 has revealed that over million people in India as suffering from one or the other kind of disability. This is equivalent to 2.1% of the population. Among the total disabled in t he country, 12.6 million are males and 9.3 million are females. Although the number of disabled is more in rural and urban areas. The disability rate (number of disabled per 100,000 populations) for the country as whole works out to 2130. This is 2,369 in the case of males and 1,874 in the case of females. Among the five types of disabilities on which data has been collected, disability in seeing at 48.5% emerges as the top category. Others in sequence are: In movement (27.9%), Mental (10.3%), in speech (7.5%), and in hearing (5.8%). The disabled by sex follow a similar pattern except for that the proportion of disabled females is higher in the category in seeing and in hearing. Across the country, the highest number of disabled has been reported from the state of Uttar Pradesh (3.6 million). Significant numbers of disabled have also been reported from the state like Bihar (1.9 million), West Bengal (1.8 million), Tamil Nadu and Maharashtra (1.6 million each). Tamil Nadu is the only state, which has a higher number of disabled females than males. Among the states, Arunachal Pradesh has the highest proportion of disabled males (66.6%) and lowest proportion of female disabled.

164 Number of Disabled Population and Type of Disability POPULATION PERCENTAGE (%) Total population 1,028,610,328 100.0 Total disabled population 21,906,769 2.1 Disability rate (per lakh population) 2,130 __ Type of Disability (a) In seeing 10,634,881 1.0 (b) In speech 1,640,868 0.2 (c) In hearing 1,261,722 0.1 (d) In movement 6,105,477 0.6 (e) Mental 2,263,821 0.2

165 From the above discussion we come to conclusion that-

the number of physically disabled persons in India was 16.15 million and they formed about 1.9 percent of the total population. 74.3

percent persons with disabilities live in rural areas. The prevalence of physical disability is reported to be 2 percent in rural areas and 1.6 percent in urban areas. Similarly, Incidence Rate is reported to be 90 per 1, 00,000 in rural areas which is higher than that of 83 in urban areas, c. Between the two sexes, prevalence as well as incidence is reported to be marginally higher among males than among females. About 12.4 percent of these persons suffered from more than one type of physical disabilities. The persons with locomotors disability are largest in number (7.6 million); followed by those with speech and/or hearing impairment (4.5 million) and then those with visual impairment (4 million). About 9 and 7 percent households in rural and urban India respectively have at least one disabled person in the household. Among these households, about 92 percent had one disabled person, about 7 percent had 2 disabled persons and less than 1 percent reported 3 or more disabled persons, both in rural and urban sectors. About 25 percent in rural areas and 20 percent in urban areas are reported

to be severely disabled as they could not function even with

aids and appliances. About 70 percent of disabled persons are found to be illiterate in rural areas as against 46 percent in urban areas. Only 4 percent persons with disability

in rural India have an educational level "secondary and above" as against 12 percent in urban

areas. Only 29 percent and 25 percent persons with disability are employed in rural and urban India respectively. Out of these, 60 percent were self employed, 7 percent regular employees and remaining 33 percent as casual labourers.

166 Unit : 3.4 ppppp Importance of Early Identification and Intervention Structure: 3.4.1 Introduction 3.4.2. Objectives 3.4.3. Early Identification of Vision Problem 3.4.3.1 Importance of Vision And Learning About Vision Loss 3.4.3.2 Symptoms of Vision Problems 3.4.4. Early Intervention Programmes 3.4.4.1 Meaning of Early Intervention 3.4.4.2 Deficit Model 3.4.4.3 Classification of Intervention Programme 3.4.5. Importance 3.4.1 Introduction 'Catch them young and teach them well' is the slogan reflected all over the world for the education of children with special needs. There are a lot of advantages over identification of children with visual problems at their young ages. Most of the eye problems are medically treated and cured. After medical correction, most of the children would see normally. Some medically untreatable conditions of eye defect lead to blindness. However, a very few children would suffer from total blindness and most of the children may have residual vision. Therefore early identification of child with visual problems will help the child to go for medical and educational interventions. In this unit a detailed discussion is held on early identification, intervention and their importance. 3.4.2 Objectives After studying this unit, you should be able to: 1. Explain the early identification of child with visual impairment

167 2. List out the factors and behavioural indicators for vision-loss 3. Describe the early intervention programme 4. Able to write about importance of identification and intervention 3.4.3 Early Identification: Early eye- examination is of utmost importance. All eye surgeons have been exposed to the frustration of an adult when informed that nothing can be done to improve vision in the lazy eye. This can be prevented to a great extent if it can be detected around the age of 3-4 years. It has been observed that 24% have refractive errors and many of these errors are present at birth and go unnoticed for a long time.

Early identification is the step to set the intervention programmes. 3.4.3.1 Importance of Vision and Learning about Vision Loss Although every one of our senses plays a role in early development, vision certainly seems to lead the way. Early bondage of the child with parents is based on the child's ability to make eye contact and sustain a gaze with his parents, response to their voices by gurgling and cooing. An infant tries to move because he sees something. He learns that things and people exist in the world primarily because he sees and hears them come and go. He visually tracks an object he pitches to the ground. He can inspire his parents to play with them by making eye contact, the earliest form of conversation. He learns about size, shape, and colour, function of objects, social interactions and so much more just by looking at the world at work. Every child with or without a disability should have regular and periodic vision checking. If the child is severely disabled, this can be even more important since their other senses may not be as useful in compensating for what they miss visually. In fact this is so important that schools should have vision screening at regular intervals throughout the remainder of the child's educational career. Factors And Behavioural Indicators For Vision Loss A child is at risk for vision loss if the child encounters the following factors: • Family history of vision loss • Malformation of the eye • Prematurity and low birth weight • Birth trauma

168 • Congenital viral or bacterial • Meningitis, Encephalitis, Hyperthyroidism, Microcephaly The following behaviours indicate the child's vision loss • The child does not have eyes that look typical • The child does not recognize caregivers' faces or smile in response to their smiles • He does not get excited when he sees other familiar object • The child's eyes do not move together when following object • The child may hold an object very close to his eyes • The child may over reach or under reach for objects 3.4.3.2 Symptoms of Vision Problem Young children with vision problems often do not know that the way they see the world is not the way everyone sees it. 1. Permanent vision loss 2. Learning difficulties Any changes in the appearance of eyes or vision should be investigated further.

Signs to Watch Out for Early Detection (As Adopted by UNICEF) General symptoms that may occur from birth • Squints or blinks when looking at something •

The eyes are crossed • Favours one eye more than the other when looking at an object • One or both of the eyes turn in or out • The pupils are hazy • Eyes are tearing excessively, they are red or eye-lids are encrusted with matter •

Turns or tilts head abnormally • Has frequent or persistent sites May occur from 0-3 Months • Child does not follow an object in his visual field. Child does not play with his hands.

169 May occur from 3-6 Months • Child does not reach for toys in his visual field • Child does not make eye contact when being fed • Child does not visually inspect object May occur from 6-9 Month • Child's mother skills such as rolling over, sitting or crawling • Child does not appear to discriminate between similar objects or people • Child does not pick up small objects successfully May occur from 9-12 Months • Child shuts or covers one eye when focusing • Child holds playthings very close to eyes • Child bumps into large objects when crawling • Child rubs his eyes excessively • Child does not attempt to grasp spoon • Child does not appear to notice

May occur from 1-2 Years • Walking is delayed • Bumps into large objects • Child is not interested in playing • Child not interested in picture book • Child holds book very close to eye • Child is afraid to walk • Child is clumsy and awkward for his age • Child pays more attention to sound May occur from 2-5 Years • Stumbles over small objects

170 • Not interested in task that require Sustained visual concentration • Complains of headaches, burning, itching of eyes • Cannot see distant things clearly • Does not notice colour difference May occur at School Age • Short attention span and daydreams • Uses unusual or fisted pencil grasp, frequently breaking pencil • Difficulty in remembering what is read • Loses place while reading • Cover one eye • Very hard to read hand writing • Skips words and re-read •

Difficulty in sequential concepts • Poor eye hand coordination • Gets easily frustrated 3.4.4

Early Intervention The term early intervention refers to services given to very young children with visual problems, generally from birth until the child turns three. For this reason these programmes are sometime called "birth to 3" or "zero to 3". Services included medical treatment, follow-up service, visual efficiency development, training on daily living skills and mobility etc. Deficit Model Current practice of early intervention is viewed as a deficit model. That is strategies address deficit of vision. The time to intervene is before the delay occurs. The goal is to prevent the delay if possible. That is why the identification of a vision problem as early as possible is essential. As soon as visual problem is identified the sooner intervention can be provided, the more likely it is that delays can be prevented.

171 Classification Of Intervention Programmes Early intervention programmes are classified as vision screening, medical intervention and educational intervention. All these programmes go simultaneously for prevention of eye deficit, restoration of vision development of vision efficiency. Vision screening All children should be screened for possible vision problems, especially those under age of three with a suspected or identified risk factor, regardless of severity. The initial screening should be conducted by trained personnel on vision screening procedures. The trained personnel may be low vision specialist, special teacher, rehabilitation workers and village nurses. Identified cases of visual problems are referred to the medical personnel who would attend to thorough eye examination. Medical intervention There are many possible defects or diseases of the visual system, but fortunately many of them appear after the first few years of life. There are still many malformations, defects, diseases, infection and disorders that can affect the visual system in infants and toddlers as it is presumed that medical follow up to screening will identify and prescribe treatment. The medical professionals will take care of treatment aspects for the diseases and defects of the eyes. Educational intervention Educational intervention includes the preschool training such as development of daily living skills, mobility skill, visual skill etc and placement of the child into formal school system. The trained teacher or rehabilitation worker who is qualified on visual impairment takes the child with visual impairment for training on various skills required by the child. He/she also provides counselling for the parents, family members, relative and neighbours about the development of the child with visual impairment and their role on caring the child. 3.4.5 Importance Early Identification Early identification is extremely important because early intervention will be most effective. Sometimes it is unclear whether a child has a vision problem or not. Physical signs of vision problems include eyelids drooping over one or both eyes, or eyelids that

172 do not completely cover the eyes when the child closes them. If a child has a clear squint, has jerky eye movements, or has eyes that do not move together, parents should see a paediatric ophthalmologist. Other signs include: Not looking at others in the eyes, Reaching in front of or beyond an object, Holding objects very close or very far to see them, Turning or tilting his head when he uses his eyes, Continuously pushing or poking his eyes, Looking above, below or off to one side of an object, rather than directly at it Bumping into objects and having a lot of trouble seeing at night, Feeling for objects on the ground instead of looking with her eyes. After the identification of visually impaired students under these, parents should begin working with an early childhood interventionist. Young children who are visually impaired are eligible for early intervention services, which can help a family through the child's first few years of life. Early intervention for students with visual impairment is vital in enhancing social, physical, and intellectual development. When a child who is over three, he will qualify for special education services if the visual impairment impacts his education. Parents should contact their district's special education office to locate services for their child. A child with visual impairment may qualify for services from teachers of students with visual impairment, an orientation and mobility specialist, a physical therapist, a speech therapist, or a psychologist, depending on individual needs. Children with visual impairment should also be provided with modifications and accommodations in an inclusive classroom. Early Intervention Research has shown that the time between birth and age of months is a critical developmental period in a child's life. These months offer a window of opportunity that will not be available later. Early intervention programmes minimize and in some cases prevent delays in development of infants and toddlers with disabilities. High quality early intervention programmes for vulnerable infants and toddlers can reduce the incidence of future problems in their learning, behaviour and health status. They can decrease the need for special education and related services when a child enters school, and increase independence. There is an urgent and substantial need to identify as early as possible those infants and toddlers in need of services to ensure that intervention is provided when the developing brain is most capable of change. Children whose special needs are identified and addressed during these crucial early years have a greater chance of reaching their full potential. Intervention is likely to be more effective and less costly when it is provided earlier in life rather than later.

173 Unit : 3.5 p p p p p Functional Assessment Procedures Structure: 3.5.1 Introduction 3.5.2 Objectives 3.5.3 What Is Functional Assessment 3.5.4 Functional Assessment Methods 3.5.5 Functional Assessment Procedures For Visually Impaired Child 3.5.6 Importance 3.5.7 Activities 3.5.8 Let us Sum Up 3.5.9 Unit end Exercises 3.5.10 References 3.5.1

Introduction One of the key factors in achieving safety, permanency and well being is the creation of an effective assessment process. The assessment of needs is, in fact, so critical to the child and family's well being and dynamic in its focus that no single form, tool or single event can adequately support it. Needs assessment is a process that continues throughout the life of each case. Assessment tools are merely instruments that are useful in bringing attention to issues that need particular focus and in identifying current strengths, needs and functioning for purposes of decision-making. 3.5.2 Objectives After going through this unit, you should be able to 1. understand and explain functional assessment 2. State the importance of of assessment 3. List out the activities of functional vision assessment 4. Understand about helpers for doing assessment

174 3.5.3 What Is Functional Assessment? A set of procedures to identify the causes of a maladaptive or socially inappropriate behaviour and reduce it through teaching replacement behaviours instead of suppressing it through punishment. The body of empirical and scientific literature which supports these methods is found in the field of applied behaviour analysis. Within functional assessment methodology the causes are sought in the immediate environment and the learning history of the individual. Causes of the maladaptive behaviour based upon intrapsychic variables or psychodynamic processes are given little attention. The outcome of the assessment is an analysis of the way the person learned the maladaptive and how it is presently supported or maintained in the present learning environment. Functional assessment does not emphasize a search for a diagnosis or classification of symptoms according to psychodynamic processes. Instead, the purpose of the assessment is to classify the maladaptive behaviour by its function (cause) and then select treatments or interventions which are effective in reducing behaviour in that functional category. Consequently, treatments or interventions are classified by functional categories and not by form of the maladaptive behaviour. In the field of education many practitioners choose interventions or treatments based upon topography or form of the behaviour instead of the function. As a result some recommended interventions actually strengthen the maladaptive behaviour instead of reducing it. This situation can make school and their personnel vulnerable to successful legal, administrative and ethical challenges.

3.5.4 Functional Assessment Methods There are three specific functional assessment methods: (a) Direct Observation, (b) Informant Methods and (c) Functional Analysis. The terms "functional assessment" and "functional analysis" are sometimes thought to be the same thing but they are not; a functional analysis is one specific type of functional assessment.

1. Direct Observation For direct observational methods, an observer would watch the client engage in activities within their natural environment. When the challenging behaviour occurs, the observer would record what happened just before it, what happened just after it and also take notes on what they perceive to be the potential cause of the behaviour. This method is used to develop a hypothesis about the function of the behaviour. The terms used for

175 this method include: Direct Observation. Descriptive Functional Behaviour Assessment.

2. Informant Methods The informant method involves interviews and questionnaires that can be completed by the client, their parents, staff members, teachers etc. These interviews would be used to identify what is happening before the behaviour occurs and then what happens after the behaviour. Just like direct observation, this method is also used to develop a hypothesis for the function of the behaviour. The terms used for this method include: Indirect Methods, Indirect Functional Behaviour Assessment, Informant Methods

3. Functional Analysis This method, functional analysis involves practitioners deliberately changing what happens before and/or after the behaviour in an effort to test what might be causing the behaviour. Unlike the other two methods that are used to create a hypothesis, this method is used to actually test the hypothesis and is the only method that can truly predict when the behaviour will occur.

3.5.5 Functional Assessment Procedures For Visually Impaired Child Like other disabilities in case of visual impairment, functional assessment is necessary to improve their remaining functional vision.

Functional vision is the ability to use vision to perform desired tasks. Because of impairment in the eye and other parts of the system, low- vision children will not learn visually without intervention and help. Selection of instructional programmes and techniques requires a thorough assessment and understanding of child's capabilities.

The

process of functional

assessment should be done-

- 1) At the age of three months of a baby if the child is not attracted by the light or not move his/ her neck to see the colourful objects, the parents should report that the child may be visually impaired.
- 2) The child has not attracted the colourful toys.
- 3) If the child complains about headache, body ache etc
- 4) The child may complain, to the parent, pain in eye at early stage.
- 5) At the time of playing the visually impaired child may not hold the ball as easily
- 176 as the normal child.
- 6) The normal functions of day to day activities are much more affected — reading, writing, walking etc.
- 7) It is always seen searching objects at any time in his/her working experience.

Who conducts a functional vision assessment? A functional assessment is typically conducted by a teacher certified in the area of visual impairment. The specialist is a certified teacher of the visually impaired, trained to evaluate how a child utilizes vision. The vision specialist will measure and observe the visual methods a child uses throughout a routine day and will speak with parents, teachers and other caregivers who know the child well. Information about how the child uses vision, the conditions and purpose of use, is essential and will be utilized in the functional vision assessment report. The vision specialist will review records and may talk to the eye doctor to learn more about the child's visual condition.

3.5.6 Importance

1. It helps to determine the current visual functioning level of the person.
2. It helps to determine the extent of

visual stimulation and instruction needed to help the person make optimum use of remaining vision. 3. It enables the person to use his limited vision in the highest potential 4.

It helps to plan the person's mobility training programme 5. It helps in decisions regarding the use of visual stimulation materials 6. It helps to decide upon the nature of the primary reading medium 7. It enables one to decide on the type of devices needed by the person 3.5.7 Activities Vision is functional if a child is able to utilize visual information to plan and carry out a task.

A functional vision assessment measures how well a child uses vision to perform routine tasks in different places and different material throughout

a day. Functional vision assessment has two types of activities like-1. Optical functioning and 2. Perceptual functioning.

Optical functioning may consist of seven activities like- visual awareness,

177 visual attention, visual fixation, visual focus, visual fusion, visual tracking and visual scanning. On the other hand

perceptual functioning consists of eight activities like- visual discrimination, figure ground, visual memory, visual closure, spatial relation, mobility, visual motor coordination and form constancy. VISUAL SKILLS OPTICAL FUNCTIONING : Visual

Awareness:

To find out the ability of the child to identify an object

Visual Attention:

To find out the ability of the child to attend to

the objects. Visual Scanning: The ability to search for a particular object among other objects Visual fixation: The ability of

the child to fix the eyes on the object. Visual focus: The ability of the child to see a known object at various distances.

Visual fusion: The ability of the child to see the object as one. Visual Tracking: The ability to follow moving objects.

PERCEPTUAL FUNCTIONING: Visual Discrimination: The ability of a person to distinguish different objects on the basis of their colour shape or size

Visual Figure-Ground Discrimination: The ability to isolate a particular stimulus from the background, i.e. seeing the distinctive

178 features of an object

Visual Memory: Ability to store and recall past experiences and integrate them into new ones. Visual Closure: Ability to

perceive a total picture or object when only part of it is visible/available Form Constancy: Ability to perceive the same

objects at different angles Visual motor coordination: This refers to the child's ability to perform a task using eyes and

hand /foot in harmony. It consists of two types these are follows- Eye-Hand Coordination: Ability to use hands and eyes

in harmony. Eye-Foot Coordination: Ability to perform a task using both eyes and foot in co-ordination. Visual spatial

relation: This refers to the child's ability to identify spatial concepts like direction, distance etc. Visual mobility: This refers

to the child's ability to indentify right and left concepts through movement. 3.5.8

Let us Sum Up

The process of seeing mainly organized through the parts of eye and image sharpness depends on the functions of the parts of the eye. But sometimes this process is aelayed or faces problems due to some errors which come under eye disorder. These refractive errors are curable if they are identified early and also get the treatment properly these. All these happen if people are aware. Problem in eye does not come under blindness; blind are those who face problems for sight disturbance. According to PWD act and WHO's definition visual impairment has

179 many classification. And these divisions depend on visual acuity, field vision, visual efficiency, functional vision etc. The

NSSO conducted the 15th round of a nation-wide comprehensive survey of dis- abled persons during 1 st April 2010 to 28 th February 2011. The survey arrived at an estimate of 21 million persons having at least one or the other disability,

which consti- tuted 1.9 percent of the total population

of 50

million. The survey revealed that population of the visually impaired in India at 850 million level of population. Among them minimum of them come under prevalence facilities. Without early detection and treatment children's vision problems can lead to permanent vision loss and learning difficulties. So it is very much essential to prevent vision loss and preserve eyesight. Early intervention programme helps them for guiding properly and also helps them in their future establishment. The development of visual ability is not innate or automatic. It requires stimulation and motivation to use vision in a variety of environments. A visually impaired child owing to uncertain and frustratingly limited vision may not always be motivated to use his vision to control and manipulate his environment to achieve specific goals. As a result he loses the ability to use whatever vision he has efficiently and purposefully. But modern researchers have proved that systematic techniques can facilitate the emergence of visually guided behaviour in some children and maximize the use of vision in others. On the other hand

functional assessment procedures also measures how well a child uses vision to perform routine tasks in different places and with different

materials throughout the day. 3.5.9 Unit exercise: 1. Draw a diagram of eye and label 2. Write, about refractive errors 3. How do we see? 4. Who are blind? 5. Write the causes of low vision. 6. Classify the visual impairment. 7. Write short note on: (a) Visual acuity (b) visual efficiency (c) field vision

180 8. What is NISSO? 9. How does it function? 10. Write the salient features of

the census data published in 2011 11. Explain the importance of census 12. Prepare a list of symptoms of visual problems. 13. What is meant by early intervention? 14. Who should conduct the vision screening to whom and when? 15. What is

functional assessment? 16. List out the activities of functional assessment procedures. 17. How functional assessment help/problem child? 3.5.10 References Smith, M.R. And Neisworth, J.T.(1975). THE EXCEPTIONAL CHILD: A FUNCTIONAL APPROACH. New York: McGraw-Hill Book Coy Kundu, C.L (2000). STATUS OF DISABILITY IN INDIA-2000 New Delhi RCI Punani, B and Rawal, N. HAND BOOK : VISUAL HANDICAP M. Dash, 2003, EDUCATION OF EXCEPTIONAL CHILDREN Ishtiaq Harder, VISUALLY HANDICAPPED CHILDREN Dr. Jose Murickan, S.J. George Kutty , PERSONS WITH DISABILITIES IN SOCIETY www.avclinic.com www.smith.edu Preston, Samuel, Patrick Heuveline, and Michel Guillot. 2000.

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182 Unit-4 :

Educational Implications of Visual Impairment Unit-4.1 Effects of Blindness-Primary and Secondary Structure 4.1.1. Introduction 4.1.2. Objectives 4.1.3. Primary Effects A. Cognitive : (a) Berthold Lowenfeld's Interpretation (b) Role of Senses (c) Jean Piaget's Theory of Intellectual Development (d) Some Factors Responsible for Cognitive Development B. Attitudes affecting Blindness : (a) Community attitude (b) Parental Reaction (c) Psycho-social Effects 4.1.4. Secondary Effects 4.1.5.

Let us Sum Up 4.1.6. "Check Your Progress" 4.1.7 "Check Yourself" 4.1.1

Introduction : 'Blindness' has varied interpretations.

It relates to impaired sense of vision. It means that the person suffers from the loss in the sense of seeing, the organ responsible for vision is defective. Blindness in all countries and through ages has come to develop as a connotative term. It evokes different emotional reactions in different persons. The societies across

183 the globe have developed their own images of blind persons, of their

capabilities and of their limitations. Even beyond that, they have developed their own ways of coping with the capabilities and/or limitations of the Blind.

Parents are the part of the community and they

share social ways and attitudes. But when a blind child is born to them, they find their personal ways to cope with. As the attitudes and reactions of the community in general, and parents in particular, impinge upon the child, blindness does not remain a simple sensory loss to him; it is confounded with psychological overtones resulting in changes in self concept of the child. The present sub-unit outlines below the above mentioned points and a note upon the role of the teacher face to face the blind child, his parents and his community. 4.1.2.

Objectives : After studying this sub-unit you will be able to (i) Understand and interpret effects of Blindness/visual impairment on the child. (ii)

Discuss the implications of child's blindness for the parents and the family. (

iii) Describe the prevailing attitudes of the community towards blindness and blind persons. (iv) Analyse the effects of family and community attitudes on the blind child. (v) Realise his/her own role as a teacher in relation to the blind child, parents and the community. 4.1.3

Primary/Basic Effects of Blindness : A—Cognitive:

The effects of blindness are basically cognitive. Since blindness relates to the sensory deficit of vision and because senses are the gateways to knowledge. Vision is the most actively used sense

by human being and hence knowledge grows chiefly of visual experience. (a) Berthold Lowenfeld's Interpretation : The resulting effects of blindness

have been discussed widely, but the most accepted interpretation has come from Berthold Lowenfeld (1975). In his own words,

184 "Blindness imposes three basic limitations : 1. In the range and variety of experiences. 2. In the ability to get about. 3. In the control of the environment and the self in relation to it." All these

interpretations may have great effects on cognitive development. They have sociological, psychological and educational implications on blindness. According to him, the visually disabled individual gets a reduced experience and therefore, 'loss of sight' cannot be interpreted as the 'loss of experience'. The sociological implication is that visually disabled persons do have experiences but those are limited in comparison with sighted persons.

The psychological implication is that blindness does not mean 'loss of life' since blind persons are more like than unlike sighted persons in terms of basic needs. The educational implication is that the reduction of experience imposed by blindness can be overcome by appropriate training to the affected individual. (

b) Role of Senses :

These three obstacles to independence and self-fulfilment are the special education provisions demand for the blind child. A brief note at the three limitations may be helped in understanding the depth of losses. It has been estimated that 90-95% of all

knowledge and experience

comes through the eyes. Vision is the major mode of acquiring information about people, places and processes.

Therefore the blind child by definition is experientially deprived.

Vision provides much more continuous information than sound. Although touch may be equally continuous, its range is extremely limited. This definition may affect development of object permanence and conservation capability. The capacity to organise a wide range of experiences through vision is much greater than through touch and sound. Further vision gives much more detailed information than any other sense modality. Another educationally significant difference in sight and touch is that sight is a holistic sense. It provides information at one glance. Whereas touch is an analytical sense. We all know the story of gaining knowledge of an elephant by four blind persons. Information gathering range of touch is limited. Therefore, if you want a visually impaired child to build

an

accurate image of any object in his mind, you

185 should show it to him bit by bit till he has synthesized the image in his mind for unifying experience. A totally blind child, in particular, depends to a very large extent on verbally mediated information. The mediation of words may leave gaps in experience and the filling of these gaps may require a very special effort on the part of the teacher. Firstly, the blind child learns in pieces. He learns in a fragmentary way. He

has to get time to put these bits and pieces together to form a concept which is not exactly like ours but which is enough like ours so that we can communicate. This is the restriction in the 'range and variety of experiences.' The child with severe visual impairment may be deprived of such experiences as the ordinary child has without effort. For example a young seeing child may look at an orange, jump to pick it up, feel it, smell it and eat it. At one go, the child has visual, auditory, tactile, gustatory and olfactory experience. But a severely visually impaired child may have great difficulty in locating an orange. The child will be able to locate it if it is within the range of his grasp, or within the reach of his arm. In this way the ordinary child easily gets a total experience, whereas a visually impaired child has a limited experience. His experience range can be enhanced only by supplementary tactile or auditory inputs given by a teacher or parents. Secondly, blindness tends to create a very sedentary kind of existence. A blind person will just sit unless he is pulled out, motivated to get out and move out independently :

He sits because of fear. He sits because of lack of skill in using information available in his environment and lack of skill in moving about within it. Certainly the ability to get about is restricted. A severely visually impaired child has difficulty in moving about independently in unfamiliar environment. Because sight does not give the child the total framework of the space in which he has to move. Therefore, determining the direction of movement poses special problems. This is particularly difficult in large open spaces. Again detection of obstacles in the way may pose serious troubles. The child may run the risk of injury. Thirdly, a blind person talks loudly in a room that is too small for a loud voice or he talks "to a corner" or an empty chair rather than to another person. The common reaction is what a silly man. But it is not silly. It simply shows how a blind person is very much at

a disadvantage. Not knowing where one is, being unable to control one's environment and oneself in relation to it is a significant deficit.

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It is not easy for a severely visually impaired child to read facial expression. Reinforcement of positive behaviour may be denied to him if he cannot read the face of his mother to whether she is happy. Parental approval in strong positive reinforces, The child's eye contact with his mother is also not possible. Now it is clear that vision is the dominant sense giving us information about the environment. No interaction with the environment is possible without gathering, storing, retrieving and organizing information. The loss of vision tends to restrict this process. Now we are to consider to what extent loss of vision hinders cognitive development and to what extent this deficiency is made up as the child grows in age and experience. (c) Jean Piaget's (1896-1980) Theory of Intellectual Development will help us to know all in this respect. Piaget says that Intellectual development takes place through the process of assimilation and accommodation. What is Assimilation ? Assimilation occurs when an already learnt stimulus evokes a response. For example, if a child sees a mango and recognizes it properly, this is an example of Assimilation. What is Accommodation ? Accommodation takes place when a child adds a new activity to his repertoire. After recognising a mango if a child begins to eat that, this is an example of Accommodation. These two processes involve acquiring information, storing it, organizing it, retrieving it in response to an appropriate stimulus and developing behavioural responses appropriate to the task in hand. In the light of the limitations entire activity of information processing is influenced by visual disability. Piaget divided Intellectual Development into several stages. Most important stages are : 1. Sensory Motor Stage (0 to 2 years) 2. Preconceptual Stage (2-4 years) 3. Intuitive Stage (4-7 years) 4. Stage of concrete operations (7-11 years) 5. Stage of Logical operations (11 year or above)

187 1. Sensory Motor development : According to Piaget's theory of cognitive development. The first two years constitute the sensory motor period during which infants' behaviour progresses from being characterised by simple reflexes to showing an internalised and representational form of problem solving. This period is broken down in to six stages. (i) Reflexes (birth to one month) : The infant's behaviour is characterised primarily by reflexive responses to his own body and to some aspects of the external world. The infant discovers some objects are suckible and some are not. (ii) Primary Circular Reactions (One to four months) : The infant begins to repeat selectively those actions that produce effects that are interesting and satisfying to him. These actions are primarily directed to his own body rather than external objects. (iii) Secondary Circular Reaction (four to eight months) : The infant reproduces behaviour that produces effects in the external world that are satisfying or interesting to him. This stage marks the beginning of the infant's effective orientation to the external world. (iv) Co-ordination of the Secondary Circular Reaction (eight to twelve months) : The beginnings of intentionality are seen in this 4th stage. Infant begins to co-ordinate his behaviour with respect to the external world in more complex ways. The use of his specific means to obtain specific ends shows his increasing organization of the world. (v) Tertiary Circular Reactions (twelve to eighteen months) : In this stage the infant's behaviour clearly involves active trial and error experimentation on the world. (vi) Internalization of thought (eighteen to twenty four months) : This stage marks the beginning of internalized thought. In this sensorimotor stage intelligence is demonstrated through motor activity without use of symbols. Knowledge of the world is limited (but developing) because it is based on physical interactions/experiences. Children acquire object permanence at about 7 months of age (memory). Physical development (mobility) allows the child to begin developing new intellectual activities. Some symbolic (language) abilities are developed at the end of this stage. A visually handicapped child may reach a particular stage late but cannot skip it. This also confirms the view that even if there is some delay in developments, the quality of mental ability remains uninfluenced by visual disability. There has been

188 very little direct effects of blindness on the infant's progress through the stages of the sensory motor period. Stephens (1972) discussed some implications of visual impairment. She noted Piaget's stress on the importance of the infant's interaction with his environment as well as the fact that in the normal infant a large measure of that interaction depends on vision. 2. Preconceptual Stage : During this stage children gradually construct more complex mental images. But these images obviously depend on the sensory data available to the child. Unless specific efforts are made by parents, teachers and neighbours, the sensory data made available to the child is deficient. Therefore, the visually handicapped child crosses this stage later than the sighted child. 3. Intuitive Stage : At this stage a child is dominated by what is known as 'here and now' i.e. the child's thinking is dominated by immediate percepts. The sighted child reads print and may look at a number of two dimensional objects. But the blind child lives in a three dimensional worlds. Even the reading of Braille is a three dimensional operation. Again a great deal of experience coming to the blind child is verbally mediated. 4. Stage of Concrete Operation : At this stage child is expected to make use of reason and logic relating objects to concrete objects. The limitations pointed out by Lowenfeld are applicable to blind children at this stage as well. If the range and variety of their experience is limited, their logic and reasoning cannot but be affected. Actually this is the result of limited experience and not of blindness. 5. Stage of Logical Operation : At this stage children are able to reason without the presence of concrete objects. In this stage of formal operations children can present problems mentally and operate on them. The blind children can make mental representation as effective and at about the same age as sighted children even if the precise nature of their mental representation is somewhat different. (d) Some Factors Responsible for Cognitive Development : Concept Formation : Concepts have been styled as building blocks of thought. They are therefore, basic to cognitive development. A fundamental ability required for concept formation is classification. It involves noting similarities and disregarding insignificant differences. The use of long or meaningless words not based on actual experience often described in the literature as verbalism. It is the use of words without knowing the precise meaning. Conservation : The conservation of a property refers in general to the ability

189 to retain correct judgement of the property even in the face of perceptual transformation. The general finding is that blind children show a lag in the development of conservation of volume, weight and substance. But these are temporary lag and as a blind child grows in experience he is most often able to make up his deficiency in day to day functioning. □ Imagery : Imagery plays an important role in the child's cognitive growth and later in practically every aspect of his life. What do we precisely mean by Imagery ? Most of our actions are based on the thinking process. An image comes to our mind before we eat, talk, jump, run or perform a more complex task. What are these images ? There are the residue of stored experience. Indeed they are learned responses. But these learned responses may be visual, auditory, tactile, or kinesthetic or combination of visio-motor, audio-motor or verbal-motor. In fact no physical activity will be possible without such imagery. □ Creativity : Creativity often depends on unique and efficient combination of images. It is often been asked whether blind and sighted children differ in divergent thinking. There is no fundamental difference between blind and sighted children on divergent thinking except that blind children exhibit much greater verbal fluency where as sighted children use much greater visual imagery. B. Attitudes Affecting Blindness : (a) Community Attitudes and Reactions : The deficits caused by blindness are not taken as objectively by the community as occur to the individual. The reaction varies from community to community depending on its traditions, culture and belief. Killing of disabled persons existed. As the society progressed towards being a welfare state from a warfare state, so did the changes occur in the total outlook. The blind persons became members of the society who needed to be looked after but not at the equal level with others. They were to live in charity. It has also an undertone of religious beliefs. To-day the scenario is changing. The community is based on the principles of equality and fraternity. The motto is equal opportunities for all including handicapped people. Though psychologists and educationists do talk about individual differences, yet we as human beings try to generalise things. Charities its general tendency is to perceive a blind person as one who can make a livelihood only through begging, 190 hence blindness implies low level of living. Another misconception refers to the special talents of blind people like musical talents, fantastic memories. As normal human beings they depend on senses of hearing and touch as the sight is denied. The stereotypes go beyond the beliefs and saying of it. It is reflected in the distortion in interaction with blind people. In daily life situation they are denied the opportunities, expectations are restricted and thus we 'socialise' the impairment into disability which is further extended to become a handicap. The community at large affects the blind child not only because of its general attitude but also through the ways that are reflected in the attitudes and behaviour of the immediate human contacts of the child, the neighbours, the parents and the peers. (b) Parental Reaction to Blindness : When a child is born blind, the parents feel at a loss for so many social, personal and psychological reasons. The reactions occur on a continuum neglect to over-protection. Due to inability of most parents to understand the implications of an impairment, the impairment is perceived as handicap, on one extreme is the response of neglect. Because it is felt that a blind person is devoid of all normal human functions of being an active member of the society. Not only this even parents at times feel the birth of a blind child to be the result of some sin. Hence in their own frustration, the child, is ignored and naturally the 'expectancy prophecy' comes to be true, the child develops into a person who cannot contribute socially or economically to the society. Neglect causes certain personality problems but the child has to learn certain basic living skills. Over protection is more dangerous. It denies the child all of the natural demands or expectations of society. In between these two ends of the continuum of neglect and over protection, are the discrepant behaviours of parents which add to the problems of the blind child. The discrepant behaviour is the gap between what a person says and what a person does/feels-- The social structure is such that we try to say or act what is socially acceptable. Real feelings are rarely expressed especially when they are contrary to the socially desirable ones. The parents of a blind child, at times, pose the full acceptance of the blind child as an over behaviour, because today society expects parents to stand by their children. But covertly, it is difficult to accept a child who becomes a liability, a reason for social talk and criticism. Overt rejection is manageable but covert rejection does not

only

deceive a child, it hurts him psychologically. It affects not only his growth and social relationships but also his own self-concept, the very basic of a person's development.

191 (

c)

Psycho-social Effects on the Child : Psycho-social development of a blind child is not affected, so much by blindness, perse, as it is disrupted by the emotional over-tones of blindness, for the parents and thr community. It is now a well-known fact from reaserch that children tend to achieve as much, and only as much as their parents aspire them to achieve or the significant persons in their environment expect them to achieve. But once the community deos not treat them as individuals, they are lost into a crowd, the crowd of blind persons--beggars, musicions or do whatever they like, once, the parents stop treating the child as a developing individual, once they refuse to accept his capabilities and limitations, both in a realistic manner, his self concept is bound to be severey affected. Overprotection takes away his independence, neglect turns him to

exhibit undesirable behaviour--Either way, it is the suffering child whose miserices multiply. 4.1.4. Secondary Effect of Blindness: After going through the effect of Blindness--primary, the students have clearly understand that there are some effects of the Visual Impairment which are due to impairment, disability and for the deficient vision. These conditions are not final. Some can be minimised with the learning of some teachiques. For example a visually impaired person is handicapped in a new place and with the new things. If he/she is oriented properly with exploration and narration barring verbalism he/she will be able to do for himself/herself. Then he/she will no more be handicapped. The on-set of blindness makes the effects whether it will be primary or secondary. Formation of concept differes in respect of born blind (congenitally) and later age blind (adventitiously) or acquired blindness. In case of later age blind the effects become secondary. We should keep in mind the issue of residual vision. Visual disability is considered from 40%. The visual disability ranging from 40% to 90% relates secondary effect. 90% to light perceptioon will be considered severe visual disability and they have only functional vision. Hence the percentage of visual disability refers whether the effects will be primary or secondary. Training and practice of some teachiques like orientation & mobility, concept formation either by TLM or getting in touch of real objects as far as possible, activities of daily living skills, have management, personal management, arranging of reading materials, assistive devices will minimise the handicapping condition.

192 Apart these the attidutes of parents, family, peers, community need to be changed through awariness making them reciant of the ability of the visually impaired, trying for their real acceptance. People in the media need to be educated to write about blindness accurately and carefully. The public need imformation

not only on the realities of blindness but also on the techniques which make both the blind and the sighted persons comfortable.

Fortunately at the Govt. level some services are also extended for making the visullay imparied at par the sighted people. Hence the primary effects gradually become secondary with the progress of science, Information & Technology. 4.1.5.

Let us Sum Up

The ordinary child easily gets a total experience where as a visually impaired child has a limited experience. The child's experience range can be enhanced, compensated to a great extent only by supplementary tactile or auditory imputs given by teachers or parents. In view of the above stated implications that a teacher is supposed to play his/her role face-to-face the blind child, his parents, and his community. The specific understanding and skills required of the teacher of blind children are given below with suggested activites for their development. 1. The teacher should know the social climate from which the child comes. Activity : (i) Prepare a case study of the observations/perceptions of the blind child of his social acceptance. (ii) Make interview of the parents, neighbours, peers and fellow teachers about their reactions to the blind child. 2. The tecaher should have experience, knowledge of and faith in the capabilities of blind child. Activity : (i) Make observations from the Daily Lives of some blind persons employed in significant jobs. 3. Reduce discrepant behaviour. Activity : (i) Introspect your own attitude towards blindness. (ii) Analyse the attitude of the parents. 4. Aviod negative or inappropriate semantics.

193 Activity : (i) Analyse the tasks that are given to sighted & blind children. (ii) Analyse the expressin of speech used for interacting with blind and sighted children. 4.1.6 "

Check your Progress" 1.

List how the blindness affects objectively.

..... 2. Define stereotype behaviour.

..... 3. To-day, the scenario is changing-- Explain.

..... 4. Senses are the gate-ways to knowledge--
Describe.

..... 5. Over protection snatches way independence--
Clarify.

194 6. Distinguish between over behaviour and covert behaviour.

..... 4.1.7 Check Yourself Some questions are here for
self-check. Tick the most appropriate answer for each. 1. Three Major/basic limitations imposed by severe visual
impairment was put forward by-- (a) Jean Piaget (b) Berthold Lowenfeld (c) Valintin Hauy (d) Samual Gridley Howe. 2.
The number of the most important stages of intellectual development as stated by Piaget is-- (a) 8 (b) 6 (c) 3 (d) 5 3.
Sighted persons feel pity for visually impaired because-- (a) Visually impaired cannot live properly in the world of sighted
(b) Sighted people fail to understand strength of visually impaired (c) By the society it is taught to the sighted (d) Kindness
is a human value. 4. A visually imparied person can learn effectively if-- (a) he is given variety of experience (b) he is
taught only through auditory mode (c) he is given a chance to learn (d) he is left to learn by himself

195 5. Parents of visually impaired children tend to overprotect because-- (a) They love thier children (b) They despise
their children (c) They are afraid for thier safely (d) They try to hide their guilty feeling. 6. Tick the most appropriate
response. (a) Senses are the geteways to knowledge [True/False] (b) The community affects a blind child by not only its
general attitude but also the attitude and behaviour of he neighbours, parents and peers. [True/False] (c) Teachers can
generalise about blindness on the basis of their limited experience.[True/False] (d) All blind persons have special talents
like musical talent and fantastic memory. [True/False] (e) Blind persons are like any other normal human beings.
[True/False] Answer Key : 1. (b), 2. (d), 3. (b), 4. (a), 5. (c), 6. (a) False, (b) True, (c) False, (d) False, (e) True.

196 Unit : 4.2. ppppp Selective Educational Placement Structure 4.2.1. Introduction 4.2.2. Objectives 4.2.3. Types of
Educational Institutions A. Special Schools B. General Schools C. Open Schools D. Non-Formal Schools 4.2.4. Models of
Educational programmes for children with disabilities. A. Resourcc Model B. Itinerant Teacher Model C. Dual Teaching
Model D. Distance Learning Model E. Alternative School Model F. Home Based Education Model. 4.2.5. The Need of
Inclusive Eduction for the Disabled in India. 4.2.6. Let us Sum Up 4.2.7. "Check your progress". 4.2.1 Introduction :
Mainstreaming of the disabled children is more than a half century old attempt in India. To-day equal opportunities to all
disabled persons have become a mandate for all welfare states. In the preamble to our Indian Constitution, it has been
emphatically declared that the people of India are resolved to provide equalify of status and opportunity for everyone of
its citizens including the disabled persons of the country.

197 "Education For All" (EFA) has been The Thrust of our Government and our people for many years. But due to several reasons including inadequacy of financial and personnel resources, this dream has not been completely materialised so far. An alarming percentage of our school-going-age population or still illiterate and ignorant remaining out-side the educational programmes. 4.2.2. Objectives : (i) The students will have a clear idea of educational programmes and placement of disabled children particularly the Visually Impaired. (ii) They would be more encouraged for the education of the visually impaired children and the target EFA will be achieved. (iii) Being aware of the educational programmes for the Visually Impaired children they could counsel V. I. Children for their education and get inspiration for conducting some Research Study. 4.2.3. Types of Educational Institutions A : Special School Special school concept for the disabled is the earliest one implemented in India. The attitude changes to the services for the disabled persons in India parallelly as those existed internationally. As a matter of fact, the educational community did not realise that disabled children could be educated. But the inception of special schools for different disabilities proved them to be wrong. What is a special school ? A Special school is a place of education for the disabled children. What is a Residential School ? Residential School is an institution where all students reside and learn. Are all Special Schools Residential ?

No. Some are completely residential where all enrolled students reside in the hostels arranged by the school. Some are partly residential and partly day-scholar i.e. Some students reside in the hostels and some students come to school from outside. Again some special schools have hostels, all students are day-scholars.

198 Do all special schools follow a special curriculum widely suited to a disabled child ? No. Some categories of disability have some special curriculum widely suited to a disabled child. But in case visual Impairment and Hearing Impairment, the existing curriculum for the normal education is followed. For other categories of disability only the mild and moderate groups can study under normal curriculum. What are plus curricular activities for the Visually Impaired Students ? In order to perform well in curricular aspects, Visually disabled children should learn skills which are

peculiar to blindness. These skills are called "Plus curricular activities' The correlation between general and plus curricular activities is positive and high. We will read more about this in the curriculum sub-unit. In most cases the special schools provide 24 hours custodial care to the children with disabilities in a protective environment. The growth of special services for disabled children in India has followed the global trends of care and help. It suggest the availability of some form of educational and rehabilitation of persons with disabilities. In pre-independent India, foreign missionaries introduced services for the disabled in the country. Besides direct service to these persons, the missionaries also assisted the Indian counter parts in attaining skills by undergoing technical courses abroad. The 1st school for the deaf in Mumbai and the first school for the Blind in Amritsar were started by The Missionaries in 1883 and 1887 respectively. At the time of independence in India, there was no formal legislation to ensure compulsory education for the disabled. Though the articles 45 of the constitution of India is assuring better services to persons with disabilities in India, it was not enforced through legislation until recently. As on today more Than 3000 special schools for the disabled are functioning in India of which approximately 900 are institutions for the hearing impaired, 400 for the children with visual impairment, 1000 for mentally retarded and the remaining 700 for children with other physical disabilities. A 'blind school' as it is commonly called is a special school, because it caters to the needs of a special kind of students—the visually handicapped. Visual impairment creates special problems and difficulties in the psychomotor, cognitive and affective areas, and in interpersonal relations of the individual—which require special kind of approach and solution. A blind school is supposed to do all these. It is different from a general school in the sense that it imparts not only, 'academic'

199 education but also aims at the development of compensatory skills i.e. rehabilitation among its students. The speciality of a blind school lies in the fact that almost always it is a residential school, though an insignificant number may attend it as day scholars here and there. This characteristic depends on both historical and demographic necessities. Historically, the modern blind schools have evolved from the pre-1784 asylums before the establishment of valentine Hany's school in Pasis. From that time till the present day, no other way of schooling seems feasible than separating blind children from the seeing in special residential schools. Special features of these schools can be noticed in the words of Lowenfeld, "In Germany, for instance, blind children entered the residential school and upon graduation were transferred from one building to another where handicrafts kept them productively occupied until they became too old to work and were moved to still another building, on the same ground, for he aged blind— a kind of 'cradle to grave security'.....In many parts of the world, it has not yet moved for beyond this stage. Demographically, the geo-scatter of the blind population makes it imperative that they should be collected in one place so that they can be given education and training properly. The institutionalization of visually handicapped children in residential special schools illustrates in concrete terms the quality of attitudes to handicapped— the desire to create some positive means of assistance and the willingness to separate and confine. In these schools, the manners of instruction is also different— either there are special teaching methods, or the teacher-pupil ratio is very low, the close connections between the medical and para-medical staff is also a distinctive feature of special school. Special schools have several aims for their pupils which are quite different from the regular schools. These Schools include making the visually handicapped child as normal in behaviour as possible. This means, imparting training in for example, orientation and mobility, training, sensory training, use of residual vision, daily living skills development etc. The aim is to enable the child to blend into his/her social context as far as possible. A general aim is the vital notion of independence— the maximum economic, social and personal self-sufficiency for the child. The school also tries to help the child to live with his/her disability in a way which minimizes its handicapping effects. These are some of the aims which distinguish a special school from a normal regular school. To enable the special school to achieve these goals all the component factors

200 which constitute a school must be brought together and made to work like a, well- oiled machine. This is called "School Organisation" Combining both— human and non-human elements, we get four major factors essential for good organisation and these are (i) Management, (ii) Teaching Personnel, (iii) Curriculum & (iv) Pupils. Apart from the above-mentioned factors, there is another equally important element in the organisation of a special school which is 'community' including the parents. This fact is generally not taken into account as it remains beyond the boundaries of the school premises, but nonetheless, its importance cannot be minimised because it is the community which is the means and the ends, of the education and training of the handicapped child. Just to bring all the elements together is not organisation, a force is required to make all these factors work in union. This force in the school organisation is the Headmaster or in some cases the Principal, or in other words the Head of the Institution is the Pivot round which the whole organisation revolves. □ Special School as Innovator : "To innovate" means "to introduce something new or novel in the existing system." The necessity of ushering in the new becomes imperative when the old and traditional system fails to deliver the expected result in the changing situations. In the New Education Policy (NEP) a basic change in the outlook and approach was proposed. By providing effective lobby for legislation, sensitizing the decision makers in the Government, helping the regular schools in the proper management of Integrated system, diversifying their own activities, initiating research and experiment in the field, the special school can play the role of responsible guide and innovator. □ Special School—its relevance Setting up a special school with all the necessary resources like infrastructure, equipments and manpower warrants a huge capital. In a developing country like India which can't afford to huge investments on alternative system became imperative so as to bring all the disabled children under the umbrella of education. Inclusive education is one of the viable approaches to make the dream come true. Inclusive education is not a threat to integrated education concept or the special school programmes rather an important component for education of the disabled. The special schools can concentrate more on difficult groups such as severe and profound group of children and children with additional disabilities. It is noted that the introduction of one system had never suppressed the old system but has widened the scope and action of such system. Therefore, special schools can change their role

201 in the following ways for expanding inclusion. 1. Serving as resource centres for a cluster of general educational schools which are involved in inclusive education. 2. Organising inservice courses to the teachers of general schools in methods of handling children with disabilities. 3. Sharing special equipment with general schools for enriching learning experiences of children with disabilities. 4. Organising summer camps for non-disabled children

to create awareness in them an disability related issues. 5. Providing residential school facilities to children with severe and profound disabilities. 6. Undertaking action research studies on disability related issues and disseminate the information to general schools. 7. Initiate community based rehabilitation services to provide alternative education and rehabilitation to persons with disabilities in their own localities. Therefore, special schools can play a vital role for the betterment of inclusive education in India. The inclusive education and special school concepts are not competitive to each other. In fact they are complimentary to each other. This spirit would go a long way in establishing a base for the harmonious growth of services for persons with disabilities in India. □ Integration and Inclusion—how do they differ ? In India the two systems—integrated education and inclusive education have a major difference. In integrated education, specialist teachers provide most of the essential as well as support services, whereas general classroom teachers provide additional assistance to blind children in the classroom. In inclusive settings, the education of disabled children is treated as an integral part of general education. Therefore,

essential services are provided by general classroom teachers and only support services are provided by specialist teachers. Provision for education of children with disabilities is usually made in special schools. But these special schools are completely inadequate to cater to the need

202 of the vast population of children with disabilities. So the steps have been taken to make provision of education of these children in general, open and non-formal schools. B. General Schools : More than 5,00,000 schools are there in India to look after the educational needs of the children in the country. These schools are meant for the normal children. But the constitutional provision to make education compulsory and free for children including disabled ones up-to the age of 14 years has compelled the policy makers and administration to make available the facilities of these schools for the education of the disabled children. In this context, these general schools may be grouped into Four Categories : □ Schools with normal children only. □ Schools where disabled children are enrolled but without any special facility of trained teachers or special teaching aids. □ Schools where disabled children read along with normal children but trained teachers are there to understand their special needs and try to satisfy their needs to some extent. □ Schools where there are special sections for disabled children. C : Open School : All disabled children cannot be benefited from formal learning system. There are many over-aged children and dropouts who may like to continue education through distance mode. The clients in vocational and rehabilitation centers who want to continue higher education many pursue the same through distance learning system. The Indira Gandhi National Open University, The Netaji Subhas Open University, some universities in every states of India, some foreign universities, Rabindra Mukta Vidyalaya etc have also started special study centres to assist persons with disabilities to continue school education and higher education. Such distance education opportunities must be used to the maximum possible extent to make more disabled persons educated. Open learning system is considered as the panacea of the general educational system. When developed nations as well as developing nations are acknowledging the need of open learning as a viable alternative to make any country literate, the special education system, being a part of general education system, needs to

203 examine the feasibility of open learning to make more disabled persons literate. The National Open School has developed instructional material for adaptation of curriculum in the case of disabled children. It has also started providing accreditation to selected institutes in the country to offer all levels of academic and vocational courses for the benefit of disabled children. The strengths of the National Open School curriculum are its wider range of options for course selection and facility to learn at the pace of the learner. These two aspects suit the requirement of children with disabilities. The children, according to their abilities, may select either academic or vocational courses. D : Non-Formal Schools : While open learning system may be encouraged for school-going and academically capable children, many adult disabled persons may not be benefited from this approach. There is a need to promote non-formal education programmes in the existing community based rehabilitation programmes to provide educational services to their clients. These clients may not opt for higher education, but they may become lifesafe for better living. Adult disabled persons are the potential seekers of non-formal education.

4.2.4 Models of Educational Programmes For Children with Disabilities

A. Resource Model : This is an educational plan in which a child with any type of disability specifically visually Impaired is enrolled in a regular class. Within the school building a special teacher called resource teacher is available to the child along with his regular teacher. The regular teacher assumes major responsibility for the children with all disability in general programme. The resource teacher is responsible for instruction in special techniques or skills required for children of all types of disabilities. One full time resource teacher can manage 8–10 children of different types of disability in the resource programme. As far as possible, the children should be distributed in different classes/sections, preferably not more than 2 in one class/section. In developing countries, at least seven models of Resource System are in practice. These are the following— (a) Resource model where visually impaired children study in general schools and stay in hostels for non-disabled children. (b) Resource model where visually impaired children study in general schools and 204 stay in hostels of the near by special schools. (c) Resource model where visually impaired children study in general schools and stay in hostels exclusively arranged for them. (d) Resource model where visually impaired children study in general schools and stay with parents at home. (e) Semi-resource model or co-operative model where visually impaired children are taught only by the resource teacher in a separate class in a general school. (f) Multi-category resource model where disabled children of different types are educated in a general school by the regular teachers and a specialist teachers. (g) Multi-category itinerant model where one special teacher attends to the need of visually impaired children of different categories in a particular locality.

B. Itinerant Teacher Model : This is an educational plan in which the children with all disabilities are enrolled in a regular class in his/her home school where his needs are met through the combined efforts of the regular teachers and visiting itinerant teacher qualified to offer special service. The salient features of the Itinerant model. □ The children in this programme are distributed in different schools. □ The Itinerant teacher has to travel everyday to reach the children. □ Each child will be visited by the teacher twice or thrice a week. However children with all disability of primary classes should be given frequent visits. In this case, limited number of children with all disability should be enrolled at the primary level especially in the beginning stages of the Itinerant programme. □ Each school will not be having a resource room. So for the itinerant teacher, a resource kit is must. □ The schools selected for the programme can be within a radius of 8 kms. However, this distance depends upon the topography of the locality. □ Depending upon the topography, the itinerant teacher should be provided with transportation arrangements— a bicycle or a motor cycle can be given.

C. Dual Teaching Model : This is the model which can make the universalisation principle, a reality. Even though resource and itinerant programme can reach a huge number of children with 205 all types of disability, there are numerous places where educational services for this population are not existing. For example, an isolated village which has one or two children with multi-category disability can very well go for the dual teaching plan. This plan is successful only when the number of disabled children is very limited, not more than two for ideal programme. The regular teachers with the support instructional material and limited competency oriented training can look after children with multi-category disability in addition to their regular classroom responsibilities. A token incentive may be provided for their

additional work with disabled children. A large number of teachers, at least one teacher per school have to be trained through crash programmes of two to three months duration to serve in the dual teaching plan. When such arrangements are made, any visually impaired child also can avail the educational facility in the local school itself. D. Distance Learning Model : The present day scenario is changed. The out-reach programme services of education is at every doorstep now. Expensive college and university centralised higher education is brought very close to our home through the study centres. Institutions like Indira Gandhi National Open University, Netaji Subhas Open University, all other universities of our own state and other states even the foreign universities facilitate higher

education available in the home locality. Apart these to- day Information & Technology has brought the world and all resources of education to our room-corner. Like general students all category of disabled students including Visually Impaired can avail themselves of the opportunities of higher education seating at home keeping personal business and engagement undisturbed and intact. E. Alternative school model : The possibility of alternative schooling such as night schools, evening schools, package programme etc. may also be explored and take into account for providing are needed to improve the skills of the disabled individual to become economically as well as educationally rehabilitated. India has great potential for the growth of alternative education models to promote maximum services to all disabled persons. F. Home based education model : "This programme is meant for children who are physically handicapped also to the extent that they cannot attend a school, or who live where a school suitable for them is not available."

The purpose of this school is that the physical inequity
206 should not and need not create
a "mental vegetable".

If the children are unable to attend the school education can be brought to them. In this approach specialised teachers are nominated routinely to minimise interruptions in a student's education caused by short and long time confinement at home.

The special teachers in this system are assigned with a caseload and visit the student in the home on a regular basis. The major responsibility of these teachers is to assist the child's regular classroom teacher in preparing instructional plans and guidelines which can be pursued with the homebound student on one-to-one tutorial basis. It is desirable that the learning environment should be made more compatible to the child's basic physical and emotional needs in this system. The homebound programmes are rarely practised in Indian conditions. 4.2.5.

The need of Inclusive Education for the Disabled in India In India special school services are more than a century old. At present, approximately 30,000 blind children are served in nearly 400 special schools for the blind. The present scenario is that : (i) A disabled child has to travel to far off places, whereas a non-disabled sibling from the same family can attend the local school. This accessibility of local school is not made available to children with visual impairment. (ii) In most villages of the country, children with disabilities of different conditions are present. As far as the standard models are concerned, one specialist teacher serves 8-10 disabled children of the same category. But the scattered villages in the country do not have an adequate number of the same category to justify the appointment of a full-time resource teacher. Therefore, the need of multicategory personal becomes inevitable. (iii) The extent of disability in each category ranges from mild cases to severe and profound cases. The mild and moderate cases are more in number than the severe and profound cases. Due to a lack of sensitivity of general education to the needs of children with visual impairment, even the mild and moderate cases are not attending schools. This invites the involvement of general education so that children who are currently left out can be served. (iv) Last but not the least, the enrolment in the integrated education as per the sixth All India Survey on Education (1998) in 8633. The total coverage in both special schools and integrated settings constitutes less than 57 of the population of

207 blind children. Therefore, special schools and integrated education models are not able to provide access to all. The Education for All (EFA) campaign should not become 'education for all minus blind children'. If EFA in the case of blind children is to become a reality, inclusive education needs to be nurtured and implemented. In addition to the accessibility factor, the nature of distribution of visually impaired children too demands inclusive education. At present the SarvaShiksha Abhiyan/ Mission is the active force for full implementation of Inclusive programme. 4.2.6. Let us Sum Up : □ Education of disabled children in India is served by mainly four types of schools—special, general, open and non-formal. □ There are various models of Education available for disabled children such as—Resource Room Model, Itinerant Teacher model, Distance Learning Model, Alternative School Model, Home Based Education Model. 4.2.7. "Check Your Progress" : 1. (i) The teacher should know the educational placement of disabled children. Activity : Enquire disabled children's learning in your locality (ii) Type of study materials of a visually impaired child. Activity : Locate a visually impaired child. List his/her study materials and techniques of learning. 2. Point for discussion. After going through the sub-unit you may like further discussion on some points and classification on other Note down those points. 3. (i) Inclusive and Integrated setting of education is not a Threat to Special Residential System—Justify. (ii) Inclusive and integrated educational setting for the disabled children—Differentiae.

208 4. Assignments : Prepare a Report regarding the types of schools and models of education available in Your Block. Collecting data from various sources and give your suggestions and recommendations for promotion of education of the children with disability. 5. Self-Check : Tick the most appropriate answer : (i) The first school for the visually impaired in India was established India— (a) 1784, (b) 1883, (c) 1987, (d) 1887. (ii) Constitution of India assures better services to persons with disabilities under article No.— (a) 54, (b) 45, (c) 24, (d) 44. (iii) Expanded core curricular items for the visually unpaired are followed more in— (a) General Schools, (b) Open Schools, (c) Special Residential Schools, (d) Non-Formal Schools. (iv) This model of Education for the disabled can make the universalisation principle, a reality.— (a) Dual Teaching Model, (b) Itinerant Teacher Model, (c) Resource Room Model, (d) Home Based Education Model. (v) Instructional material for adaptation of curriculum for disabled children has been developed by— (a) The National Open School, (b) General School, (c) Special Residential School, (d) Non-Formal School. (vi) Inclusive education is essential in India for— (a) Larger coverage of disabled children population, (b) Huge cost for running special school will not be needed, (c) Implementation of EFA will be possible normally, (d) All of the above. (vii) The categories as per percentage of disability is— (a) 4, (b) 5, (c) 6, (d) 3. Answer Key : (i) d, (ii) b, (iii) c, (iv) a, (v) a, (vi) d, (vii) a.

209 Unit - 4.3

Teaching Principle Structure : 4.3.1. Introduction 4.3.2. Objectives 4.3.3. Child Central Approach to Teaching 4.3.4. Principle of Teaching 4.3.4.1 Psychological Principles of Teaching 4.3.4.2 General Principles of Teaching 4.3.5. Maxims of Teaching 4.3.6. Principles of Teaching for the Visually Impaired children 4.3.7. Some more points to be taken into granted 4.3.8. Let us Sum up 4.3.9. "Check Your Progress" 4.3.10. Check Yourself 4.2.11. References 4.3.1. Introduction : Rehabilitation council of India (RCI) in the preamble of B.Ed. Spl. Ed. Programme—2015 has stated rightly and significantly about the new trend of teaching—moving away, from 'show and tell' to 'learning by doing'. A disabled child is a child first like all normal children, then we are to consider the disability accordingly in course of teaching-learning process. Hence we are to glance first. The principles of teaching prescribed for normal children as all these are applicable to all categories of children and then the disability particularly the visually impaired will be taken for discussion.

210 4.3.2. Objectives : The clear knowledge of the principles of teaching will help the teacher-students (i) to take their teaching in the goal-oriented right direction without groping or hovering aimlessly (ii) to take steps for teaching properly both in inclusive, integrated, special & home-based set-ups. 4.3.3. Child Centred Approach to Teaching : • Meaning of Child Centred education—The claim of the teacher, 'I teach children, not subjects' implies care for the 'whole' child—his/her personality, needs & learning style and not just for his/her academic process. Child-centred education stresses the need for taking care of the child, its growth and development. It requires 'individualisation' of approach, so that one must study each child carefully, keep observations over a period of time, study the growth and development in sensory-motor, intellectual, emotional, social, language areas and soon. • Key Concepts of Child Centred Education—Aim—The aim is development of the total personality of the child Programme—Programme is to be activity based with different teaching strategies. Pace of Learning—It is to be based on children's needs & abilities. Teaching-Learning—Teacher's role is that of a facilitator in learning and development. Discipline—It is to be achieved through the maintenance of positive human relationships between teachers and pupils. • Need for child—Centred Approach and its implications (i) The child is the most important agent in his/her own learning. Out of the three components of learning situation—the child, the teacher and the environment,

211 the prime place is occupied by the child. It means that curriculum must be thought of in terms of activities and experiences which appeal most to the child. (ii) Children learn best when they are active. Learning takes place through a continuous process of interaction between the learners and its environment. (iii) Knowledge or information is not the goal. Self-realization is the goal. Personality and character are more important than the subject matter. (iv) Child-centered approach is more psychological than logical. It emphasises the process rather than the product. (v) Child-centered approach gives boundless freedom to the child under the creative and sympathetic direction of the teacher. (vi) One single exposure to an experience does not affect all the necessary co-ordination of the physical and mental faculties of a child to preserve the net value of exposure. Hence there have to be repetitive exercises and drills to give a certain knowledge and the efficiency and tenacity of skill and value. (vii) A Child is a unique being and has a Specific role to play. The teacher's role is to help the child to conform to its unique role, both in its spirit, habitual values, choices and consistent behaviour patterns. (viii) The child's sense of wonder and astonishment and his/her natural curiosity leads to a learning process which should be encouraged by the teacher. • Limitations of Child-Centred Education- Child-centred education has a few limitations which must be taken care of by the teachers. Too much freedom is likely to engender egocentrism in children. Children may grow to be unwilling to accept reasonable authority. If all the times and at all places likes and dislikes, preferences, whims and interests of children are elevated above the matured judgements of parents and teachers, it may result in undesirable outcomes. Adams, therefore, wanted that both the children and their teachers should be on the same footing of importance. Pragmatically speaking, learning cannot be child centred always in absolute

212 term. Child-centred education implies that each child may have a separate learning activity besides a few group activities. Perhaps no nation can afford to spend so much money, resources and time on child-centered education. There are so many children under the charge of a teacher that it is rather impossible to attend to the specific needs of children individually. • Corrective Measures : Of Course emphasis on child-centred education tends to free the child from the tyranny of the traditional approach to education like 'chalk and talk', 'bookish knowledge' and 'The supremacy of rod'. Implicit in all the positions of child-centred education is that the teacher must be prepared to give initiative to the learner in the educational encounter. The role of the teacher in child-centred education is encouraging self-disciplinary function of the child which cannot be over-emphasised. It can be summed-up as-- (i) Motivating children. (ii) Developing trust and confidence in children's capacity to learn. (iii) Becoming a resource for creating meaningful learning experiences. (iv) Accepting the individual and the group. (v) Participating as a member of the group in guided learning. (vi) Becoming sensitive to the child's needs and interacting in a way that would provide a sense of feeling and security. (vii) Recognising and reinforcing the individual contribution. 4.3.4. Principle of Teaching : The educators and philosophers have emphasised certain principles of teaching which the teachers are expected to bear in mind for making their teaching effective, efficient, and inspirational. These are classified as psychological general principles. 4.3.4.1 Psychological or Learning of Teaching : (i) Principle of Activity or Learning by Doing : Children are active by nature and any process or method that is not based upon the student's activity is not

213 in accord with the progressive educational theories. Rousseau considers the child as a "hero" in the drama of education and as such he/she must be allowed to play. The dominant role. So the first principle is to keep the class active. The great vitality of our children cannot be permanently restrained without providing a positive purpose which will interest the children and give them opportunities for observation and the use of their hands. This is to offer them the fulfilment and satisfaction which nothing else confers. Activity does not mean mere physical activity. To develop all sides of pupils' personality it is necessary for them to be active in all ways, to exercise all the powers they have. (ii) Principle of Playway : This principle is closely related to the principle of learning by doing. According to Froebel play is the chief activity of childhood. It gives joy, freedom, contentment and inner and outer peace. It holds the source of all that are good. But "without rational conscious guidance", says Froebel, "childish activity degenerates into animals play instead of preparing for those tasks of life for which it is designed." (iii) Principle of Motivation : The teacher will do his/her best to motivate all children in the lesson-motivation arouses the interest of children and once they become interested, they are willing to concentrate and work. Motivation is developed by the following techniques--(a) utilising the instinctive tendencies of the children in an effective manner; (b) satisfying the curiosity of children; (c) utilising all the senses of children; (d) relating closely body and mind; (e) linking teaching-learning with life. (iv) Principle of Self Education : Best teaching is enabling the child to learn by his own efforts. Teachers must fire the imagination of their students. Children must be left free to express themselves, for the best education is self- education. Teachers must stand aside. They must talk less, explain less and direct less. The essential activity in teaching is not the adjustment of child to teacher but is to enable him/her to adjust himself/herself to the environment and also to change the environment to adjust himself/herself. Teaching must enable the child to work independently and without the teacher at a later state. (v) Principle of Individual Differences : No two children are alike. Teaching to be effective must cater to individual differences of children. 214 (vi) Principle of Goal Setting : A definite goal must be set before each child according to the standard expected of him/her. Short term or immediate goal should be set before small children and distant goals for older ones. It must be remembered that goals should be very clear and definite and the children must understand their goals. (vii) Principle of Stimulation : Burton has said teaching is the stimulation, guidance, direction and encouragement of learning. Ryburn emphasises, the guidance of the teacher is mainly a matter of giving the right kind of stimulus to help him/her to learn the right things in the right way. (viii) Principle of Association : Thorndike points out that things we want to go together should be put together. Many different things or ideas which want to go together should be associated with each other. They should form a part of one process. Then it becomes easier to make the students understand their relationship. (ix) Principle of Readiness : This principle is the indicative of learner's state of mind to participate in the teaching learning process. Readiness is preparation for action. (x) Principle of Effect : This principle states that a response is strengthened if it is followed by pleasure and weakened if followed by displeasure. (xi) Principle of Exercise or Repetition : According to it, the more a stimulus induced, response is repeated, the longer it will be retained. This principle has two sub-parts- principle of use and principle of disuse. (xii) Principle of Change and Rest : Psychological experiments in learning have demonstrated that fatigue, lack of attention and monotony can be overcome by making appropriate provision for change, rest & recreation. (xiii) Principle of Feed-back and Reinforcement : Learning theories point out that the immediate knowledge of the results and positive reinforcers in the forms of praise, grade, certificates, taken money and other incentives can contribute to make the task of learning joyable. (xiv) Principle of Training of Senses : Senses are the gateways of knowledge. The power of observation, discrimination, identification, generalisation and application can only be appropriately developed through the effective functioning of senses.

215 (xv) Principle of Group Dynamics : Under the influence of group behaviour, appropriate changes in the behaviour of the members of the group can take place. Individuals composing the group think and feel as the group feels, do as the group does. A suitable climate for group dynamics is to be created in the classroom environment. (xvi) Principle of Creativity : Opportunities should be provided to the students to explore things and events and find cause-effect relationships. This principle envisages that every student possess some element of creativity which must be explored and developed to the maximum extent. (xvii) Principle of Correlation : Gandhiji was of the firm view that correlation should be the basis of all work. He advocated that correlation of the learning task should be established with the craft, physical and social environment. 4.3.4.2. General Principles of Teaching : Successful teaching necessitates that the teacher comes down to the level of the pupils and at the same time assists them in rising above it. To a great extent, the principles of teaching to be followed depend upon the age of the pupils, the subjects and topic of the lesson. However, there are certain general principles which should underline the teaching of all subjects. Actually there is no clearcut dividing line between psychological and general principles of teaching. (i) Principle of Definite Goals or Objectives : Destination or goals of teaching- learning must be clear to the teachers and the students. Goals and objectives keep them on the track. Definiteness of goals helps in planning, executing and evaluating every step, phase or act of teaching-learning process. (ii) Principle of Child Centredness : The entire teaching endeavour is for the child. Therefore, it is essential that teaching strategies should cater to the aptitude, interest and abilities of the students. In the drama of education, child should be assigned the role-of 'hero'. (iii) Principle of Individual Differences : No two children are alike. Teaching to be effective must cater to individual differences of children. (iv) Principle of Linking with Life : Teaching can never be performed in a vacuum. It is always in a social context. In the teaching of all the school subjects, examples from everyday life should be given their due place.

216 (v) Principle of Correlation : Knowledge is one 'whole'. Various ideas and events are inter related. There exist links among various subjects. Correlation of the present events can be made with the past. Similarly future can be visualised on the basis of the present happenings or state of affairs. (vi) Principle of Active Involvement and Participation of Students : Teaching- learning is a two-way traffic. Traditional teaching was almost teacher-centred. There was very little scope for the involvement of the students. The teacher used to teach and the students would listen to him passively. The new teaching emphasises that the students must actively participate in all the stages and steps of teaching-learning. (vii) Principle of Cooperation : Classroom environment becomes lively when the teacher and taught work in union, helping each other in carrying out the task of teaching and learning. All the participants have the same common interest. Naturally they must cooperate with teacher. (viii) Principle of Remedial Teaching : All the students do not learn with the same speed and accomplishment. Some lag behind and need extra coaching. The teacher has to find out where the fault lies and think for positive measures. He may have to arrange for remedial or compensatory or extra teaching for any particular group of students for removing their specific difficulties. (ix) Principle of Creating Conducive Environment : Physical as well as social environment of the classroom plays a vital role in motivating the learners. Arrangement of light, fan, furniture etc. should be properly attended to. There should be proper discipline and order. The teacher should be sympathetic but firm. (x) Principle of Planning : Planning determines the quality or success of any task. Planning in teaching involves the preparation of the lesson notes, provision of teaching aids and working out strategies to be adopted in the delivery of the lesson. (xi) Principle of Effective Strategies : Teaching process to be effective must adopt proper means, strategies and tactics. A

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teaching strategy is a generalised plan for a lesson which includes structures, desired

learning behaviour in terms of goals of instruction and an outline of planned tactics necessary to implement the strategy.

217 (xii) Principle of Flexibility : Strategies should serve as guides for effective teaching. Strategies may have to be changed, if the classroom situations, so warrant. Teaching is a complex task and a live phenomenon. The possibilities of alternation in planned strategies cannot be ruled out at the execution stage. A teacher must be quite imaginative and resourceful for adapting himself/ herself and his/her teaching to the requirements of the teaching-learning environment.

(xiii) Principle of Variety : A variety of teaching aids and strategies should be adopted to motivate and sustain the interests of the students. Variety serves as great tonic for creating fresh environment and checking boredom and lethargy.

(xiv) Principle of Activity : Children are active by nature and any process or method that is not based upon the students activity is not in accord with the progressive educational theories. Rousseau considers the child as a "hero" in the drama of education and as such he/she must be allowed to play. The dominant role. So the first principle is to keep the class active. The great vitality of our children cannot be permanently restrained without providing a positive purpose which will interest the children and give them opportunities for observation and the use of their hands. This is to offer them the fulfilment and satisfaction which nothing else confers. Activity does not mean mere physical activity. To develop all sides of pupils' personality it is necessary for them to be active in all ways, to exercise all the powers they have.

4.3.5. Maxims of Teaching : The maxims of teaching are very helpful in obtaining the active involvement and participation of the learners in the teaching learning process. They quicken the interest of the learners and motivate them to learn. They make learning effective, inspirational, interesting and meaningful. They keep the students attentive to the teaching-learning process. The maxims will be discussed under course code A3 and unit-3 in Semester-II. Here only the points are to be noted :

(i) Proceed from the Known to the Unknown

218 (ii) Proceed from Simple to Complex. (iii) Proceed from Easy to Difficult. (iv) Proceed from the Concrete to the Abstract. (v) Proceed from Particular to General. (vi) Proceed from Indefinite to Definite. (vii) Proceed from Empirical to Rational. (viii) Proceed from Psychological to Logical. (ix) Proceed from Whole to Parts. (x) Proceed from Near to Far. (xi) Proceed from Analysis to Synthesis. (xii) Proceed from Actual to Representative. (xiii) Proceed Inductively. In the ultimate analysis it must be observed that the maxims are meant to be our servants and not masters. Moreover, by and large, all are interrelated. It is also to be kept in view that children differ in their aptitudes, capacities, interests, mental and physical make up. Different maxims suit different situations and different children. It is, therefore, essential that a judicious use should be made of each maxim.

4.3.6. The Principle of Teaching for the Visually Impaired Children : The discussion of a general principles of teaching for all children is now over. We will proceed to highlight the specific principles of teaching required to be obeyed in course of dealing with the visually impaired children. Ever since formal education of blind children began, enlightened teachers of the blind have practiced such principles, mostly without being theoretically aware of them.

(i) Educational Set Up : To what extent these principles can be applied in the actual process of teaching depends somewhat on whether visually Handicapped children receive their education as a group in an environment geared to their

219 needs, as residential schools are, or as single individuals in general school facilities where they may have an understanding general classroom teachers and should have a resource or an itinerant teacher who is aware of and knows how to meet their special needs. (ii) Need For Concrete Experience : In order to give the blind child a knowledge of the realities around him/her the teacher must aim at providing him/her with a wide variety of concrete experiences. Thus making up to a certain extent for the limitation in the range and variety of his/her experiences. For the blind child it is not important to learn concretely about exotic things; his/her primary need is to learn about his/her environment. The young seeing child is familiar with a multitude of characters and scenes of domestic and social life. Experiences of such things as these, and of their observed relationship, are the very stuff of the child's mind, and on them the teacher draws daily activities for the purpose of teaching. The deepest and most fundamental needs of blind children are a rich and intimate experience of common things, and a direct acquaintance with the many characters that move across the scenes of daily life, and the activities of the characters. The children must learn to know persons and things in terms of their own sensory persons and to meet the situations in which they occur on an independent footing. For these no verbal substitutes will serve. They need the direct contact with the world. Concreteness in teaching can be achieved in essentially two ways : by having the children observe the object or situation itself or by providing them with a model of the object. In all cases if there is any possibility, reality is to be preferred. Children must be given sufficient time for the observations. Study excursions and field trips can familiarize children with many situations which otherwise would remain abstract for them. A model or replica can only be a substitute and will always in some ways be incomplete or distorted, unless the teacher is careful and persistent in making the students fully aware of size and other distortions. The use of embossed pictures to give blind children an equivalent of visual illustrations has often been tried but never had only lasting success. Embossed outlined representations of essentially two-dimensional objects, such as leaves, a fork, or a butterfly, may be identified by the blind children and even a man's figure will

220 be understood because the child will relate the body parts to his/her own bodily experience. Such embossed pictures can even result in wrong ideas, for instance when a four-legged animal is shown with only three legs, since the fourth-leg is visually hidden. Though limitations are there diagrams and embossed maps are the most valuable from the early school years on in developing spatial concepts and basis relationship needed for orientation and other purposes. Giving blind children a knowledge of the realities around them is not a question of enriching the child's vocabulary, but of giving him/her a sense of reality about his/her environment. It will prevent him/her from following into a pattern of unreality towards which he/she may be inclined for other reasons. It will also be valuable to him/her in his/her social life, because in conversations he/she will not feel left out by lack of concrete knowledge but will be able to take an active part as the result of experiences which he/she has in common with others. (iii) Need For Unifying Experiences : Blind children are at a services disadvantage in experiencing things and situations in their totality. Touch permits simultaneous observation only of objects that can be embraced by either the hands or the body. Larger objects must be observed by consecutive touch motions and in many instances only parts of them are observed in this way. Vision permits a unification of observations and it structures and organizes discrete impressions received by other sensory organs. The lack of unifying integrative experiences must be counteracted by teachers who give blind children opportunities to experience situations in their totality and to unify part-experiences into meaningful wholes. The teaching by study units is an important means of achieving this end. By this method blind children will not only learn the facts of a given topic as seeing children do, but will also recognize how the different parts combine into a total object, situations, or topic. (iv) Need For Learning by Doing : As a result of their blindness and because of the environmental reactions to this handicap, blind children have in general significantly less opportunities for self acting. Special attention must be given at home and school to encouraging blind children to do as many things for themselves as are desirable and compatible with a well-conceived time economy. That blind children from an early age on are not visually stimulated

221 by their environment to imitate activities of others combined with tendency of many parents to be content with just satisfying their child's bodily needs, causes a tendency toward inertia in many blind children. The general approach should be to encourage blind children to learn to do things themselves with as little assistance as possible. The blind child should be encouraged to become independent and successful at the endeavours like eating, dressing, playing, meeting people and getting about. The more situations he/she has learned to master, the stronger will be his/her feelings of security and the more positive his/her self-concept. As regards the creative activities of blind children, educators should not impose their 'seeing taste' on blind children, but should let them create things according to their own concepts and emotions. The visual aspects of a piece of clay modeling are irrelevant for the blind child, who works by touch and expresses his/her sculpture his/her touch concepts of things and events. Thus the result may be a product which in no way resembles the visually perceived objects, but truly expresses what the blind child knows and feels. It is the process that counts not the product. From all that has been said about individual considerations and about special educational needs of blind children it is obvious that the teaching can fulfil his/her role only if the number of children in his/her group is small. This is true for classes in residential schools as well as for facilities in local schools, with either resource room or itinerant teachers. The actual number of children will depend on such factors as grade level, age, subject matter (is the upper grades), and geographic location (for itinerant teachers). In general, between five and ten children can normally be assigned to one teacher. If special conditions exist, such as an itinerant teacher serving blind children in primary grades, or if the children are multilaterally disabled, a much smaller teacher-pupil ratio, sometimes one to one, is essential for success.

4.3.7. Some more Points to be taken into Account Apart the above mentioned major points the educators should keep in mind the following in course of teaching a blind child. (i) Age of onset of blindness is of crucial importance. (ii) Extent of residual vision determines the nature and dominance of visual imagery. (iii) Stability of residual vision and suffering from trauma. (iv) Knowledge of family background. (v) Contrive concrete life situations to give the visually handicapped child experiences that he/she would miss day-to-day life. (vi) Where necessary take the visually handicapped child to experiences that he/she cannot have at home or in the classrooms. (vii) Use models where absolutely indispensable. (viii) Organise visits to Museums, Post office, Markets, and social and cultural centres in the city, town or in the neighbouring areas where the school is located. (ix) Touching objects should not be prohibited. Indeed, it should be encouraged. (x) Verbal description should be supported where possible with concrete experiences. (xi) Reward and punishment should be judiciously given to motivate the visually handicapped child to interact extensively with his environment. (xii) Diagrammatic representation in braille or in large print should be used where necessary to give the visually handicapped child an idea not only of two dimensional perspective but also of the three dimensional world. (xiii) Learning by doing should be the basic principle of the teacher. In this way the formation of imagery and concepts could be fostered. (xiv) Play at home and in the classrooms should be extensively used as a tool promoting cognitive development. (xv) Acting should be used in appropriate situations to improve the visually handicapped child's expression and strengthen his retention and recall. (xvi) Role playing should also be used to give a visually handicapped child experience of life situations.

223 4.3.8 Let us Sum up : The principles of teaching help to navigate the goal-oriented teaching-learning process efficiently, competently and successfully. Committed quality teaching is expected from an educator. Hence each and every educator should know well and obey the principles of teaching. These days are the days of child-centred education. Hence the child whether normal or disabled particularly visually handicapped should be given appropriate principle-based teaching-learning environment, care and attention. Principles-psychological and general help the education to be endowed with proper techniques and strategies for education of all children. But for the visually impaired children some specific principles are to be taken into account in addition to the two principles meant for all. ● "Course Work" : (a) Write the process and name or articles needed for preparing 4 models and 4 maps for teaching the visually handicapped children. (b) Give critical analysis of these models and maps. 4.3.9 "Check Your Progress" : 1. 'Learning by doing'--What type of activity does it mean ?

----- 2. Principle of Individual Difference--Explain.

224 3. Remedial Teaching--Does it prove teachers lack of competency ?

----- 4. Type of education set up of a visually handicapped child changes the role of the educator--Clarify.

----- 5. In the process of teaching-learning of visually handicapped child the age of on-set blindness is of crucial importance --Explain.

----- 6. Teaching of totally visually handicapped and low vision child differs--Justify.

225 4.3.10. Check Yourself : Tick the appropriate answer-- 1. Child is the 'hero' in the drame of education has told by-- (a) Johann Heinrich Pestalozzi (b) John Dewy (c) Jean Jacques Rousseau (d) Alfred Binet 2. Principle of motivation does not include the technique of-- (a) linking teaching-learning with life (b) relating closely body and mind (c) satyifying the curiosity of chidren (d) utilising only the sense of vision of the children 3. Planning of teaching does not involve-- (a) preparation of excessive talk (b) preparation of lesson notes (c) making provision of teaching aid (d) working out strategies for delivering lesson. 4. The most fundamental needs of visually handicaped children do not include-- (a) rich and intimate experience of common thing (b) a passive sedentary tendency (c) a direct acquaintance with the characters that move across the senses of daily life. (d) the activities of the characters that come in their contact. 5. The teaching of visually impaired multiple disabled (VIMD) children the ideal teacher-pupil ratio should be--

226 (a) one to more than ten (b) one to eight (c) one to one (d) one to ten • Answer Key : (1) (c), (2) (d), (3) (a), (4) (b), (5) (c)
4.3.11. References : See pages 67 & 68

227 Unit-4.4 ppppp Expanded Core Curriculum Concept & Areas. Structure 4.4.1. Introduction 4.4.2. Objectives 4.4.3. What is curriculum? 4.4.3.1 Function of the curriculum 4.4.4 Need for Special Approaches for Visually Impaired Children 4.4.4.1 Objective Effects of Blindness Causing Experiential Deprivation in Visually Impaired Children 4.4.4.2 Curriculum for Inclusive/Integrated Education Programmes. 4.4.5. General Curriculum with Modified Experiences 4.4.6. Exanded Core Curriculum/ Plus Curriculum 4.4.7. Special Areas : (a) Braille 4.4.7.1 (b) Orientation and Mobility 4.4.7.2 (c) Daily Living Skills 4.4.8. Co-curriculum Activities in Brief 4.4.9. Difficulties to Cope with 4.4.10. Let us Sum up 4.4.11. "Check Your Progress" 4.4.12. Check Yourself 4.4.13. References 4.4.1. Introduction : Curriculum planning for visually impaired children follows the same maxims as for normal children. The motto is to facilitate children's learning. The effects of 228 visual impairment necessitate some adjustment in the planning and execution of the curriculum. Some skills for learning which are natural to a sighted child need to be developed through a well planned programme hence the need for expended core curriculum/plus curriculum. Similarly the visually impaired child needs some special in-puts from the teachers besides what is given to every child. He/She also needs, at times, special inputs in terms of equipments or efforts. 4.4.2. Objectives After completing the subs unit the teacher/students are expectable to be able to : (i) Describe the concept of curriculum in general and its implications for teaching visually impaired children for classroom practice. (ii) Specify curriculum adaptations for teaching visually impaired children. (iii) Identify the components of Expanded core curriculum/plus curriculum activities for visually impaired children 4.4.3. What is Curriculum ? (a) Education is treated as a race, with its objectives as the goal and curriculum as the course leading to the goal. The traditional system insisted on curriculum as the acquisition of mastery over certain skill and certain areas of knowledge. According to modern educational thoughts curriculum does not mean only the academic subjects traditionally taught in schools, but includes the sum total of experiences. That a pupil receives through a variety of activities in the school, in the classroom, library, laboratory, play grounds, in formal contacts between teachers and pupils. In this sense, the whole life of the school becomes the curriculum, which can touch the life of the students at points and helps in the evolution of a balanced personality. Modern curriculum. Thus, "covers all the wider areas of individual and group life. It encompasses all meaningful and desirable activities outside the school provided that these are planned, organised and used educationally." The concept of curriculum reflects the following concerns : (i) Curriculum exists only in the experiences of the children. 229 (ii) Curriculum includes more than the content to be learnt content does not constitute the curriculum until it becomes a part of the childrens total experiences. (iii) The school curriculum is an enterprise in guiding living. (iv) The curriculum is a specialised learning environment deliberately arranged to direct the interest and abilities of children towards effective participation in the life of the community and the nation. 4.4.3.1 Functions of the Curriculum : (b) The functions of the school curriculum are determined by two factors : (i) Taking into account the varying capacities and the endless potentialities for good or evil in the life of the community and the nation (Social goals) (ii) Problems encountered by the individual for living in the society (individual goals) The curriculum is the instrument through which these two factors are brought together; it consists of experience through which children achieve self realisation and at the same time learn to contribute to the building of better communities and a better nation. 4.4.4 Need For Special Approaches For Visually Impaired Children : (a)

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The whole gamut of the curriculum for children in school and community is centered around two significant aspects, "The Opportunity" and "The Experience". Often children are provided with opportunities, but the mere provision of opportunities does not mean acquisition of experience.

The understanding of the self and the world is not a 'whole' when experience is denied. Sighted children have advantage over visually impaired children in the acquisition of knowledge through experience. The vision, which brings an enormous amount of information in just a glimpse enables sighted children to have rich experiences in a "Natural Way". They learn the experience as a "whole".

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But the 230 learning of visually imparied is not "whole" but in "Pieces" of information.

Thus there is a significant diference between the two groups. The sighted having "Natuall Learning" and the visually imparied child having "Mediated Learning". There is therefore a need for different approaches to the curriculum for visually-imparied children. 4.4.4.1 Objective Effects of Blindness Causing Experiential Deprivation In Visually Impaired Childern : (b) According to Dr. Berthhold Lowenfeld, The objective effects of blindness are : (i) Reduction in the range and variety of experiences--As vision is the major mode of acquiring information, the visually-impaired child learns in a fragmentary way. He/She has to have time to put these bits & pieces together to form a concept which is not exactly like that of the sighted but which is sufficiently like ours to enable us to communicate. (ii) Reduction in the ability to move about-- Blindness tends to create a very sedentary kind of existence. A visually impaired person may just be inactive become of fear, lack of skill in using information and lack of skill in moving about within it. (iii) Control over the environment and self in relation to its--By just being blind and not knowing where you are, to whom you are speaking and what you are facing, being unable to controla the self and environment in relations to self is a significant defecit. Except these, all other effects such as etiology, extent of blindness and all other mitigated experiences are purely subjective. The three obstacles in the form of "objective effects" to independence and self-fulfilment are the underlying reasons for all the "Plus Curriculum" or "Expended Core Curriculum" set forth for visually impaired children. 4.4.4.2 Curriculum for Inclusive or Integrated Education Programmes : (c) A visually impaired child in the regular class is one among many children in That class. The curriculum meant for visually impaired children of, the inclusive/ imtegrated programmes should be more like than 'unlike' that of the sighted 231 children. Most information is received by the visually impaired child through 'Touch' and 'Hearing'. Hence these experiences must be planned to facilitate the acquisition of at least the near normal experience acquired by other children through 'vision'. Hence there is no need for a special curriculum for visually impaired children in the inclusive/integrated education programmes but special approaches based on multi-sensory experiences are needed. To learn the general curriculum, the visually impaired child should possess some skills which are peculiar to blindness and dealt with under 'Plus curriculum'/'Expended Core Curriculum'. In the light of this, the curriculum for visually impaired children may be stated as follow : 4.4.5. General Curriculum With Modified Experiences : The general curriculum which contains more "visual experiences" and less "non-visual expearence" must be analysed to convert visual to non-visual experiences for the betterment of the concept development of the visually impaired child. The four steps are given hierarchy of preferred management of "educational experience". (a) We give Duplicate experiences; but cannot always, so we (b) Modify experience some times; These modifications may be

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in terms of--Content, Method of Display, Type of Material used, Response Expectations From The Child. (

c) Sometimes, there is no suitable means of modification, and we must therefore substitute one kind of lesson for the visually impaired child, which as closely as possible, approximates that presented to his/her sighted peers. But even then, and specially in the early days, we may sometimes. (d) Omit a lesson These four steps are very important in giving experiences to the visually impaired child through the mutli sensory material. It has been found by experience that higher the academic standard, easier it is to produce the material exactly. That is most omissions occur during the first year. The pattern shifts quickly, and in no time at all, omissions are rare, substitions are infrequent, modifications continues to be desirable; but of the greatest

232 importance is the fact that more and more duplicate experience are possible. The visually impaired children could be divided into two main types. Those for whom braille or recorded study materials must be the medium of learning. Children with low vision who can read print with magnification in good and defused lighting. By and large, in both cases no significant modification is required in the curricular content. However, many boards of secondary education in India have exempted visually impaired children from appearing in maths and science in the 10th and 12th class Examinations. They are allowed to take music or an additional at language. Therefore, many schools teach science and maths to children from 6th to 8th class but discontinue the subjects from 9th class onwards. This is not absolutely necessary in the light of modern equipments now available. It is possible for a visually impaired child to take 10th or 12th class examination with maths and science. Over the years changes may come. Particularly in West Bengal Board of Secondary Education does not allow entire exemption of any subject, to the visually impaired students appearing at the final examination. Only alternative questions of equal marks are set against a few questions in the subjects like Mathematics--The construction portion and in Geography & Life Science against the pictorial portion alternative questions are set other wise all papers & questions are like the normal students. In all standards from 1st to 10th no change in there. Special equipments are needed for teaching Braille, Mathematics, Science and expanded core curriculum subject. Embossed maps are necessary for teaching social studies. It may be necessary for a teacher to adapt his/her teaching strategies to suit the needs particularly of visually impaired children. The following points should be borne in mind. (i) Show models instead of illustration. (ii) Orally spellout, whatever you write on the black-board. (iii) Assignment should be taken either in Braille or on any audio system. In case of non-feasibility of the both, oral examination is necessary.

233 (iv) Orient the child fully to his classroom and the school building. Do this bit by bit so that an accurate image is formed in the child's mind. (v) It will be preferable to adopt what is sometimes called the buddy system. This means association of one other peers who will take the responsibilities of giving the visually impaired child lecture notes, taking him out when necessary, playing with him/her in suitable hour. (vi) Encourage the child to be as mobile as possible within the school campus. (vii) Let him/her use in the classroom, all the equipments he/she needs for doing all the subjects taught in the school. (viii) Given the right environment, equipments and encouragement, the blind child should be expected to perform well as the rest of the students. (ix) Blindness should not be treated as an excuse for poor performance. (x) Encourage all the students in the class to interact freely and without inhibition to the blind child. (xi) Enforce the same discipline to the visually impaired child as it applies to other children. There should be no positive discrimination in matters of disciplines with visually impaired children. (xii) Low vision children usually do not require special methods except giving them more time for doing assignments. If they have mobility problem, some visual orientation may be given.

4.4.6. Expanded core curriculum/plus curriculum : The expanded core curriculum commonly known as plus curriculum is not 'extra' for visually impaired children but 'compensatory'. These are the basic skills on which the general curriculum skills are developed. These skills are skills peculiar to blindness, which a sighted person does not need. Experiences have shown that the strength in, the 'expanded core curriculum' or 'plus curriculum' always facilitates better learning of the general curriculum. The special areas are as follow :

234 4.4.7 Special areas (a) Braille Braille Louis Braille himself blind, introduced the Braille System for the educational purpose of visually impaired, persons. Braille is a tactical approach to reading and writing for the visually impaired, in which the letters are formed by a combination of raised dots in a cell. The cell consists of six dots which can be arranged in 63 combinations or characters. The finger tips possess sensitive nerve endings which make touch reading possible.

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The area covered by light pressure of the finger tips on paper gives the necessary information to the child to discriminate between different configuration of braille letters,

written within the braille cell, which is approximately 6mm vertically and 3.6 horizontally. The braille system is classified as Grade I, Grade II and Grade III levels. In Grade I, each letter of the braille word is specified. Grade I braille is sufficient for those who do not read braille for extensive reading. It is sufficient for lower primary school children and adult blind people of rehabilitation. Programmes when they try to learn braille for the first time. Grade II represents the contracted form of the Grade I braille characters, prefixes, suffixes, pronouns, conjunctions are denoted by contractions. Grade II braille is needed for the child to proceed to higher education. Mastery over Grade II braille helps the learner to read more Braille books in less time. Braille is based on phonetic scripts and, therefore, Indian languages and all world languages are easily written and read in braille. Grade III braille system is not followed by many visually impaired people because of its complexity. It is the complicated form of the Grade II Braille and presented more or less in a form of a "short hand system"/stenography. A few visually impaired people who take note and record the proceedings of meetings learn Grade III braille. • Braille Reading : Braille learning requires some pre-requisite skills called 'Braille mechanism', which means the efficient flow of hands over the braille lines with proper hand and finger position together on the dots from left to right.

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When the right hand reaches the end of the line, the left hand should, retrace the line which was just read, and identify the beginning of the next line.

To develop this braille

235 mechanism, certain tactual discrimination activities should be undertaken as these activities have great importance for developing the sensitiveness of the finger tips. Tactile tolerance needs to be developed among visually impaired children for effective Braille reading. Learners having no good braille mechanism just "butterfly" over the braille sheet. Scrubbing hampers the speed of Braille reading. Braille reading should come first and Braille writing next. • Brailled Writings : Braille slate and stylus are commonly used by learners in developing countries for writing purposes

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while writings, the child has to punch the dots from the right to the left of the slate.

Braille writing frame is used placing the paper in between the two parts of the frame (Guide). After this, the child has to

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reverse the paper and read it from left to right.

In order to write Braille effectively, the child should possess skills such as (i) Flexibility of fingers, (ii) Fine motor coordination and control of muscles, and (iii) Competency to read familiar Braille codes. Writing in Braille slate and stylus needs enormous muscles control, and thus may be introduced during the second year of a child's schooling. To develop

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speed in writing, the lefthand should always identify the braille cell while the right hand punches the letter in the previous cell. The stylus and the left hand should be placed on consecutive cells. By this the lefthand assists the right hand which holds the stylus to identify the correct of in the braille cell. While writing, the stylus should be held vertically. Tilting the stylus may make holes

on the braille paper, which spoils neatness in braille writing work. Braille typing with the use of Brailles can be used with learners of higher classes. Sophisticated electronic equipment such as talking machines, audio materials and optacons make the reading activity of the child easier. However, presently this advanced technology is available only in developed countries. Whatever the innovations, Braille continues to be the primary mode of communication for visually impaired learners. 4.4.7.1 Orientation And Mobility : (b) Independence in travel breaks the sedentary condition caused by blindness. Two important skills are necessary to attain such an independence—one being the knowledge of the environment and the other, moving from one place to another in the environment in relation to oneself.

236 The skills that are related to the use of the

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remaining senses of the sightless person to establish one's position in and relationships to, significant objects in the

environment are widely classified as orientation skills. In the environment the abilities of the individual to move from one place to another are classified as mobility skills. By nature both skills are interlinked. A sightless learner with excellent orientation skills and graceful mobility skills is said to have attained physical independence and such learners are easily acceptable by the sighted community. 'Orientation and Mobility' is a typical area in the development of the sightless student in which the client needs absolutely individualised instruction and practical assistance mobility is not a subject for discussion with the sightless persons, it must compulsorily be practised by them. This area warrants individual, one-to-one attention because the onset of blindness in individuals leaves them sometimes with no visualisation of the world. Approach wise, there are differences between a bornblind (congenital) and adventitiously-blind (acquired) person. The later-age blind may have acquired some concepts about the objects of this world; for one born-blind, everything needs to be started from scratch. Therefore, the techniques of the orientation and mobility, briefly "O & M" are the same but the approaches are different for the visually impaired individuals. • Sensory Training & Mobility : The good and efficient training in the use of the remaining sense enables the sightless individual for independent travel. The loss of sight is compensated by the sense of touch & hearing. Sensory stimuli enable a sightless person to determine his position or direction. Such sensory stimuli are classified as "clues". Hearing plays a dominant role in mobility. The important areas required for sensory training may be branched off as follows. (i) Sense of Hearing : Sense of Hearing is essential as we rely on the auditory information of the world consciously or unconsciously. The sightless student has to depend on this sensory training to a great extent. It overcomes the difficulties of the student suffering from lack of visual perception. (ii) Sense of Touch : Exploration of an object is worth a thousand words used in explanation. Objects, perceived through touch, determine the definiteness of the objects and help the individual to form a neat conception of them. More than mobility, the sense of touch has a lot to do with the reading of the sightless student. It has its limitations as large objects lie beyond tactile exploration. "Wholeness" can be perceived by the child only when the object is within the reach of the non-seeing child's hands. (iii) Sense of Smell : A good nose voluntarily effects the information of the objects which can be smelt. These are sensible clues for a traveller during his/her travel, the smell of a gutter, the smell of smoke in a chemical industry smell of flowers in a garden or smell of a kitchen, are sources of information for him/her to locate where he/she development of this skill speaks well of the chemistry laboratory of the child's school experience. This also helps in the day-to-day life of the individual. If the student has an "educated nose" his surroundings can transmit enormous information to him/her. (iv) Sense of Taste : Of course, this sense has less utility in the mobility of the child, as it does not relay any details from the outside world. Unless the sense is provoked, sensing is not spontaneous. This skill helps the sightless person to associate the names of the substances with the sensed taste. For example, sweet, sour and hot should be associated with the substances which provide such experiences. For a sighted person, seeing such objects is a stimulus. The conditioning by observation is natural for a sighted person, best for the sightless, it is a vital experience. (v) Sense of Kinesthesia : The feeling of the body is responding to external stimuli, otherwise the kinesthetic sense, enables the child to get certain information like cold, heat, breeze and elevation of surface. Mobility is guided by his/her efficient kinesthetic sense. It is a misunderstanding to suppose that the loss of sight leads to extraordinary abilities in the other senses. A child who has acquired the necessary sensory skills, orientation to environment becomes easier and this leads the child to a greater level of confidence in mobility. • Types of Mobility Techniques : The major techniques which are widely accepted are the sighted guide techniques, guide dog techniques and the long cane techniques. All the systems have

238 their own advantages and limitations. It must be left to the discretion of the individual to select the particular system that suits his/her need and temperament. (i) Sighted Guide Techniques : It is the skill of traveller with a sighted companion. It is learning for both the sighted and the sightless persons. (ii) Guide Dog : It is popular in Europe and America. The system could not stand the test in developing countries for many reasons. It involves an enormous cost. (iii) Long Cane Technique : The system is widely accepted by many countries recent years for independent travelling of the sightless. It is accepted for many reasons—it is expensive; it is handy; the length can be adjusted according to the height of the person in collapsible canes; the techniques are simple; the techniques learnt in a known environment can be applied in an unknown environment and so on. Despite the advantages, some sightless are reluctant to use the cane as device for mobility because of the feeling it confirms that the person is sightless. But people who have realised the richness of the cane techniques advocate the long cane for their sightless fellows. (iv) Safety Techniques : Safety techniques are necessary for sightless persons to protect body in a restricted environment and outdoors. A sightless person is said to have mastered the Orientation and Mobility Training when he/she feels safe in moving from one place to another, when he/she feels secured in the environment and moves gracefully. Safety, security and gracefulness are the three main outcomes expected on mobility training. 4.4.7.2 Daily Living Skills : (c) Education of sightless children has undergone periodical changes. Many new methods are being developed in educating sightless children. They are trained to be independent so that they may be accepted by the society. As a medium of communication, the invention of Braille has made a big breakthrough. This enables visually impaired children to overcome to a great extent the losses of written communication. Similarly the invention of Orientation & Mobility skills, using the devices like long cane and other mobility aids, helps sightless people to move freely

239 from place to place without much dependence on others. This independence is slowly changing the attitude of the society towards sightless people because they perform many activities like sighted people. Daily living skills are helping them to socialise effectively in the community. Due to the lack of sight, visually impaired people have the disadvantage of not getting the visual feedback, which in turn, retards the child from possessing the skills normally acquired by imitation. Therefore, it becomes vital to teach the daily living activities to the child who is visually impaired. Daily living skills together with the orientations and mobility can make the child readily accepted by the seeing world. • What is Daily Living Skills ? Daily living skills are those abilities that enabled the disabled child to carry out his/her day-to-day activities without assistance or minimum assistance. Development of these skills instils confidence in the child to enter the mainstream of normal children. Loss of sight at times retards the daily living skills of the child. Lack of opportunity and environment are the reasons for the development lag in sightless children. The goal of education set forth for sightless children should not be too general, for this may fail to give any measure of how the student can achieve a goal and under what circumstances. It is necessary to prepare a list of individual tasks, ranging from the use of the hands to the preparation of a complete meal. This, in itself, however, is not sufficient. There is need to develop a criterion to judge the success of the student's performance in each standard. • Training Strategies : Where, when and how to teach daily living skills to the usually impaired children need to be specified in clear behavioural terms before taking up education for such a task. In designing a daily living skills development programme, one should have the following objectives. (i) Observation of the daily living skills exhibited by sighted children at various grade levels. (ii) Diagnosing the difficulties faced by sightless children in acquiring the skills

240 possessed by sighted children in a natural manner. (iii) After the necessary diagnosis, pre-requisite skills must be defined for sightless children that will lead them to perform daily living skills in a better way. (iv) Even though daily living skills are defined in a general context, they must be classified according to grade levels and, if possible, age levels. (v) For each skill, a methodology must be developed. Methodology should primarily mention the teacher approach to a specific task. (vi) Some daily living skills may warrant certain aids for learning. Such aids and appliances should be made available for teaching those specific skills. (vii) Teaching skills should not stop with training. The teacher should design his/ her own criteria for evaluating the acquisition of the required skills by the visually impaired child. (viii) The abilities developed through the training are sustained when there is a continuous follow-up. The teacher plan should also suggest the various sources, either direct or indirect that can provide follow-up services after the necessary skill-development training. The evaluation should be on an individual basis.

- Areas of Interest in Daily Living : The efficient use of daily living skills depends upon the ability in sensory training, as well as the mobility training of the child. For example, in the task of going to the market and buying vegetables, the skill of going to the market is mobility, whereas the skill of purchasing, choosing. The right vegetables, getting change and speaking to people, constitute the daily living skills. Hence, the art of daily living and mobility teaching should go together. The main areas of interest in daily living activities may be classified as follows. (i) Techniques to be used at meal time. (ii) Shopping Techniques. (iii) Care and maintenance of clothing and personal belongings. (iv) Maintenance of personal records. (v) Systematisation of daily routine.

241 (vi) Money identification and money management. (vii) Use of Telephone and other devices. (viii) Development of tactile, kinesthetic and olfactory abilities. (ix) Skills in using electrical appliances. There is a feeling that deficit in the daily living techniques is one of the most continually humiliating and frustrating of all the shortcomings imposed by blindness. Times are changing. There are now better opportunities for visually impaired children to erase this feeling by demonstrating their skills. Inclusive/Integrated education programmes and the introduction of new methods of teaching in residential programmes are important signs of development in this vital area. It is the duty of every person working for the education of the visually impaired to provide them ample opportunity. Then they can show their potentiality; they can overcome the embarrassment caused by this limitation; they can rejuvenate themselves to self-sufficiency and responsibility. It is the art of daily living that works wonders.

4.4.8. Co-curricular Activities in Brief : Recreational & physical activities are the personality builders and should not be left out from curriculum. Intellectual activities like singing, playing instrument composing poems, eloquence etc. Physical activities like games & sports, swimming etc. intellectual-cum-physical activities like dance, etc are very essential for the sightless children.

4.4.9. Difficulties To Cope With : One of the main difficulties in this area is the slow pace of the performance of the visually impaired children. It is true that the sighted and the sightless could take part in some activities with little modifications. As sighted children tend to opt for "fast activities", they may be reluctant to join with the visually impaired child, not because of blindness but owing to the slow pace of performance of the sightless. Therefore, the approach in this context should be purely on an individual basis. This adjustment is necessary in the Inclusive/Integrated education programmes for visually impaired children.

242 On no account, should the curriculum in the inclusive/integrated education programme be changed only for the sightless child. On the other hand, it is not advisable and feasible as the inclusive/integrated programme is a part of the 'General' school which has a common curriculum. Therefore, it is suggested that we provide modified and special approaches, so as to reach the 'near normal' experience at par with sighted children. This should be the main objective of the curriculum approaches in inclusive/integrated education programmes. A rich curriculum approach depends upon the nature of instructions expected by the sightless child, type of materials used by the child, the method of teaching followed by the regular teacher and the nature of remedial and resource instructions organised by resource teachers/special educators. A thorough understanding of these aspects facilitates understanding of a better approach in adapting the curriculum content of sightless children in the inclusive/integrated education programme. Experience makes it clear that visually impaired children in fact gain more than they lose through this special approach. The understanding between the resource teacher/ special educator and regular teachers makes the curricular approach more effective. It constantly improves and there is no saturation point. 4.4.10. Let us Sum up : Curriculum meant for sighted children should be followed in the education for the sightless children without major omissions. Research studies (Jangira, 1986; Mani, 1982) indicate that 80-85 percent of the general curriculum could be duplicated for visually disabled children. The rest can also be provided through modified and substituted experiences. Omissions are rare and it is for less especially at the higher grades when the students learn more of content. Expanded core curriculum/plus curriculum, therefore, is a foundation for development in general curricular areas and teaching of these skills should be an integral part of the education of visually disabled children. 4.4.11 "Check Your Progress" Give four examples of content for visually impaired children in the integrated/ inclusive set up one each.

243 1. Duplication : 2. Modification : 3. Substitution : 4. Omission : 4.4.12 Check Yourself Tick (✓) the alternative which you consider to be the best choice. 1. Curriculum means the-- (a) content taught in the classroom (b) experience acquired at home (c) totality of experiences of the child in his/her day-to-day life (d) all content and experience deliberately planned for educational purposes. 2. Modern curriculum covers-- (a) the individual life experiences (b) the family life experiences (c) individual and group life experiences (d) none of the above 3. Provision of opportunity-- (a) ensures provision of experiences for visually impaired children (b) does not ensure provision of experiences for sightless children (c) is the same as experience (d) mentions the needs of visually impaired children 4. Visually impaired children-- (a) learn in pieces (b) learn the content as a whole (c) learn like sighted children

244 (d) none of the above 5. The learning of visually impaired children is treated as-- (a) natural learning (b) mediated learning (c) unnatural learning (d) isolated learning. 6.

Reduction in the range and variety of experiences-- (a) is a subjective effect of blindness (b) is impersonal loss for visually impaired children (c) is an objective effect of blindness (d) reduction in experience provided to children 7. Sightless children in inclusive/integrated education programmes need-- (a) the same curriculum meant for sighted children (b) the curriculum for special schools (c) the same curriculum meant for sighted children with various approaches (d) a different curriculum 8. More duplicated experiences may be provided for the visually impaired child at-- (a) the primary level (b) the secondary level (c) the pre-school level (d) the college level 9. The skills peculiar to blindness are known as-- (a) plus/expanded core curriculum (b) extra curriculum (c) co-curriculum

245 (d) core curriculum 10. Visually impaired children can participate more effectively with sighted children in-- (a) physical activities (b) intellectual activities (c) social activities (d) recreational activities 11. Grade II braille represents a contracted form of-- (a) prefixes, suffixes, pronouns (b) sentences (c) words (d) capital letters 12. Universally accepted technique of good braille reading is-- (a) using the right hand forefinger (b) using the left hand forefinger (c) using both the forefingers (d) using all fingers 13. The teacher should always compel the students to follow the correct techniques-- (a) yes, it should be (b) no, it need not be so (c) teaching should be through correct techniques, but the student may be inclined to go his own way. Therefore, the teacher should not compel him/ her. (d) it should left to students. 14. Braille reading is-- (a) as fast as print reading (b) a little slower than print reading (c) same as print reading

246 (d) none of the above 15. Braille writing on a slate is done-- (a) from right to left (b) from left to right (c) anywhere in the braille cell (d) in the cell horizontally 16. Reading braille and writing can go together simultaneously-- (a) yes (b) no (c) braille writing should come after braille reading (d) braille writing and braille reading have no relationship 17. The abilities of the individual to move from one place to another are known as-- (a) orientation skills (b) plus curriculum skills (c) mobility skills (d) walking skills 18. Teaching of mobility skills should be the same for all visually impaired children-- (a) yes it should be the same for all (b) no, it depends upon the onset of blindness (c) no, it depends upon the daily living skills (d) it depends on the capability of the teacher 19. Orientation skills are greatly influenced by-- (a) the sense of taste (b) the senses of touch and hearing (c) the sense of smell

247 (d) the vision 20. Widely used mobility techniques in developing countries are-- (a) sighted guide techniques (b) guide dogs (c) electronic aids (d) long cane techniques 21. Guide dog techniques cannot serve the purpose of developing countries owing to the-- (a) inadequacy of training methodology (b) enormous cost of the system (c) prejudice among visually impaired people (d) shortage of dogs 22. At the primary schools, The visually impaired child should-- (a) not be taught O & M skills (b) be taught the long cane techniques (c) be taught the pre-cane mobility skills (d) be taught guide dog techniques 23. In an inclusive setting the sighted child can be oriented to the school environment in a better way by-- (a) the sighted peer group (b) the regular teacher (c) the special educators (d) the parents 24. Daily living skills are-- (a) expanded core curriculum skills (b) extra-curriculum skills (c) skills for performing day-to-day activities

248 (d) skills for maintaining good health 25. Skills required for the readiness of the child to learn day-to-day survival skills are-- (a) daily living skills (b) pre requisite skills (c) academic skills (d) curriculum skills 26. For teaching all daily living activities-- (a) a common methodology should be followed (b) methodology should be based on the nature of activity (c) methodology is not necessary (d) none of the above 27. Daily living skills should be taught according to-- (a) age levels (b) grade levels (c) ability level (d) living background 28. Aids are necessary for teaching-- (a) all daily living skills (b) certain daily living skills (c) academic and not daily living skills (d) none of the above 29. Learning of daily living skills by an individual-- (a) continues even after the schooling (b) continues till the end of the school year (c) takes place at different time intervals

249 (d) takes place in pre-school years 30. Listening to music is-- (a) an academic skill (b) an auditory skill (c) daily living skill (d) none of the above. Answer Key : (1) (d), (2) (c), (3) (a), (4) (a), (5) (b), (6) (c), (7) (c), (8) (b), (9) (a), (10) (b), (11) (a), (12) (c), (13) (c), (14) (b), (15) (a), (16) (c), (17) (c), (18) (b), (19) (b), (20) (d), (21) (b), (22) (c), (23) (a), (24) (a), (25) (b), (26) (b), (27) (c), (28) (b), (29) (a), (30) (c). 4.4.13 References : See Pages 67 & 68.

250 Unit-4.5 ppppp Commonly Used Low Cost and Advanced Assistive Devices Structure : 4.5.1. Introduction 4.5.2. Objectives 4.5.3. Importance of Technology 4.5.4. Available Technology 4.5.4.1 Traditional Low-Tech A. Linguistical B. Computational C. Geography D. Science E. Mobility F. Recreational, Games & Sports G. Other-Daily Living Devices Personal Devices etc. 4.5.4.2. Low vision Devices 4.5.4.3 Modern High-Tech 4.4.5 Let us Sum up 4.5.6 "Check Your Progress" 4.5.7 Check Yourself 4.5.8 References 4.5.1 Introduction : Over the years, it has been considered that the only occupation a blind person can pursue is related to playing musical instruments and singing. It is widely still believed that auditory faculties are more developed in the blind. As schools for the

251 blind were set up in various parts of the country during the late 18th century, the doors to higher education opened. While some studied law and became successful lawyers and solicitors, other opted to enter the teaching profession some pursued careers in Railway & Bank sectors, in social work and others settled to work as telephone operators etc. In recent years, however, blind persons have ventured to take up opulent management studies. They have embraced technology and as a result, have positioned themselves into very competitive front. Advancement, in technology has brought in revolutionary changes in the quality of life and patterns of work and leisure. Assistive devices have helped the visually impaired to achieve better levels of independence through more access to information. The technology available is (i) traditional-low-tech, (ii) modern-high tech, and (iii) low-vision. However, users have to depend on imports for high-tech devices. Technology has tremendous potentialities for facilitating economic rehabilitation of the visually impaired and there is a need to improvise technology in the absence of universal designs. The government of India has taken initiatives to promote technology and assist the disabled to purchase such devices however, there are still a few bottlenecks. New areas of technological development have to be explored. So that the objective of equal opportunities for the visually impaired is achieved.

4.5.2. Objectives : After reading this sub-unit the student-teachers will be able to : (i) Understand what assistive devices are to be used for the visually impaired learners; (ii) Gain a general understanding of assistive devices available in the country for the visually impaired learners. (iii) Gather knowledge when and where to use particular type of assistive device. (iv) Have clear idea of using assistive devices in different educational placement of the visually impaired learners; (v) Acquire readiness for use of assistive devices before its handling is practical; (vi) Know how to make teaching-learning-materials (TLM) (vii) Estimate the contribution of modern technology to make assistive devices visually impaired friendly.

252 4.5.3 The Importance of Technology : The twentieth century has witnessed phenomenal advancements in technology in almost every sphere. Those developments have brought in revolutionary changes in the quality of lives of human beings. Today, even a common man is utilising specialised equipment to his/her advantage in activities of daily living and productivity. No doubt, technology has influenced our patterns of work and leisure. Technology has played a very important role in mitigating the limitations imposed by a disability. The use of assistive devices has helped persons with visual impairment to achieve new levels of independence and facilitate their rehabilitation print continued as a barrier to access to information until recently, however, modern technology has paved the way for using Internet with audio. Braille and large-character displays resulting in improved independence access to a large amount of printed information. Technology advances have provided numerous new devices also challenges to the visually impaired. Technology encompasses a broad spectrum of assistive devices. Quite a number of these devices both low-tech and high-tech are now available and used side by side by the visually impaired all over the world.

4.5.4.1 Tradition – Low-Tech Devices : In India most of the visually impaired continue to use traditional and low-tech devices for linguistic, computational, recreational, mobility and activities of daily living purposes. Most of these devices are low priced also.

A. LINGUISTICAL : ●

Braille Writing Devices : [i] Inter-Line Writing Frame : It is used for writing interline standard Braille characters. The frame comprises a wooden board/plank, with holes on either sides, a metal/plastic frame called guide, a reversible paper clamp and a stylus. The guide is fitted in these holes and brought gliding down as writing progresses. The metal/plastic foot-scale like guide has two flaps joined with a hinge. Each cell in the top flap of the guide has 253 six notches representing six dots. The bottom flap of the guide has fine pot-hole craters cell-wise which helps to emboss raised dots on the paper with punch of the pin of the stylus. The guide has two lines of Braille cells. The clamp is fitted at the top of the board/plank with pins to hold the paper in position. The clamp

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has a small swivel stud for locking and holding braille papers. When one side of the paper has been brailled, the clamp with the paper still held, is turned over, as a until the binding margin is made automatically.

The paper holding clamp is of two types— –in one type two-fold clamp is fixed on the plank and can be opened when needed; in other type the clamp holding with the paper can be reversed. Writing progresses from right to left. The brailled paper to be read requires to be reversed and reading progresses from left to right. This is the simplest and low cost appliance for Braille writing. [ii] Interpoint Writing Frame : Plastic made frame has two flaps joined with a hing, and is opened like book opening. The top flap has braille cells with thorough cell notched holes. The bottom flap has only cell-wise very fine pot-holls craters. The paper is set in between the two flaps and paper holding corner pins locks the paper with a little snap. Writing needs punch by the stylus. Writing and reading method is same as like inter-line frame. Only differences between Inter-line and Inter-point are : (i) Wooden and Plastic; (ii) no need of gliding the guide in the Inter-point frame; (iii) cell in the Inter-point is smaller, (iv) In the Inter-point frame no writing on the reverse is possible; (v) the Inter-point frame is light in weight and easily portable. The Inter- point is convenient for the students from standard-III. [iii] Taylor Post-Card

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Frame : It is used for writing small braille characters on one side of the paper. The corner pins are arranged in such a way braille can be read without removing the paper from the frame; when the top section is lifted, the paper remains attached to it. [iv] Pocket Braille Frame : The four-line pocket braille frame produces small braille characters on one side of the paper. This is specially used for making small and occasional notes. 254 [

v] Stylii / stylus : Braille writing in the above explained frames is not possible without a sytlus. For punching to produce Braille characters this is the sole device and hence is indispensable. These are produced with plastic or aluminium or wood handles of various shapes like ball-head, bull-head, concave head etc.

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to suit individual needs. The pins of all stylii are made of stainless steel and the handles are of

ploished hard wood or synthetic material. These are normal low-cost stylus. But it runs a little risk as the pin remains open. [vi] Safety Stylus : Aluminuin body, the handle is caved, the pin is fitted with a screw. While writing the pin-side is taken out unscrewing from the handle. Screw side of the pin in set tightly in the handle hole. After use the pin is set again in the handle hole. [vii]

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Braille Kit : It is rexine coated or a decorative wood box 36 cms x 28.5 cms. with a weight of 3085 Gms and contains the itmes like--■ Braille Frame; ■ Braille Writing Pocket Frame; ■

Two Stylii ■ Taylor Mathematical Board with Arithmetic Types; ■ Abacus; Rubber Sheet; ■ Spur Wheel; ■ Foot Ruler; ■ Measuring Tape; ■ Compass Set; ■ Some Braille Papers; ■ Circket Ball; ■ Some Play-way Braille Utter Composing Apparatus; ■ Folding Mobility Stick (cane); ■ Signature Guide. The itness may very sometimes. [viii] Braille Writer : It is a top-side

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writing machine for writing on one side of the paper, enabling to read as it is written. This machine can be compared to a normal type, writer with a major difference that it has only nine keys, three for paper setting and six for embossing

and one spacer.

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The braille embosses combinations of six dots in a braille cell. The

Braille is made of metal with an enamel finish, with plastic key-tops and adjustable margin stops. The paper is roller-fed and line spacing is achieved by pressing a special key. The most popular Braille writers are : ■ Perkins Braille; ■ Stensby Braille writer; ■ Taj Braille; ■ Worth trust Perkins Braille; ■ Minal Braille.

255 [ix] Braille Paper : To write braille in all the above mentioned apparatus the must item is thick braille paper, the standard size of Braille paper is 22"x28" and weight of each gross is 8.6kg. Manufacturers : ■ Titagarh Paper Mills Ltd; ■ Andhra Pradesh Paper Mills Ltd; ■ West-Coast Paper Mills Ltd; ■ Rohtas Paper Mills Ltd; ■ Orient Paper Mills Ltd. [x] Braille Duplicators (Braille Copier) : (a) Thermoform Machine : It is

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semi-automatic braille duplicating machine. It is useful for taking out multiple copies of the braille matter on the 'Brailon' sheets from the master copy generally prepared on the braille paper.

These braille sheets are plastic made. This

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machine operates on the principle of vacuum and high temperature.

It is power operated Foreign made is 'American Thermoform' and indigenous is 'Induthrem'. (b) Vacuum Forming Machine : It is available in standard sizes. It is used for taking out multiple copies of braille matter using PVC, HIP, Acrylic & ABS sheets with 2mm thickness. [xi] Braille Box : It is a play-way learning Braille device for the 1st year learners. Wooden finish the smallest size of the is 5"x10"x2". Braille cells with holes are set in the box. Thin round headed aluminium pegs are used to compose braille characters--letters, words. It is available in larger sizes. [xii] Study Material Listening Appliances : Talking Book.

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The material recorded on cassettes has emerged to be the most popular mode of imparting education to visually impaired persons. As Braille books are very heavy,

damaged prone, require high cost in production, storing difficulties and many newly blind persons are unable to learn braille easily and many of them don't like reading braille talking books are gradually becoming to be the best viable alternative. In the present day for listening recoded study materials visually impaired persons use mostly C.D. Player or I. Pod.

256 B. COMPUTATIONAL / MATHEMATICAL APPLIANCES : [i] Taylor Frame : The surface of this frame is an aluminium or a plastic sheet with star shaped holes in straight rows. The holes are octagonal having eight angles. The lead pegs known as types are double-ended having a line on one side and two dots on the other. The pegs move in the holes clock-wise starting from position 6 of the clock. The rotating of these pegs with line side in the hole in different angle position denotes the digits starting from 1 to 8. Then the type is set up-ward down i.e. dotted side with rotating will denote 9, 0, +, -, x, ÷, ., =, signs.

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This frame is suitable for teaching arithmetic to visually impaired

learners specifically in lower classes. There are Algebraic types also for doing Algebra from standard-VI. [ii] Abacus : A simple instrument for performing rapid arithmetical calculations. Abacus is an oblong frame having 13 to 15 vertically arranged rods called column on which beads slide up and down-Each column is separated by a bar technically known as centre bar.

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The beam supporting the beads is marked with a raised bar between every third rod. The bars serve to indicate the decimal point and other units of decimal measure.

The abacus is to be held straight. The bottom portion of the centre bar contains 4 beads in each column and the upper portion of the centre bar contains one bead in each column. It is to be held in such a way that the 4 beads below the centre bar are at the bottom and the single bead above the centre bar is at the top. Each bead in the lower portion of the abacus denotes 1 unit and the bead above the centre bar denotes 5. Each column denotes the position of the number it represents. the extreme right column is the units column, the 2nd column from the right is the tens column, from the right 3rd is the hundred column, the 4th column from the right is the thousand column and soon and so forth. [iii] Counting Device : Wooden Board with holes. Aluminium round-headed pegs are set in the holes. It helps to learn counting and to develop pre-requisite skill of Taylor Frame by setting. The pegs in straight line and to place the pegs in the holes properly and swiftly. It is for use of the 1st learners.

257 [iv] Geo Board : Wooden Board with fixed pegs. Geometrical shapes are made and practiced with rubber bands. It is for use in upper classes. [v]

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Talking Calculator : Audible calculator in synthesized speech useful for calculation, clock, alarm and calendar. Manufactured by casio and sharp companies, Japan. [

vi] Primary Mathematics Kit : Specially designed kit for the visually handicapped children to comprehend mathematics concepts. It contains ■ a plastic box; ■ slide strips, ■ number boards; ■ fractional strips; ■ braille clock; ■ geometrical shapes--geometrical figure tray; ■ magnetic board; ■ geometrical devices. [vii]

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Spur Wheel : A serrated revolving wheel in a plated metal handle. It is used for making continuous embossed lines on the reverse side of the paper. [

viii]

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Compass Set : It includes a foot ruler, a protractor and a set square in nylon and a spur wheel. It enables visually impaired students to use the same techniques as his sighted counter part. the foot ruler and set square have embossed markings for their convenience. The compass has a removable component fitted with a toothed wheel for drawing embossed dotted lines on the reverse of the braille paper. [ix] Geometry Mat : A rubber sheet for use as a base in conjunction with the spur wheel and braille paper for making geometrical drawings. [x] Opisometor : A bell rings each time the disc moves a distance of one meter. Useful for mapping and understanding mathematical problems in length and perimeter. [

xi] Some Other Mathematical Devices : • Counting Stand/Device • Graded Abacus

258 • Fraction Boards • Hundreds, Tens, Units Board • Geometric Shapes and Solids etc. C. GEOGRAPHY DEVICES : [i] Sensory Quill : It is an

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equipment for obtaining a raised line format of any writing or drawing. The height and texture of the line can be altered. Useful in learning hand writing skills, mathematics, science, drawings & spellings. [ii] Raised Relief Plastic Maps : Vacuum formed plastic maps printed in strong colours with names in letter press for the benefit of person with low vision. The main towns are shown by large dots and principle rivers by depressions. Braille symbols denote the names of seas, main rivers and towns, a key to which is given in the guide. The boundaries on political maps are indicated by raised lines. [

iii] Geographical Features Model : Models of features of mountains, vallies, lands & rivers are there in vacuum plastic two diamenssion sheets & three dimenssions all in briht colour useful for both visually impaired and low vision person. [iv]

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Relief Globes : A plastic globe in textured relief. The lans masses are shown in different colours. The principle towns are indicated by raised dots; rivers and lakes by depressions. Dotted lines indicate the tropics, arctic and antarctic circles, the international date-line and meridians. The names of oceans and the main land are shown in Braille. Nystrom's Bathymetric world model is raised relief map of the world with oceans drained. All under-water features are exposed. A cassette recording explaining the features is supplied with the product. [v] Braille Diagram Board : Metal sheet fixed on a board with closely formed holes in which round-headed pins are stuck to form maps and diagrams.

D.

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SCIENCE DEVICES : [i] Conductivity Apparauts : Demonstrates the difference in the heat conductivity of copper and iron. It consists of a wooden stand with horizontal heating rods. 259 [ii]

Vacuum Printed Diagrams : These

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diagrams are also available for various body systems, anatomy, physiology etc. [

iii]

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Three Dimenssional Raised Relief Plastic Charts : Rigid PVC sheet, printed and formed in multi-colours charts available-- (a) Botany General :

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includes typical plant cell, plant meiosis, plant mitosis, Ribo-Nuleic Acid, Bacterial forms, spirogyra and Funaria-common moss in botany. (b) Botany Advance :

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depicts fertilization, T.S. dicot leaf, dicot stem, types of placentation. (c) Zoology : Vertebrate and Invertebrate : (d) Human Physiology and Human Body Systems :

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human skeleton, circulation system, heart nervous system, a section of the brain, muscles, digestive system, the ear, the nose and the eye. (e) Human Reproduction :

It includes male and female reproduction organs, fertilization and foetus. E. MOBILITY DEVICES : (i) Canes : The types of canes available are as follows : [a]

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Symbol Canes : Made of sections of light metal tubings, generally aluminium or its allyos, joined through the centre by means of an elastic cord. The canes fold up conveniently for carrying in the pocket or handbag. When

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fall into position. Devised for portability and not intended to be used other than as

a

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guide aid and an indication that the user is a visually impaired person. This cane is populaely known as a Brailled folding stick. (

b) Guide Cane :

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A stronger version of the symbol cane and intended to be more of a mobility

and

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but not a means of support. The four sections, covered with ribbed plastic sleeving, are joined through the center by means of an elastic cord enclosed in nylon sleeving. It is fitted with an elastic loop handle and a standard nylon tip. (c) Long Canes : A wooden or aluminium stick of 85 to 90 centimeters. Three models are available—■ rigid ■ two pieces and ■ four pieces. 260 The aluminium cane is generally sleeved with PVC material, having a rubber grip and a nylon tip with or without a crook.

The nylon tip at the bottom touches the ground and generates very subtle sound to indicate difference of surface of the ground. the lower lastpart of each cane measuring is generally red, sometimes white. The cane day is observed in the name 'White Cane Day'. [ii]

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Electronic Travel Appliances : An ETA is described as a device that sends out signals to sense the environment within a certain range or distance, processes the information received and furnishes. The person with relevant information about the environment. Most of these devices are based on integrated circuits and emit sound or tactile signals.

As

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ETAs are not available and prevalent in India, it is not very necessary to give description of these devices. However for the sake of information,

some names

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of these devices are noted here. • Lind say Russel E-model Path Sounder • C5 Laser Cane • Ultrasonic Torch • Sonic Guide • Light Probes • Mowat Sonar Sensor • Nottingham Obstacle Sensor • Electro Cortical Prostheisi • Electro Rofalm •

AF B's Computerzed Travel Aid. • Polaroid Ultrasonic Travel Aid. For details about ETAs, refer to NIVH publication "Selected Abstracts & Annotated Biography On Orientation and Mobility" [iii]

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Mobility Show Cord : A plastic show card to help visually impaired persons to cross busy roads and to hail a taxi. [iv] Mini Beeper : A battery operated, hand-held electronic gadget having application in mobility, recreation, sports and obstacle location. 261

F. RECREATION GAMES & SPORTS : (a) Recreation : [i] Playing Cards : Superior quality standard playing cards with reverse embossing in standard Braille on the top left corner. [ii] Chess : A wooden board with the black squares raised and all the squares drilled in the centre for the reception of the pegged chessman. Holes are provided at each end for pieces not in play. The pieces are of uniform height, the white having a point with pin at the top to distinguish them from the black. [iii] Dominoes : Made of plastic and having raised black dots on a white back ground with black inset pieces on the reverse. These dominoes are ideal for players with low vision also. [iv] Brahma Puzzle : The puzzle consists of three pegs on a wooden base and eight discs of different diameter each with a hole in the centre. The purpose is to transfer all the discs from the peg to another without allowing any disc to be placed over a smaller one. [v] Audible Ball : Made of strong good quality plastic in which hole has been punched. Small metal ball bearings are inserted. The hole is sealed. These small balls are inserted for creating sound enabling the visually impaired children to locate the ball. An ordinary good quality ball of plastic of 5 cms. radius can be converted into an audible ball by drilling a hole, putting small size pebbles or ball-bearings and then sealing the hole using the soldering rod. The ball can be used for playing cricket. [vi] Draught Board : A wooden board with sunken playing squares. The colours of the men are distinguished by size. Pieces of double thickness are used as kings. A variety of other games as listed here under have also been adapted for the visually impaired. ■ Beziq maker; ■ Bridge scorer; ■ Lexicon; ■ Happy Family; ■ Whot; ■ Patience Board; ■ Chess Clock; ■ Jigsaw Puzzle; ■ Electronic Ball; ■ Beetle Game; ■ Centre-peg; ■ Scrabble; ■ Dice and Dice Cub; ■ Nine Men's Morris; ■ Tic- Tac-Toe; ■ Unilock Word Building Device; ■ Checkers Set; ■ Rattle Bells. Only chess, playing cards, Nine men's morris, Draught Board and checker set

262 and various puzzles are available in India. Other games are available from the Royal National Institute for the Blind, London. (b) Games & Sports : [i] Football, Basket Ball and Soccer Ball : These are equipped with a small electronic beeper which is battery powered and emits a compact sound. The beeper is held within a moulded cavity designed for easy access to 'on' & 'off' switch. [ii] Cricket : It is becoming very popular in India. The standard rules have been drawn. It can be played using the audible ball as mentioned earlier. [iii] Stilt Walking : The ordinary strong bamboo poles or wooden poles with foot rest at a height of 30 cms from the ground can be used for training the visually impaired in stilt walking. [iv] Swimming : It is also emerging to be a popular sport among visually impaired persons. The normal swimming pool with sound indicators on the sides and lane ropes with thermocol pieces can be used for training them in swimming. [v] Athletics : The normal tracks with some precautions and safety measures can be used for training the visually in race, shotput, Javelin Throw, Sack-race, musical chair, hit the target etc. In the present time the visually impaired runs in conjunction with the sighted runner as guide/navigator binding very loosely with a tether on their wrist. For one pair double track is used. [vi] Table Tennis : It has become a popular in-door game for the visually impaired in many south-east countries. The normal table tennis table with some modifications in the net and the sides can be used for the purpose. G. OTHER DEVICES : (a) Daily Living Devices : [i] Clocks & Watches : A standard alarm clock is adapted for the use of the visually impaired. It has strengthened hands and an open plastic dial having the hour positions indicated by two raised dots at the 3, 6, 9, 12 positions and single dots at the remaining hours. Manufacturer : HES Limited, Patel Estate Jogeshwari (west), Mumbai-400102

263 [ii] Travel Alarm Clock : This adapted clock as mentioned above is fitted into a case. The whole clock is packed into the case when folded. When opened, the case also serves as a stand for the clock. ALIMCO Alarm clock has time setting knobs. The dial is encased in a transparent plastic cover which can be easily removed from the top for obtaining access to the clock dial. The raised dots are provided for indicating hours with two dots for 3, 6 & 9 position, 3 dots for twelve hour position and signal dots at the remaining hour positions. [iii] Pocket Watch : A hunter watch, the hinged cover of which opens when the winding knob is depressed. Fitted with strengthened movements and dots as mentioned earlier. [iv] Ringer Timer : A one-hour ringer, in streamlined plastic case for timing any operation when an audible reminder is required. Each five minute period is indicated on the embossed setting dial by two dots and the first quarter hour is additionally marked to show the individual minutes. [v] Wrist Watch : It has the appearance of an ordinary wrist watch with the front cover being fitted with a transparent centre. The front can be lifted with a lever mechanism when the winding knob is depressed. The general arrangement for dial marking is two dots on the 3, 6, 9 & 12 positions, and a single dot at the intervening hours, but for the 12 O'clock position two or three dots according to the particular watch. Manufacturer : Hindustan Machine Tools Ltd... Watch Marketing Division 26/1, Leveel Road, Bangalore-560001 [vi] Talking Time : This is an electronic watch as well as alarm clock fitted with an electronic device which announces the time whenever the knob is pressed. It is possible to set time, date, day and alarm etc. All the settings are audible in signals, it is thus possible for a visually impaired persons to do the settings himself/ herself. The most popular brands are sony and sharp. In India, Sikkim tme corporation limited (SITCO), Sikkim has introduced talking wrist watch. The SITCO has established marketing divisions in all the major towns in India.

264 (b) Personal Devices : [i] Sound Beacon : This pocket size electronic device emits a sound which can be varied from a loud continuous whistle down to low intermittent beeps at various rates. It is generally used as a homing device. [ii] Notex : It consists of a rectangular base and flaps made of high-density polythene hinged together. It differentiates Indian currency notes of different denominations. It considers length and breadth of a currency note for its differentiation. Available from : NAB Louis Braille Memorial Research Centre Mumbai. [iii] Magnets : Round, square and u-shaped magnets for picking up pins, small nails and other iron or steel objects. [iv] Signature Guide : A template to guide the visually impaired persons in placing signature in proper place. [v] Address Template : Made of cardboard with four raised lines to guide a visually impaired person to write his/her address on Inland letters and envelopes. [vi] Light Probe : Full function light detector may be adjusted for desired sensitivity to light. [vii] Location Finder : Own house, apartment or office can easily be found out with portable, light weight location finder. A siren, attached outside location, will sound on pressing transmitter attached to a key chain. [viii] Other Personal Devices : The Americal Foundation for The Blind and Maxi Devices are supplying a variety of personal devices for the visually impaired persons as noted here under. These are so far not available in India. • Thermo voice : announces temperature • Talking Blood Pressure & Pulse Monitoring Kit • Becton Dickinson Magni Guide : for accepting barrille of insulin syringe • Insulin Needle Guide • Talking Blood Glucose Moniforing Kit • Big Print Address Book.

265 • Talking Wallet • Locklid Saucepan • Weight Talker • Key finder • Clothing Identifiers • Tactile Braille Signs • Eye-Ease Eyedrop Guide • Medicine Spoon For the present we will set aside a long list of vocational training, Home Management, kitchen etc equipments modified and developed for use by the visually impaired persons. 4.5.4.2 Low Vision Devices : There are two main types of Low Vision Devices : Optical Devices which use lenses to magnify objects Non-optical Devices and techniques which make objects easiler to use. (a) VTS Link : It is a portable large print computer and work station, specially designed to meet diverse needs of the visually impaired. It provides people with low vision with the most comprehensive solution to computer access available today. It features a custom-made high contrast flat display screen which present a sharp clear image of character up to 75 mm. (b) Visualtek : Closed circuit TV magnifying system magnifies upto 60 times the normal size with wide variation of light intensity and btch positive and negative images. (c) Schmidt Reader : It is also a close circuit TV and functions on the same principle as the visualtek. (d) Overhead Projector : It is supplied with screen, stand, lamp and transparency sheets with magnification facilities. (e) Magnifying Lenses : These lenses have many applications other than

266 reading; they make everything bigger & brighter. Following models of magnifier lenses are available. [i] Mounted Magnifying Lens : It has an extra large sized Fresnel lens as magnifier. It provides large visual field and leaves both hands free for manipulation of reading material or hand work. It is useful for quick scanning of large surfaces and objects. [ii] Flexible Arm Illuminated Magnifier : It has a large sized precision glass lens and a circular tube light mounted around the lens. The lens-light assembly is mounted on a spring balanced stand with feather touch movements and a reach of 900 mm, allowing the lens to be placed in any position and freeing both hands of the observer for work. It is an ideal aid for inspection, quality work in electronics, instrumentation and precision engineering industries, gems and jewellery, geology and hospitals. (Lense Product Catalogue) [iii] Magnifying Binoculars : It is handy in close work, both hands free. [iv] Book Magnifier : Having a large field it enables reading of printed material such as newspapers, paper back books, fine legal print etc. It magnifies one page at a time. [v] Illuminated Magnifier : Provides magnification along with illumination of the object. A range of models, including battery operated ones. Ideal for viewing maps, directories, botanical and geographical specimens when ambient light is not adequate. Useful for close work. [vi] Paper Weight Magnifier : It is a moulded plastic lens. Clear plastic allows light through to copy. [vii] Super Loupe : It is handy 2x magnifying lens hangs from neck cord and rests against chest, leaving hands free to do hand work. [viii] Eye Loupe : A favourite with watch makers and jewellery. Using precision acrylic lens the unit is very light and can be held comfortably in eye sockets. It is also available with adapter for use with spectacles. It can be put on and taken off easily. [ix] Head Loupe : Mounted on a comfortable handband, it can be flipped up when not in use. As both eyes are used this magnifier provides 3D vision enabling fine manual coordination. The lenses have built in prisms that eliminate squinting 267 and eyestrain. It can be worn over spectacles also. It is best suited for any kind of detail work where both hands are required to be free to attend to his/her work. [x] Flashlight Magnifier : Ivory light hood rests on printed material keeping focal distance steady. [xi] Fresner Wallet Magnifier : Slim, extremely light weight and visiting card size, it fits easily into pocket or purse. A ready at hand magnifier for reading fine print in dictionaries, menu cards, instructions on medicine bottles etc. [xii] Pocket Magnifier : A general purpose magnifier commonly used as an inspection tool and a reading aid. It is easy to hold and can be used to read a sign or a bus number. [xiii] Rayner Recumbent Spectacles : It has a single prism mounted on a study block plastic frame which requires little adjustment. [xiv] Super scan Reading Glasses : It can be worn over ordinary spectacles. [xv] Windsor Spherical Magnifiers : It is a range of hand-held magnifiers available in 50,76 and 102 mm lens diameter giving 3.0, 2.0, and 1.8 magnification. [xvi] Stand Magnifier : Handy table top magnifier, ideal for magnifying printed matter, films, art works, maps etc. Rests on work surface and leaves both hands free. The stand has side openings allowing illumination and easy accessibility of tools to the object being viewed. (Lense Product Catalogue). [xvii] Hand-held Magnifier : Commonly used general purpose magnifiers. They have precision lenses made of optic grade acrylic. The lenses are break-resistant and much lighter than equivalent glass lenses, hence more convenient to use. Manufacture : Lense Optics Pvt. Ltd. 66/2, D2, Mide Chinchwad Pune-411019 4.5.4.3. Modern High-Tech Appliances : The impact of modern technology, which is volatile and ever-changing, is yet to be experienced by a majority of the visually impaired in India. At times the changes are so rapid. That is really difficult to keep pace with them. High-tech 268 aids are now available-Though at a high cost, even exorbitant in certain cases. But these devices have significant impact on education and employment of the visually impaired. [i] Digital Tapes Recorder : Yeoksam-Dong, Kangnam-Ku, Seoul, Korea has developed Digital Tapeless Recorder (Check-back) for the blind. The blind people can use it alone without someone's help. It has a special voice prompt for the blind which includes a voice guide, easy research mode, volume adjustment and option for use of earphone. [ii]

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Kurzweil Reading Machine : A portable optical scanner that reads type- set

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type-written text and turns into speech. Its features include : (a) a large memory to provide improved processing of incoming text; (

b) an automatic contrast control; (c) tools for format analysis; (d) multi-lingual capability for

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textinary of these verbal languages; (e) communication interface which allows it to serve as an input

or output

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device with other data or text processing equipment. [iii] Optacon : It is book-sized electronic device with a movable camera, the size of a pocket knife and a tactile screen the size of a

finger tip

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which presents a tactile image on an array of vibratory pins. The reader passes the camera over printed material with his/her right hand and his/

her

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left index finger feels in vibratory relief. The image the camera sees. The manufacturer claims that an experienced optacon user reads upto 90 words per minute, about half his/her Braille reading speed. [iv] Braille Computers : • Braille Window is the Braille-display for connection to all sorts of IBM compatible personal computers. • Key tone is a portable information handling, word-processor and computer acces device that takes to its user. • EHG-BW/2-PIEZO is a monitor and keyboard which provides out-put in raised dots and can be conveniently used by the visually imparied persons. • Galaxy Piezo is a special computer for the visually imparied and it gives output in embossed dots. • Galaxy

Speech

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is a special computer for the visually impaired with speech output. 269 • Brille'n Speak is pocket size note taker. It can be used for word processing, as a calculator, as a clock and a calendar. It can store 200 pages of Braille text. • Versa-Braille II+ is recognised as a convenient Braille operating system. It can be used for editing, programming and word processing. The input is from sixkeys and output is in the form of raised dots. It is a product of Telesensory Systemot Inc. • Index Braille Index Braille is a Sweden based privately owned business with a mission devoted to development and production of Braille Embosser. The company has introduced Double-sided Braille Embosser, popularly known as "Index Everest".

It has a high speed Interpoint Braille Embosser which uses normal cut sheet.

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Over the years, The Everest has proved to be one of the most reliable Embossers on the market. • Speech Synthesizeers A speech system converts text from a computer into spoken words. It is the hardware device that does the speaking in a speech acces system. (

a)

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External device : It connects to a computer externally and comes with a speaker and a socket for head phones and can be moved around to different machines. (b) Internal device : It comes as a chip or circuits board that must be inserted inside the computer with-sockets for speakers and headphones. It can be moved around to different machines, it works faster than an external device. (

c) Soft-ware

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based device : It is loaded as software on a compateble computer and it gives speech out through the sound system of the computer itself. The Microsoft voice is useful for reading the documents and for operating window commands with the help of multimedia kit.

Important features of synthesizers include. • voice quality; • speed at which text is converted to speech; • memory requirements; and • compatibility of the synthesizer to the computer (Mac or Pc) and • the number of language available. (d)

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Language Software : The Indian Institute of Technology (IIT) Chennai has developed Braille Software as well as language software which enables a visually impaired person to access computers for Braille as well as language outputs in all the Indian Languages.

The Vidya Vriksha Training Centre for the disabled, a Chennai 270 based NGO is imparting training to visually impaired persons in the use of software. It is also providing the software completely free of cost to the users and institutions. It has also developed a system of key board mapping and operations in Indian languages and instruction manual for use of the special version of the ITI multi lingual software. Computers provide a rich and diverse bearing in the lives of the visually impaired. No device in the journey of time can boast a better feat. Every day new devices are coming up. Interested teacher-learners can have more knowledge from web-site and e-mail. [i] ASAP for windows : web-site : <http://www.screenaccess.com> [ii] Hal : e-mail : sales@dolphinaccess.com (or) support@dolphinaccess.com Internet : <http://www.dolpinaccess.com> [iii] JAWS For windows (JFW) : e-mail : info@hj.com Internet : <http://www.hj.com> ft : <ftp://ftp.hj.com/pub/hj> [iv] Out Spoken for windows V.1.2 : e-mail : osw@aagi.com Internet : <http://www.aagi.com> [v] SLIM WARE Window Bridge : e-mail : help@synthavoice.on.ca Internet : <http://www.synthavoice.on.ca> (or) [ftp.synthavoice.on.ca](ftp://www.synthavoice.on.ca) [vi] Window-Eyes : e-mail : support@gwmicro.com Internet : <http://www.gwmicro.com> ftp : <ftp://www.gwmicro.com> • Name of some more companies : [i] Aicom Corporation : Fax : (408) 577-0373 [ii] Arkenstone, Inc : web:<http://www.arkenstone.org> [iii] Artic Technologies : web:<http://www.artictech.com> 271 [iv] Balzie Engineering : web:<http://www.blazie.com> [v] Digital Equipment Corporation : Phoen-(800) 344-4825 [vi] Dolphin Computer Access Ltd : e-mail:sales@dolphinusa.com web:<http://www.dolphinusa.com> [vii] Duxbury Sytems Inc : Phone (978) 486-9766 [viii] Enabling Technology Company : e-mail:enabling@brailier.com web:<http://www.braille.com> [ix] G W Micro : web:<http://www.gw-micro.com> [x] Human ware Inc : web:<http://www.humanware.com> [xi] Kurzweil Educational Systems, Inc : e-mail:info@kurzweilededu.com [xii] Pulse Data Informational Limited : e-mail:sales@pulsedata.com web:<http://www.pulsedata.co.nz> [xiii] R C Systems Inc : Fax (206) 355-1098 [xiv] Telesensory System, Inc : Phone: (408) 616-8700 or (800) 227-8418 e-mail:tele@netcom.com web:<http://www.telesensory.com/index.html> Indian Sources of Availability of Devices : Therform machine : (i) Asian Power Cyclopes Rochipura, P.O.: Majra, Dehradun-248171 (ii) Advance Engineering works 22, Lytton Road, Dehradun. • Brailier : (i) North Trust 48, New Thiruvallam Road, Katpadi-632007, Tamil Nadu e-mail : worth@md3vsnl.net.in • Braille, Arithmetic, Mobility, Recreational & other devices. (i) National Institute for the visually Handicaped.

272 116 Rajpur Road, Dehradun–248001, Uttarkhand. e-mail:nivhddn@nde.vsnl.net.in (ii) National Rehabilitation Engineering Intitute Blind People's Association, Vastrapur, Ahmedabad Pin–380015, e-mail:bpa@vsnl.com web:http://www.education.vsnl.com/bpa_ahmedabad (iii) Asian Power Cyclopes (iv) Advance Engineering (v) Sparsh Products, 151–5, Rajpur Road, Dheradun–248001 Uttarakhand, e-mail:rectarao@de 13.vsnl.net.in (vi) Voltas Ltd, Kaybee cell, Volkart Building 19 J N Heredia Masg, Ballard Estate, Mumbai–400038 (vii) Artificial Limbs Manufacturing Corporation G. T. Road, Kanpur–2080116, Uttar Pradesh. (viii) NAB Louis Braille Memorial Research Center Rustom Alpaiwala Complex 124, Cotton Depot, Cotton Green, Mumbai–400033. • Geography & Science Appliances : (i) V. R. Vardhman International, Vardharman House 1. Raj Block Naveen Shahadara, New Delhi–110032 (ii) Bharat Educational Stores, Chippi Tank, Meerut, Uttar Pradesh. (iii) Krishna Models Manufacturing Co. Ltd., Nai Sarak, Near Chandni Chowk, New Delhi–110015 (iv) Bharat Graphics, 194, Industrial Area, Phase–II Chandigarh–160002 • Clock & Watches : (i) HES Limited, Patel Estate, Jogeshwari (West), Mumbai–400102

273 (ii) Hindustan Machine & Tools Ltd. Watch Mrketing Division 26/1, Levelle Road, Bangalore–560001 (iii) ALIMCO, Kanpur • Recreational : (i) Pneumatic Controls, 35–B, Rama Road. New Delhi– 110015 (ii) Pinball Manufacturing Co. 147, GIDC Makapura Industrial Estate, Vadodara (iii) Latha Industries, 89/1, Triplicane High Road. Triplicane, Chennai–600005 • Indian Suppliers of Imported Appliances : (i) Karishma Enterprizes, Shop No. 140, Opp. Mariyamma Temple Jesmine Mill Road, Dharavi, Mahim (East), Mumbai–400017 (ii) Sparsh Products, 151–5, Rajpur Road, Dehradun–248001, Uttrakhand, e-mail : reetarao@de 13.vsnl.net.in 4.5.5. Let us Sum up : Education of children with disabilites requiries special equipments and TLM. Braille ruler, protector and special compass can enable a blind child to draw any diagram in geomety. Low vision children require magnification. In the case of blind child, Braille state/writing frame, Taylor/Arithmetic Board/Frame are essentials. Teachers–students having keen interest, tenacity and inquisitiveness can impart lessons to visually impaired learners with the objects easily available at hand using sas TLM. Sometimes they can also make low-cost or no-cost equipments by themselves for this purpose. 4.5.6 “Check Your Progress” : (i) Name the low-tech indispensable equipments to teach the children with visual impairment. (ii) Suggest how you can prepare TLM from locally available materials for teaching children with usual impairment. (iii) Briefly describe when and where to use particular types of equipments. • Activity :

274 Go to 3/4 visually impaired students studying either in special school or in inclusive set-up to observe his/her special equipments and techniques of their use. 4.5.7 Check Yourself : Tick the most appropriae answer : (i) Type is used by the visually impaired students to-- (a) write braille (b) read braille (c) do arithmetic (d) none of the above (ii) Top-side braille writing is possible by-- (a) inter-line braille slate (b) inter-point braille frame (c) pocket frame (d) braille (iii) JAWS for he use of visually impaired is a-- (a) software (b) mathematical device (c) money identifying device (d) duplicating machine (iv) Braille writing by right and reading by left is done on-- (a) inter-point frame (b) perkins brailler (c) worth-trust brailler (d) stensby braille writes (v) Optacon is a-- (a) braille writing machine

275 (b) brailled duplicating machine (c) mobility device (d) ink-book reading machine (vi) Sonic guide is a-- (a) braille writing apparatus (b) mobility apparatus (c) braille reading apparatus (d) type of watch. • Answer Key : (i) c, (ii) d, (iii) a, (iv) a, (v) d, (vi) b. 4.5.8 References : □ Holbrook, C.M. & Koenig A. J. (Eds) (2000). Foundation of Education, Vol- I, History and Theory of Teaching children and youth with visual impairment. (2nd ed.) : New York A F B Press. □

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Unit - 5 ppppp DeafBlindness 5.1 Definition, causes, classification, prevalence and characteristics of deaf-blindness

Structure 5.1.1 Definition of Deafblindness 5.1.2 Causes 5.1.3 Classification 5.1.4 Prevalence 5.1.5 Characteristics of

deafblindness 5.1.1 Definition of Deafblindness Deaf-blindness is a unique disability. It is

a condition in which a person may have a combination of

both hearing and vision impairments

of varying degrees, causing severe communication, developmental, and educational needs. Since 95% of the information is acquired through vision and hearing, restrictions in seeing and hearing means significant challenge in accessing information in a clear and consistent way. 5.1.2 Causes Deafblindness is not caused by a single medical condition. A child

can be born deafblind or a person may acquire deafblindness later in life. A child

born deafblind as a result of infection, genetic syndrome or birth

defect are termed as having congenital deafblindness or early onset deafblindness. Those who acquire deafblindness later in life as a result of trauma or accident, genetic syndrome, ageing or progressive infection are termed as having acquired

deafblindness. It is important to note that a genetic syndrome can result in deafblindness at birth or later in life. This

happens because genes might have an immediate effect on developing foetus or its effects may not be apparent until later in life.

Congenital or early onset deafblindness.

278 1. Infections as a cause | Historically one of the most common infectious causes was the Rubella virus commonly known as "German Measles". If the mother is infected with this virus during the first trimester of her pregnancy, the child becomes deafblind | TORCH syndrome (Toxoplasmosis, Other agents, Rubella, Cytomegalovirus, Herpes Simplex) 2. Genetic or chromosomal syndromes as cause | CHARGE syndrome | Down syndrome | Goldenhar syndrome 3. Congenital birth trauma or infection as a cause | Premature birth | Low birth weight | Asphyxia or stoppage of breathing due to obstruction in the air passage | Anoxia or lack of oxygen | Other trauma or birth injury | Trisomy 13: in case of three chromosomes in the 13 th pair, child develops deafblindness | Hydrocephaly | Microcephaly | Encephelitis-inflammation of the brain cells | Meningitis Acquired deafblindness 1. Genetic syndromes as a cause | Usher syndrome: Usually hearing loss is present from birth, and progressive visual impairment from late childhood to early adolescence or even adulthood. | Norrie Syndrome: born with blindness and later develop hearing impairment

279 2. Accidents or other trauma as a cause Accidents or some traumas such as stroke or cerebral haemorrhage can cause deafblindness in people due to injury to parts of the brain that deal with information processing tasks through sight and hearing. 3.

Ageing as a cause

After the age of 50 years, hearing and vision impairments become more common and prevalence of sensory impairment increases with age.

Other than these significant causes, malnutrition of the mother during pregnancy can cause premature birth or low birth weight. Infants who survive these conditions are more likely to have mental retardation, cerebral palsy, epilepsy and respiratory disease which may result in deafblindness, Maternal jaundice during pregnancy can also be vital for the developing foetus. High level of bilirubin can harm the developing brain of foetus affecting vision and hearing. 5.1.3 Classification Deafblindness is an umbrella term which is used for children and adult who may suffer from varying degrees of hearing and visual impairments. Total deafness with total blindness is rare. Thus, deafblind would include children and adult who are Totally blind with profound hearing loss Ø Totally blind with partial hearing loss Ø Partially sighted with profound hearing loss Ø Partially sighted with severe or partial hearing loss. Another grouping: Ø Congenitally deafblind Ø Congenitally blind and later acquire deafness Ø Congenitally deaf and later acquire blindness Ø Acquired deafblindness, meaning people born with hearing and vision, but later lose both senses to varying degrees. The losses may occur at different times.

280 5.1.4 Prevalence Of the total world population, 0.02% people are deafblind. It is estimated that, in India, there are about 450000 deafblind people children and adults. 5.1.5 Characteristics of deafblindness It is commonly estimated that 95% of the information are gathered from vision and hearing. Individuals who have a hearing or vision loss cannot access the same amount of information without accommodation for their sensory loss. Depending on the age of onset, the characteristic features of deafblind individuals vary from one another, thereby giving them unique characteristics. Wide ranging characteristics are observed among diverse group of people with deafblindness. Ø Lack the ability to communicate in a meaningful way Ø Have a distorted perception of the world Ø Deprived of the information necessary to anticipate future events or the results of his close one's actions Ø Deprived of many of the most basic motivations Ø Have medical problems that lead to serious developmental lags Ø Mislabeled as developmentally disabled or emotionally disturbed Ø Forced to develop unique learning styles to compensate for the sensory impairments Ø Have extreme difficulty in establishing and maintaining interpersonal relationships

281 5.2 Effects and Implications of deafblindness on activities of daily living and education Structure 5.2.1 Effects of deafblindness 5.2.2 Implications of deafblindness on a person 5.2.1 Effects of deafblindness People who are deafblind experience difficulties in: •••• Finding out information This does not only mean restrictions in accessing information through newspaper, books, radio or TV channels, but also missing the experience of seeing the face/hearing the voice of an unfamiliar person, the shape of any object larger than the size of the hand to hold, any object beyond one's reach. Therefore, life experience is severely reduced to build up a store of world knowledge. Without that knowledge what is there to communicate about? | Communicating with others This is perhaps the most obvious challenge to a person who is deafblind. Each person has individual communication needs and ways of communication. Some use simple gestures, facial expressions or movements of the body. Very few people understand these communications of a person who is deafblind. It becomes difficult for him also to understand other's communication and learn to communicate. | Moving around the environment The person who is deafblind cannot compensate for vision with hearing, or for hearing with vision. This person is cut off from the world into a world of "invisible silence". Due to constrained information through sensory system, they cannot interpret whatever information they have received, and prefers to remain in a secured position.

282 5.2.2 Implications of deafblindness on a person Ø Vision Loss of or restrictions in vision may have different implications on persons with deafblindness. These may be: •••• loss of visual acuity meaning difficulty in seeing objects accurately •••• loss of visual field meaning limited field of vision •••• difficulty in moving eyes when fixating, scanning or tracking objects with eyes •••• reduced contrast sensitivity meaning difficulty in seeing the relative difference between the lightness and darkness of objects •••• processing problems meaning difficulty in making sense out of what she/he is seeing | difficulty in seeing parts of the image or complete picture together | squint or Strabismus meaning eyes do not work together | oculomotor problems meaning difficulty in coordinated movements of the eyes to focus or fixate | Nystagmus meaning involuntary movement of eyeballs. Due to this child fails to see and understand the object clearly. Ø Hearing We interpret our environment by hearing different information that comes our way and we develop concepts on our own without being taught by others. But, for a child with deafblindness, these inputs are missing; the use of functional hearing also gets restricted due to lack of interveners. | Sometimes, a child with deafblindness responds to a particular sound and not to other sounds. | A child with deafblindness may face problems related to balance due to the structural impairment in the ear.

283 Ø Motor and mobility

Children use their vision and hearing to gather information about their surroundings, to understand

their own bodies and their own capabilities of movement. The sight of toys or people and the sounds of voices or objects encourage them to move and discover.

Children with deafblindness do not experience this due to loss of or restricted vision and hearing. Sometimes, severe medical problems are associated leading to developmental delays affecting motor and mobility. As a result, they face difficulty in independent exploration which restricts the ability to get a control over the environment. Conceptual development and experience of space and direction remains severely restricted and/or totally absent. Ø Behaviour A person with deafblindness may acquire behavioural patterns that may not be well understood to others in the society. Some of these are: •••• Self-stimulatory behaviours such as eye poking, body rocking, etc. •••• May have incorrect manner of eating food •••• May have unusual sleep patterns •••• May have variety of behaviour patterns to express needs and emotions Ø Socialisation skill A person with deafblindness has very limited scope of reaching out to others to share his/her needs, events and entertainment. •••• They face extreme difficulty in establishing and maintaining interpersonal relationships with others. As they have different ways of communication, they face difficulty in initiating and understanding conversations. •••• Due to communication problem, they remain isolated. •••• Their isolation also leads to social deprivation Accessing information, communicating with others and moving around the environment are central to daily living and learning. All three of these depend on each other. Thus, people who are deafblind experience difficulties in their daily living and learning.

284 Ø Implications of deafblindness on education Educationally, children with deafblindness are isolated because impairments of sight and hearing require attentive and unique educational approaches in order to ensure that children with this disability can have the opportunity to reach their full potential. If a child with deafblindness has some usable vision/hearing, as many do, his/her world will be enlarged. Many of them have enough vision to move about, recognise familiar people, see sign language at close distance” and read large print. Others have sufficient hearing to recognise familiar sounds, understand some speech, or develop speech themselves. As deafblind children get fragmented and distorted information from their contact with people and environment, it is important to provide access to opportunities that helps in incidental learning as sighted/hearing children do have. In other words, deafblind children will need to experience activities in real life settings as they are occurring naturally in the environment around them. They will learn best by doing things together by using his tactile, olfactory, kinaesthetic and proprioceptive senses along with whatever residual vision and hearing they might be having. They must be involved in full sequence of the activity. To reduce the impact of dual sensory loss, it is important to develop routines in the life of the deafblind child.

285 5.3 Screening, Assessment, Identification and Interventional Strategies of Deafblindness Structure 5.3.1 Screening and Identification 5.3.2 Assessment 5.3.3 Instructional strategies 5.3.1 Screening and Identification Screening is a service in which people, who do not perceive that they are at risk of, or are already affected by a disease, are asked a question or offered a test, for early identification. The aim of screening is to identify the number of people affected from suspected eye or ear problems. It reduces the risk of developing further complications through early identification; at the same time, it is not a guarantee of prevention, or of diagnosis and cure. lllll Why screening? Because deafblind people remains invisible and hidden from everyone, and are often misdiagnosed as mentally challenged or hearing impaired with vision problem, screening helps in identifying the number of population with these dual sensory impairments. lllll Possible outcomes of Screening Process i) No problems are observed. The child is screened again at the next recommended age. ii) One or more of the high risk conditions have been identified, but there are no observable problems with visual or hearing performance. Parents should be informed of high risk indicators of visual/hearing problems; how to observe visual/hearing performance and/or resources to contact, if vision/ hearing problems are observed at a later date. iii) A prompt referral to an eye care or ear specialist should be made if: a) the child has an observable eye condition such as excessive tearing, redness, eye deviation or misalignment, nystagmus, drooping eyelids, cloudiness of the 286 cornea or pupil, etc. or the child suffers from frequent discharge from ear, does not respond to sounds, etc. b) the child has observable difficulty with one or more behavioural items. 5.3.2 Assessment Functional Assessment is a process using observation, screening test, and test analysis to determine an individual’s strength and weaknesses in order to plan educational services. It should be set in the context of the clinical information including aetiology, visual acuity and hearing thresholds, and the assessor should integrate the whole information to provide a commentary of the child’s needs and provide useful recommendations about strategies to meet them. A proper assessment requires family participation and a trans- disciplinary team. Purpose of assessment: Assessment is the first step that is taken by an educator/therapist to develop a holistic programme for the child. This includes child’s environment, communication, functional abilities of vision and hearing, cognitive abilities, physical difficulties, socialisation skills, child’s likes and dislikes and strengths, and where development is required. It must include an evaluation of the child’s communication, cognitive, and adaptive and everyday functioning including behavioural concerns. Assessment is not done once for the child; it is periodic, depending on the condition of the child. Components of assessment: The assessment format must contain questions relating to child’s social and communication domain, sensory/motor domain, functional vision domain, and functional hearing domain. Tools for assessment are: l Learning through doing: This tool was developed by National Institute for the Visually Handicapped (NIVH) and Blind Peoples association, Ahmedabad in 2002. It is an assessment tool as well as a programme manual. l Screening checklist for sensory impairment developed by National Institute for the Mentally Handicapped (NIMH) l Callier-Azusa Scale is a developmental scale specially designed to aid in the assessment of deafblind children. This is composed of 18 sub-scales in five

287 areas. These are motor development, perceptual development, daily living skills, cognition, communication and language, and social development. Functional assessment for vision and hearing problem in children developed by Sense International (India). Now this format is used for assessment in camps and community, and in special schools. 5.3.3 Instructional strategies Instructional strategies for children with deafblindness mean intervention into their world of "invisible silence". The strategies to be taken are: Creation of effective environment, that helps in acquiring maximum learning, is the prime thing that an educator needs to act upon in a systematic way. Adaptations to the physical environment, e.g. arrangement of the room, lighting, noise level, location of materials and resources, accessibility to other rooms, etc. are all considerations for environmental modifications. Adaptations in the class programme include

- Ø Allowing more time for the task
- Ø Pacing the lesson differently
- Ø Ensuring a variety of ways of processing information
- Ø Setting up structures that enable achieving smaller steps to the goal
- Ø Checking more frequently than usual for understanding
- Ø Giving more frequent feedback
- Ø Simplifying questions/instructions

Modifications to resources and materials Materials have to be adapted to allow them to access the information or demonstrate their understanding. This can be done by simplifying resources and materials, using different materials, enlarging print, using Braille prints, provision of support personnel. Despite the adaptations and modifications, some children or adults need higher levels of assistance from the educator/caregiver.

288 Components of Teaching Strategies

1. Stability : It refers to the orderly approaches that would help the child to predict about the environment. Structured environment supports structured learning. It helps in building confidence in the world of the child.
2. Routine to create stability: Routines allow the child to experiment with more confidence in a predictable situation Teaching curriculum is embedded around routine activities.
3. Role of Motivation: Activity has to be planned in a way to motivate the child to act and enjoy with the educator. Think of rewarding to maintain the enthusiasm in the child.
4. Small Steps (task analysis) in implementing the goal: Before introducing the whole activity to the child, it should be spread into small steps. Short steps achieved builds confidence in the child, and s/he loves to learn the next steps.
5. Pace of learning: It refers to the time required and taken by the child in learning any task. Based on the individual needs, each child has his/her own learning pace.
6. Repetitions of the task: Children with deafblindness may need more repetitions of an activity due to restricted or limited input from the senses.
7. Presentation of the task: The task has to be designed in such a way that it is of maximum use. The Teaching Learning Material (TLM), selected on the basis of the needs as well as the strengths/limitations of the child, should be easily seen, heard or explored tactually.
8. Prompts: Prompts are cues/indications given to the child to perform the task. It requires high level of prompting at the initial stage, and reduced gradually.
9. Working hand over hand: Before working hand over hand, rapport with the child has to be built so that the child must feel secured. The educator generally places his/her hand over the child's hands gently to show him/her to perform a task.

289 5.4

Fostering Early Communication Development : Methods, assistive devices and practices including AAC

Structure 5.4.1 Fostering Early Communication Development 5.4.2 Modes of communication 5.4.3 Using assistive devices and practices including AAC

5.4.1 Fostering Early Communication Development Communication is the process of transmitting thoughts, ideas, information and messages from one person to another. For children who have vision and hearing problems, communication may be somewhat different. There are a variety of ways through which deafblind children communicate in early years. These are:

- l Facial expression
- l Vocalisation such as crying, cooing and babbling
- l Change in muscle tone
- l Touching and manipulating others
- l Body movements
- l Assuming positions
- l Pointing
- l Natural gestures
- l Behaving aggressively (biting, pinching, throwing things etc.)

For communication three things are required:

- l Someone to communicate with
- l Something to communicate about
- l A means of communication

290 It is therefore a two way process: receptive and expressive. It is crucial for the child to gain meaning from experience, learn to anticipate and predict, and learn to control the learning environment. Receptive communication is the process of receiving and understanding the message. It is often difficult to determine how a child with deafblindness receives messages and responds to the communication of his/her family members. Expressive communication means sending message to another person for any need or responding to the message already received. There are certain strategies to foster early communication development. These are

- l Good lighting with the light coming from behind
- l Create a good listening environment
- l Use of hearing aid/s
- l Sometimes song helps the child to anticipate or cooperate
- l Enhance sensory information
- l Use of scented materials to identify places/activities/persons
- l Provide consistency
- l Routine activity recommended
- l Use "Calendar Box" to denote "beginning of activity" and "finish of activity"
- l Different types of cues and objects are used in fostering receptive and expressive communication.
- l Touch Cue: Cue is given by touching child's body part related to the activity or action; e.g. touching lips for feeding; waist for nappy change
- l Movement Cue: Moving body part that relates to an activity; e.g. moving hand to mouth for eating; moving two hands for clapping for recreational play
- l Contextual Cues: Cues given or taken by the child during an activity or in a situation; smell of cooking food from kitchen, tactile feeling of grass in the garden, taste of sour while licking pickle, etc. Cues are helpful in developing anticipation and understanding associations, the most vital aspect for developing communication skills. However, certain things to be kept in mind while using cues with the children. These are:

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- l Cues must be used same way each time by every person working with the child.
- l Cues must precede a relevant activity for the child.
- l Cues have to be different from one another so that the child gradually understands the differences and later on discriminate and relate to particular activity.
- l When a child develops understanding and responding to cues, educators may move to next level of receptive communication through object cues. Objects are chosen for daily activities that are presented to the child as cues for activities. For example, spoon for eating, soap for bath, ball for play, cane for outing, etc.

5.4.2 Modes of communication Children with deafblindness use different modes to communicate. These are :

- l Sign Language In visual signing, signs are made in front of the person. Tactile signing involves signing with the receiver's hand resting lightly on the signer's hand. This mode is suitable for people who have very little vision or no vision at all.
- l Print on palm This mode is used where block capital letters are drawn on the palm of the deafblind person's hand, one after the other.
- l Tadoma Tadoma is tactile lip reading. The person reading the speech places his/her thumb on the speaker's lips and his/her fingers along the jaw line, touching the speaker's cheek and throat. From this s/he is able to pick up the vibrations of speech as well as the lip patterns.
- l Braille Braille is a system of touch reading and writing in which raised dots represent the letters of the alphabet. Both hands are usually involved in the reading process and reading is generally done with the index fingers from left to right along each line.
- l Gestures Gestures or non-verbal communication and body language communicate as effectively

292 as words and may be even more effective. Some deafblind children express their needs through vocalisations (crying/cooing/babbling).

- l Symbols Communicating with the help of symbols is called symbolic communication. Spoken and written languages are examples of abstract symbols and real objects are examples of concrete symbols.
- l Cues A cue is a prompt that is individualised for each deafblind child and is used to encourage a specific behaviour. It is dependent on specific activity or context. For example, tapping a child on chin may be a prompt for "open up mouth" for food. Cues are of different types, e.g. touch, movement, contextual cues, and object cues. Gestures and cues are anticipators to let a deafblind child know what is about to happen.

5.4.3 Using assistive devices and practices including AAC Augmentative and alternative communication (AAC) means methods of communication which can be used to add to the more usual methods of communication including speech and writing when impaired. AAC includes unaided systems such as signing and gesture, as well as aided techniques ranging from picture charts to the most sophisticated computer technology currently available. AAC strategies assist persons with deafblindness with severe communication disabilities to participate more fully In their social roles including interpersonal interaction, learning, education, community activities, employment, recreation, home management and so on. AAC is just the means to develop the abilities to communicate when, where and what is desired. AAC includes unaided and aided methods.

- l Unaided communication: This method does not involve a piece of additional equipment. Body language, gestures, pointing, eye pointing, facial expressions, vocalisations and sign language.
- l Aided communication: This method involv~additional equipment, e.g. picture chart, a computer. Adults with deafblindness use the Power Braille attached to the computer.

293 5.5 Addressing orientation, mobility and educational needs of students with deafblindness Structure 5.5.1 Problems of Orientation and Mobility for persons with deafblindness and strategies to develop mobility 5.6 Let us Sum Up 5.7 “Check your Progress ” 5.5.1 Problems of Orientation and Mobility for persons with deafblindness and strategies to develop mobility A child with deafblindness has very limited access to learn skills of Orientation and Mobility. This restricts the child’s motivation to explore, initiate interaction or participate in activities. As a result child becomes dependent on others and becomes passive or engages himself in less meaningful activities. What is Orientation and Mobility?

Orientation is the ability to locate oneself in one’s environment.

In absence or significant loss of vision and hearing of a person with deafblindness, orientation requires a skill that is related to using the residual vision and remaining hearing with the sense of touch and smell to establish position in, and in relation to significant objects in the environment.

Mobility is defined as action of travelling, going from one place to another, safely and freely. To be mobile, a person with deafblindness should be able to gather and use sufficient information from the environment to avoid hazards, and to reach the destination safely. Orientation and mobility training is important for every child with deafblindness, The goals of orientation and mobility are | Enhancement of the sense of orientation | Development of means of supporting the child to move about and explore the environment freely and safely

294 | Development of prerequisites for integration of the child into the community | Development of sense of independence Focus of Orientation and Mobility training The training must include | Sensory awareness: Gaining information about the environment through smell, touch, movement, and using partial hearing and/or vision | Spatial concepts: Realising that objects exist even if not heard or felt, and understanding the relationships that exist between objects in the environment | Searching skills: Locating items or places efficiently. | Independent movements: Such as crawling, rolling, walking and so on. | Sighted Guide: Using another person to aid in travel | Protective techniques: Specific skills which provide added protection in unfamiliar areas. | Cane skills: Use of various cane techniques to clear one’s path or to locate objects along the way. Sensory Training Sensory stimuli are environmental clues that enable the child with deafblindness to determine position or direction in respect with other objects in the environment. Systematic instruction is needed to develop the other senses for use in travel and finding things in the environment. While providing sensory training, it is of utmost importance to use the fact sheet prepared for the child after functional assessment of vision, hearing and motor control. | Touch: The children with deafblindness need to learn the use of their hands and feet to explore the environment, to understand spatial relationship, about texture, temperature and weight. Hands give the idea of diversity of objects, while feet provides idea of position, pathways, changes in ground surface, slope and so on. Often the children with deafblindness are found to be tactually defensive; they should be trained to gain information through their whole body, and be able to use that information through auditory, visual and olfactory senses to determine their current location. For example, developing the tactual sense will help the child in finding a toy he dropped on the floor.

295 | Smell: Smell is useful for orientation both indoor and outdoor. Many physical locations can be easily identified through smell: bakery, tea/coffee stall, gas station. Therefore, smell can be a very good clue for directions. A particular place can also be used as landmark. The children with deafblindness should be exposed to a variety of fragrances; but not all at one time; the educator must link a fragrance with any meaningful activity. For example, familiarising the smell of lemon and then the activities of lemon cutting, squeezing and making juice. Use of smell can be used for a wash by using a particular soap. | Residual vision: teaching the child with deafblindness to use his residual vision is important and beneficial for his independent daily living. Use the functional vision assessment sheet for activity plan. | Awareness of body parts: Knowing the names of body parts and their functions develop mobility skill. Because of absence of incidental learning, the child is shaky in movement. Therefore, slowly the fundamental concepts of body awareness, spatial relationship, different tactual feelings relating to objects and surface, smells of objects and the environment have to be provided. Then the educator can initiate assisted movement with a goal. This would build confidence in the child and s/he would develop enjoyment while moving around. | Once a child with deafblindness learns to walk independently, there are a number of techniques to be taught to the child. This includes Ø Protective techniques help a person to be safe. The upper arm techniques protects the upper body around the chest and head. It can be used from open door, sharp wall curves, cupboards, hanging objects, tree branches and so on. The lower arm technique protects the lower part of the body near waist level. In both these techniques, hands are used like a bumper. Ø Trailing technique is used to trail wall or other similar furniture or object. Extend arm that is closer to the wall or object. It helps a person to walk straight, and to detect landmark or find doorways. One gets useful tactual information by trailing. Ø In Sighted guide technique, person with deafblindness holds the arm of the guide just above the elbow and maintains the position one step behind the guide. The sighted guide must know the how to guide a person while moving.

296 Ø Cane technique is taught when a child with deafblindness of school age, can walk and maintain balance. Cane should always be in line with middle of the body and in front of the traveller. The cane is moved from side to side by flexion and extension of wrist with tip touching the ground in each movement. The arm should not move. The aim of training children with deafblindness in orientation and mobility is to create positive experiences of movements, and instill the confidence of moving and travelling independently. 5.6

Let us Sum up

| Deafblindness is a unique disability with a combination of vision and hearing impairment of varying degrees affecting mobility and communication. | Causes of Deafblindness include congenital and acquired factors. | After screening and identification, functional assessment of the sensory abilities of the persons with deafblindness by a trans-disciplinary team, educator can adopt instructional strategies. | Among all the challenges faced by the persons with deafblindness, communication is the most significant. Systematic training helps in developing communication for the persons with deafblindness. | For orientation and mobility, self awareness and sensory training gives the understanding of self in the environment. Techniques of mobility gives confidence in independent movement. 5.7 "Check your Progress" Essay type questions 1. How would you define deafblindness? Discuss the implications of deafblindness in a person. 2. What are the causes of deafblindness? 3. What is assessment? Why is important? Discuss the tools of assessment.

297 4. Describe the need for functional assessment. What would be the strategies of instruction for a child with deafblindness? 5. Explain different modes of communication used by the persons with deafblindness. What are the strategies to enhance communication? 6. What is Orientation and Mobility? Explain the strategies for teaching orientation and mobility to a person with deafblindness 7. Explain the different categories of persons with deafblindness. Short questions 1. What are the characteristic features of deafblindness? 2. What are the major causes for deafblindness? 3. What may be the possible outcomes of screening? 4. How will you teach orientation and mobility to a student with deafblindness? 5. Discuss the modes of communication used by the persons with deafblindness. 6. Discuss the role of assistive devices and AAC for persons with deafblindness. 7. What are the protective techniques for safe and independent mobility of a person with deafblindness? Objective questions 1. Find out the true answer: i) Congenital Rubella Syndrome means infection of the baby after birth/ mother during pregnancy/family gene. (mother during pregnancy) ii) Persons with deafblindness depend mostly on ... residual vision/ hearing/ touch (touch) iii) Socialisation skill can be imparted through individual training/play therapy/ gardening. (play therapy) iv) For early intervention of a child with deafblindness, caregiver has to observe the child's behaviour/gesture/total communication. (Total communication) v) Before early intervention programme, functional assessment of hearing & vision/neck control/toilet control are necessary. (Hearing & Vision)

298 2. Find out True or False (

Tick in the appropriate answer) i)

Meningitis may damage brain leading to hearing and vision impairment. (True/False)

ii) ep children never have vision or hearing problems. (False/False) iii) Deafblind persons communicate through gesture and sign. (True/False)

iv) A child with deafblindness requires 1:1 training for future mainstreaming. (True/False) v) Dual sensory loss detaches a person from environment and community, both. (True/False)

Answer of the objective Question No. 2 (i) T, (ii) F, (iii) T, (iv) T, (v) T.

299 Notes

300 Notes

Hit and source - focused comparison, Side by Side

Submitted text

As student entered the text in the submitted document.

Matching text

As the text appears in the source.

1/108	SUBMITTED TEXT	64 WORDS	67% MATCHING TEXT	64 WORDS
	Introduction to Sensory Disabilities UNIT - 1 : HEARING IMPAIRMENT : NATURE & CLASSIFICATION 9-69 UNIT - 2 : IMPACT OF HEARING LOSS 70-137 UNIT - 3 : VISUAL IMPAIRMENT –NATURE AND ASSESSMENT 138-181 UNIT - 4 : EDUCATIONAL IMPLICATION OF VISUAL IMPAIRMENT 182-276 UNIT - 5 : DEAF - BLINDNESS 277-298 8 9 Unit-1.1 ppppp Types of sensory impairments: Single(Hearing Impairment & Visual Impairment) & Dual sensory impairment (Deaf-Blindness)		INTRODUCTION TO SENSORY DISABILITIES (SECD 02) Block 1: Hearing Impairment: Nature & Classification Block 2: Impact of Hearing Loss Block 3: Visual Impairment-- Nature and Assessment Block 4: Educational Implications of Visual Impairment Block 5: Deaf-blindness Block 1: Impairment: Nature & Unit 1: Types of sensory impairments: Single (Hearing Impairment & Visual Impairment) & Dual sensory impairment (Deaf-blindness)	
W	http://mpbou.edu.in/slm/bedsede/secd02.pdf			
2/108	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
	sight, hearing, smell, touch, taste and spatial awareness, is no longer normal.			
SA	Sensory impairment resource book.docx (D91330153)			
3/108	SUBMITTED TEXT	19 WORDS	82% MATCHING TEXT	19 WORDS
	sight impairment, if find it hard to hear or have a hearing aid then call hearing impairment.			
SA	Sensory impairment resource book.docx (D91330153)			

4/108	SUBMITTED TEXT	23 WORDS	64% MATCHING TEXT	23 WORDS
<p>damage to the hair cells lining the inner ear, or the nerves that supply them. This hearing loss can range from mild to profound,</p> <p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>		<p>damage to the delicate sensory hair cells of the inner ear or the nerves which supply it. These hearing losses can range from mild to profound.</p>		
5/108	SUBMITTED TEXT	16 WORDS	100% MATCHING TEXT	16 WORDS
<p>A person does not have to have full loss of a sense to be sensory impaired. 1.1.5</p> <p>SA Sensory impairment resource book.docx (D91330153)</p>				
6/108	SUBMITTED TEXT	31 WORDS	77% MATCHING TEXT	31 WORDS
<p>Total absence of sight, 17 b) Visual acuity not exceeding 6/60 or 20/200(Snellen) in the better eye correction lenses, c) Limitation of the field of visual subtending an angle of 20 degree or worse.</p> <p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>		<p>Total absence of sight; Visual acuity not exceeding 6/60 or 20/200 (Snellen) in the better eye even with correction lenses; or ? Limitation of the field of vision subtending an angle of 20 degree or worse.</p>		
7/108	SUBMITTED TEXT	11 WORDS	87% MATCHING TEXT	11 WORDS
<p>Some diseases or circumstances can cause deafness, including: Chicken Pox Cytomegalovirus Mumps Meningitis Sickle cell disease</p> <p>SA .SREEJA DEAFNESS.docx (D70342501)</p>				
8/108	SUBMITTED TEXT	87 WORDS	100% MATCHING TEXT	87 WORDS
<p>dual sensory impairment It is the combination of both hearing and sight impairment. It is not necessarily a total loss of both senses - indeed the majority of dual sensory impaired people do have some degree of sight and/or hearing. Those with a less severe degree of both sight and hearing impairment may also be referred to as having a dual sensory impairment or loss. The words dual sensory impaired and deaf-blind are generally accepted as interchangeable words. 23 When a person has difficulties seeing and hearing then the person can be termed</p> <p>SA Sensory impairment resource book.docx (D91330153)</p>				

9/108	SUBMITTED TEXT	72 WORDS	100% MATCHING TEXT	72 WORDS
<p>Although it is more common to refer to someone as being deaf-blind if their combined sight and hearing loss causes difficulties for them with communication, mobility and access to information. The combination of the two sensory impairments intensify the impact of each other, which usually means that a deaf-blind person will have difficulty, or find it impossible, to utilise and benefit fully from services for deaf people or services for blind people. Meeting the needs of</p> <p>SA Sensory impairment resource book.docx (D91330153)</p>				
10/108	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>swollen glands, a slight temperature, or a sore throat and swollen glands, a slight temperature, or a sore throat, and</p> <p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>				
11/108	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>to turn up the volume on the television or radio</p> <p>SA Sensory impairment resource book.docx (D91330153)</p>				
12/108	SUBMITTED TEXT	17 WORDS	90% MATCHING TEXT	17 WORDS
<p>Process of hearing & its impediment leading to different types of hearing loss Structure 1.3.1 Introduction 1.3.2 Objectives 1.3.3</p> <p>Process of hearing & its impediment leading to different types of hearing loss Content 3.1 Introduction 3.2 Objectives 3.3</p> <p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>				
13/108	SUBMITTED TEXT	12 WORDS	95% MATCHING TEXT	12 WORDS
<p>Dual sensory impairment is the combination of both hearing and sight impairment (</p> <p>SA Sensory impairment resource book.docx (D91330153)</p>				

14/108	SUBMITTED TEXT	58 WORDS	52% MATCHING TEXT	58 WORDS
<p>Types of hearing loss 1.3.4.1 On age of onset 1.3.4.2 On the location of the problem 1.3.4.3 Nature of hearing impairment 1.3.4.4 Degree of hearing impairment 1.3.4.5</p> <p>SA SED-14 Final.docx (D93662759)</p>				
15/108	SUBMITTED TEXT	84 WORDS	68% MATCHING TEXT	84 WORDS
<p>External Ear The external or outer ear is the outer most portion of the ear. It has two parts- (i) Pinna and (ii) Ear canal. (i) Pinna (auricle) The Pinna or Auricle is that part of the ear which we can see from outside. The pinna is of conical shaped structure and is attached to the head, on either side, at an angle of 30 to 40 degree. The various portions of pinna play an important role in human 43 hearing.</p> <p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>				
16/108	SUBMITTED TEXT	32 WORDS	45% MATCHING TEXT	32 WORDS
<p>an elastic cartilaginous structure and it has no bones. The pinna remains live and active due to the blood and nerve supply. Ear canal (external auditory meatus) The external auditory Canal/Meatus is "S" shaped</p> <p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>				
17/108	SUBMITTED TEXT	31 WORDS	85% MATCHING TEXT	31 WORDS
<p>the external ear and the inner ear. The middle ear is that portion of the ear, which plays a very vital role in "Bio medical Engineering" activities of the human ear. The</p> <p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>				
18/108	SUBMITTED TEXT	38 WORDS	92% MATCHING TEXT	38 WORDS
<p>very thin membrane and its thickness is about 1/10th mm. The normal tympanic membrane is pinkish in colour. It is roundish oval in shape. It is also concave. It has an area of about 85 to 90 sq.mm. The</p> <p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>				

19/108**SUBMITTED TEXT**

32 WORDS

71% MATCHING TEXT

32 WORDS

long handle is attached to the tympanic membrane and short handle is free. For its typical hammer shape, it is known as "malleus". Incus : This is second smaller bone of the ossicular chain .

SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)**20/108****SUBMITTED TEXT**

77 WORDS

88% MATCHING TEXT

77 WORDS

It is an anvil shaped bone 44 with the head and two handle like structures. The head of the malleus is attached to the head of the incus. The long handle of the incus is attached to the third ossicle called Stapes, while the short handle is free. Stapes: This is the smallest bone not only in the middle ear but also in the whole body. It is a stirrup shaped bone with a small head and an oval shaped footplate.

SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)**21/108****SUBMITTED TEXT**

21 WORDS

93% MATCHING TEXT

21 WORDS

Among all three ossicles, stapes plays very vital role in both transmission and amplification of sound waves from middle ear to inner ear.

SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)**22/108****SUBMITTED TEXT**

56 WORDS

69% MATCHING TEXT

56 WORDS

on the age of onset we have two groups of hearing loss such as- (A) Congenital hearing loss (B) Adventitious hearing loss (A) Congenital hearing loss It refers to any hearing loss occurring prior to birth or at the time of birth. It may be hereditary or may develop during prenatal or natal period. (B) Adventitious hearing loss

SA SED-14 Final.docx (D93662759)

23/108	SUBMITTED TEXT	13 WORDS	100%	MATCHING TEXT	13 WORDS
<p>Pre-lingual hearing loss- The term pre-lingual hearing loss refers to that hearing loss</p> <p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>					
24/108	SUBMITTED TEXT	72 WORDS	77%	MATCHING TEXT	72 WORDS
<p>development or language acquisition or language age. The hearing loss developed during the first three years of life is considered as pre- lingual. ii) Post-lingual hearing loss- The term post-lingual hearing loss refers to that hearing loss developed after the language had developed significantly. Post-lingual hearing loss can be sudden or progressive in nature. The person with post-lingual hearing loss finds it more difficult to adjust and adapt to deafness as compared to pre-lingual deafened persons.</p> <p>1.3.4.2</p> <p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>					
25/108	SUBMITTED TEXT	81 WORDS	81%	MATCHING TEXT	81 WORDS
<p>hearing loss. 1.3.4.3 Nature of hearing impairment On the basis of nature, hearing impairment can be classified as: A) Gradual hearing impairment B) Sudden hearing impairment A) Gradual hearing impairment- Gradual hearing impairment is also termed as "progressive hearing loss". This refers to a slow deterioration of hearing sensitivity with time. This may be due to any infection or hereditary disorder or aging. Conductive or mixed or sensori-neural hearing impairment can be gradual or progressive in nature. B) Sudden hearing impairment In Sudden hearing impairment, the patient</p> <p>SA SED-14 Final.docx (D93662759)</p>					

26/108	SUBMITTED TEXT	65 WORDS	97% MATCHING TEXT	65 WORDS
<p>may suffer partial or complete hearing loss in either one or both ears. This hearing loss results due to onetime insult to the auditory system. Usually the damage to the auditory system results in a permanent hearing loss. Sudden hearing impairment is usually always of sensori-neural type. 1.3.4.4 Degree of hearing impairment An important consideration of any hearing loss is the degree of impairment. On the basis of</p>				
<p>SA SED-14 Final.docx (D93662759)</p>				

27/108	SUBMITTED TEXT	103 WORDS	87% MATCHING TEXT	103 WORDS
<p>cause Hearing loss can be classified as Exogenous Hearing Impairment, Endogenous Hearing Impairment and Idiopathic hearing impairment. (a) Exogenous Hearing Impairment This refers to hearing loss caused by all factors other than heredity. These factors include: • Prenatal causes (Cause before birth) • Natal causes (Causes at the time of birth) • Post natal causes (Causes after birth) • Infections 49 • Noise • Aging (b) Endogenous Hearing Impairment This includes only "heredity" as the causative factor for hearing loss. Hereditary hearing loss may be transmitted as a dominant or recessive characteristic. (c) Idiopathic Hearing Impairment This refers to hearing loss of an unknown pathology or cause i.e., the causes of hearing loss is unknown. 1.3.5</p>				
<p>SA SED-14 Final.docx (D93662759)</p>				

28/108	SUBMITTED TEXT	11 WORDS	86% MATCHING TEXT	11 WORDS
<p>Definition of hearing loss, demographics & associated terminologies: deaf/deafness/hearing impaired/disability/handicapped Structure 1.4.1 Introduction 1.4.2</p>		<p>Definition of hearing loss, demographics & associated terminologies: deaf/ Deaf/ deafness/ hearing impaired/ disability/ handicapped Content 4.1 Introduction 4.2</p>		
<p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>				

29/108	SUBMITTED TEXT	15 WORDS	100% MATCHING TEXT	15 WORDS
<p>ear. The external or outer ear is the outer most portion of the ear.</p>				
<p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>				

30/108	SUBMITTED TEXT	20 WORDS	90% MATCHING TEXT	20 WORDS
<p>Hearing is the main sensory pathway through which speech and verbal communication develop. A child is likely to speak incorrectly</p> <p>SA SED-14 Final.docx (D93662759)</p>				
31/108	SUBMITTED TEXT	24 WORDS	74% MATCHING TEXT	24 WORDS
<p>hearing loss. Hearing loss, also known as hearing impairment, is a partial or total inability to hear. It may occur in one or both ears .</p> <p>SA K. NOORJAHAN.pdf (D45854578)</p>				
32/108	SUBMITTED TEXT	23 WORDS	100% MATCHING TEXT	23 WORDS
<p>Deafness is defined as a degree of loss such that a person is unable to understand speech even in the presence of amplification.</p> <p>SA .SREEJA DEAFNESS.docx (D70342501)</p>				
33/108	SUBMITTED TEXT	44 WORDS	95% MATCHING TEXT	44 WORDS
<p>In profound deafness, even the loudest sounds produced by an audiometer (an instrument used to measure hearing by producing pure tone sounds through a range of frequencies) may not be detected. In total deafness, no sounds at all, regardless of amplification or method of production, are heard.</p> <p>SA .SREEJA DEAFNESS.docx (D70342501)</p>				

34/108	SUBMITTED TEXT	63 WORDS	97% MATCHING TEXT	63 WORDS		
<p>The term "hearing loss" is used whenever specific reference is being made to a hearing impairment, which is of a particular intensity magnitude. It is measurement made on an audiometer and reported in decibels (dB). Hearing Impairment is a genetic term referring to any organic hearing problem regardless of etiology or degree. It is a deviation or change for the worse in either structure or function which</p> <p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>						
35/108	SUBMITTED TEXT	25 WORDS	100% MATCHING TEXT	25 WORDS		
<p>usually outside the range of normal .It generally includes a broad range of hearing disability, which ranges in severity from mildly hearing impaired to profoundly deaf.</p> <p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>						
36/108	SUBMITTED TEXT	19 WORDS	62% MATCHING TEXT	19 WORDS		
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Challenges arising due to Congenital and acquired hearing loss Structure 1.5.1 Introduction 1.5.2 Objectives 1.5.3 Congenital hearing loss 1.5.3.1 Congenital causes 1.5.3.2 Types of Congenital</p> <p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Challenges arising due to congenital and acquired hearing loss Content 5.1 Introduction 5.2 Diagnosis 5.3 Congenital Hearing Loss 5.4 Syndromic Hearing Impairment 5.5 Discuss the types of congenital</p> </td> </tr> </table>					<p>Challenges arising due to Congenital and acquired hearing loss Structure 1.5.1 Introduction 1.5.2 Objectives 1.5.3 Congenital hearing loss 1.5.3.1 Congenital causes 1.5.3.2 Types of Congenital</p> <p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>	<p>Challenges arising due to congenital and acquired hearing loss Content 5.1 Introduction 5.2 Diagnosis 5.3 Congenital Hearing Loss 5.4 Syndromic Hearing Impairment 5.5 Discuss the types of congenital</p>
<p>Challenges arising due to Congenital and acquired hearing loss Structure 1.5.1 Introduction 1.5.2 Objectives 1.5.3 Congenital hearing loss 1.5.3.1 Congenital causes 1.5.3.2 Types of Congenital</p> <p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>	<p>Challenges arising due to congenital and acquired hearing loss Content 5.1 Introduction 5.2 Diagnosis 5.3 Congenital Hearing Loss 5.4 Syndromic Hearing Impairment 5.5 Discuss the types of congenital</p>					
37/108	SUBMITTED TEXT	83 WORDS	98% MATCHING TEXT	83 WORDS		
<p>The term "hearing handicap" refers to the effect of the hearing impairment on the person's everyday situations and the disadvantages imposed by the impairment sufficient enough to affect one's personal efficiency in the activities of daily living. Thus in other words, the influence of the hearing impairment is the hearing handicap. According to the definition adopted by Ministry of Social Justice and Empowerment, Govt. of India and Persons with Disability Act (P.W.D.-1995-96), "hearing handicap" refers to hearing loss of 60dB HL or more on the better ear. 1.4.5</p> <p>SA 8 UNIT-I (FUNDAMENTALS OF HEARING).docx (D162037136)</p>						

38/108	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>The main sensory pathway through which speech and verbal communication develop</p> <p>SA SED-14 Final.docx (D93662759)</p>				
39/108	SUBMITTED TEXT	17 WORDS	91% MATCHING TEXT	17 WORDS
<p>a child is likely to speak incorrectly. Again, hearing also influences learning and other aspects of maturation.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
40/108	SUBMITTED TEXT	17 WORDS	82% MATCHING TEXT	17 WORDS
<p>hearing loss 1.5.3 Congenital hearing loss Congenital hearing loss is any hearing loss that is present at birth.</p> <p>hearing loss congenital hearing loss? Congenital hearing loss is a hearing loss that is present at birth (</p> <p>W https://www.hear-it.org/congenital-hearing-loss</p>				
41/108	SUBMITTED TEXT	102 WORDS	93% MATCHING TEXT	102 WORDS
<p>The causes of hearing loss and deafness can be divided into congenital causes and acquired causes. 1.5.3.1 Congenital causes Congenital causes may lead to hearing loss being present at or acquired soon after birth. Hearing loss can be caused by hereditary and non-hereditary genetic factors or by certain complications during pregnancy and childbirth, including: • maternal rubella, syphilis or certain other infections during pregnancy; • low birth weight; • birth asphyxia (a lack of oxygen at the time of birth); • inappropriate use of particular drugs during pregnancy, such as aminoglycosides, cytotoxic drugs, antimalarial drugs and diuretics; • severe jaundice in the neonatal period, which can damage the hearing nerve in a newborn infant.</p> <p>The causes of hearing loss and deafness can be congenital or acquired. Congenital causes Congenital causes may lead to hearing loss being present at or acquired soon after birth. Hearing loss can be caused by hereditary and non-hereditary genetic factors or by certain complications during pregnancy and childbirth, including: • maternal rubella, syphilis or certain other infections during pregnancy; • low birth weight; • birth asphyxia (a lack of oxygen at the time of birth); • inappropriate use of particular drugs during pregnancy, such as aminoglycosides, cytotoxic drugs, antimalarial drugs, and diuretics; • severe jaundice in the neonatal period, which can damage the hearing nerve in a newborn infant.</p> <p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>				

42/108	SUBMITTED TEXT	43 WORDS	63% MATCHING TEXT	43 WORDS
<p>acquired causes which may lead to hearing loss at any age : • infectious diseases such as meningitis, measles and mumps, Encephalitis, • Chicken pox, Flue; • chronic ear infections; • collection of fluid in the ear (otitis media); • use of particular drugs, such as</p>		<p>Acquired causes may lead to hearing loss at any age, such as: • infectious diseases including meningitis, measles and mumps; • chronic ear infections; • collection of fluid in the ear (otitis media); • use of certain medicines, such as</p>		
<p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>				
43/108	SUBMITTED TEXT	27 WORDS	76% MATCHING TEXT	27 WORDS
<p>injury to the head or ear; • excessive noise, including occupational noise such as that from machinery and explosions, and recreational noise such as that from personal audio devices,</p>		<p>injury to the head or ear; • excessive noise, including occupational noise such as that from machinery and explosions; • recreational exposure to loud sounds such as that from use of personal audio devices</p>		
<p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>				
44/108	SUBMITTED TEXT	27 WORDS	94% MATCHING TEXT	27 WORDS
<p>concerts, nightclubs, bars and sporting events; • ageing, in particular due to degeneration of sensory cells; • wax or foreign bodies blocking the ear canal. Chronic otitis media is</p>		<p>concerts, nightclubs, bars and sporting events; • ageing, in particular due to degeneration of sensory cells; and • wax or foreign bodies blocking the ear canal. Among children, chronic otitis media is</p>		
<p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>				
45/108	SUBMITTED TEXT	17 WORDS	70% MATCHING TEXT	17 WORDS
<p>one of the main impacts of hearing loss. Spoken language development is often delayed in children with</p>		<p>One of the main impacts of hearing loss is on the individual's ability to communicate with others. Spoken language development is often delayed in children with</p>		
<p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>				
46/108	SUBMITTED TEXT	15 WORDS	100% MATCHING TEXT	15 WORDS
<p>hearing loss and ear diseases such as otitis media can have a significantly adverse effect.</p>		<p>hearing loss and ear diseases such as otitis media can have a significantly adverse effect</p>		
<p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>				

47/108	SUBMITTED TEXT	23 WORDS	100% MATCHING TEXT	23 WORDS
<p>exclusion from communication can have a significant impact on everyday life, causing feelings of loneliness, isolation and frustration, particularly among older people with hearing loss.</p> <p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>		<p>Exclusion from communication can have a significant impact on everyday life, causing feelings of loneliness, isolation, and frustration, particularly among older people with hearing loss.</p>		
48/108	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>Children with hearing loss and deafness rarely receive any schooling</p> <p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>		<p>children with hearing loss and deafness rarely receive any schooling.</p>		
49/108	SUBMITTED TEXT	19 WORDS	86% MATCHING TEXT	19 WORDS
<p>Adults with hearing loss also have a much higher unemployment rate. A higher percentage of people with hearing loss</p> <p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>		<p>Adults with hearing loss also have a much higher unemployment rate. Among those who are employed, a higher percentage of people with hearing loss</p>		
50/108	SUBMITTED TEXT	43 WORDS	66% MATCHING TEXT	43 WORDS
<p>among those who are employed, are in the lower grades of employment compared with the general workforce. Unemployment rates among this group will decrease by improving access to education and vocational rehabilitation services, and raising awareness especially among employers about the needs of people with hearing loss.</p> <p>W https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss</p>		<p>Among those who are employed, a higher percentage of people with hearing loss are in the lower grades of employment compared with the general workforce. Improving access to education and vocational rehabilitation services, and raising awareness especially among employers about the needs of people with hearing loss,</p>		
51/108	SUBMITTED TEXT	9 WORDS	100% MATCHING TEXT	9 WORDS
<p>It also adversely affects the child's performance in learning.</p> <p>SA SED-14 Final.docx (D93662759)</p>				

52/108	SUBMITTED TEXT	39 WORDS	96% MATCHING TEXT	39 WORDS
<p>The whole gamut of the curriculum for children in school and community is centered around two significant aspects, "The Opportunity" and "The Experience". Often children are provided with opportunities, but the mere provision of opportunities does not mean acquisition of experience.</p>		<p>The whole gamut of the curriculum for children in school and community is centered around two significant aspects that include, the Opportunity and the Experience. Often children are provided with opportunities, but the mere provision of opportunities does not mean the acquisition of experience.</p>		
<p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-14-Introduction-to-Sensory-Disabilities-English.pdf</p>				
53/108	SUBMITTED TEXT	13 WORDS	76% MATCHING TEXT	13 WORDS
<p>teaching strategy is a generalised plan for a lesson which includes structures, desired</p>				
<p>SA DB manual.docx (D110503252)</p>				
54/108	SUBMITTED TEXT	14 WORDS	87% MATCHING TEXT	14 WORDS
<p>in terms of--Content, Method of Display, Type of Material used, Response Expectations From The Child. (</p>		<p>in terms of content, method of display, type of material used and response from the child.</p>		
<p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>				
55/108	SUBMITTED TEXT	15 WORDS	71% MATCHING TEXT	15 WORDS
<p>But the 230 learning of visually imparied is not "whole" but in "Pieces" of information.</p>				
<p>SA SED-14 Final.docx (D93662759)</p>				
56/108	SUBMITTED TEXT	26 WORDS	79% MATCHING TEXT	26 WORDS
<p>The area covered by light pressure of the finger tips on paper gives the necessary information to the child to discriminate between different configuration of braiile letters,</p>				
<p>SA SED-14 Final.docx (D93662759)</p>				

57/108	SUBMITTED TEXT	28 WORDS	94% MATCHING TEXT	28 WORDS
<p>When the right hand reaches the end of the line, the left hand should, retrace the line which was just read, and identify the beginning of the next line.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
58/108	SUBMITTED TEXT	18 WORDS	80% MATCHING TEXT	18 WORDS
<p>while writngs, the child has to punch the dots from the right to the left of the slate.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
59/108	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>reverse the paper and read it from left to right.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
60/108	SUBMITTED TEXT	17 WORDS	73% MATCHING TEXT	17 WORDS
<p>remaining senses of the sightless person to establish one's position in and relationships to, significant objects in the</p> <p>remaining senses of a person, to establish one's position in' and 'in relation' to significant objects in the</p> <p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>				
61/108	SUBMITTED TEXT	66 WORDS	76% MATCHING TEXT	66 WORDS
<p>speed in writing, the lefthand should always identify the braille cell while the right hand punches the letter in the previous cell. The stylus and the left hand should be placed on consecutive cells. By this the lefthand assists the right hand which holds the stylus to identify the correct of in the braille cell. While writing, the stylus should be held vertically. Tilting the stylus may make holes</p> <p>SA SED-14 Final.docx (D93662759)</p>				

62/108**SUBMITTED TEXT**

37 WORDS

88% MATCHING TEXT

37 WORDS

has a small swivel stud for locking and holding braille papers. When one side of the paper has been brailled, the clamp with the paper still held, is turned over, as a until the binding margine is made automatically.

SA SED-14 Final.docx (D93662759)**63/108****SUBMITTED TEXT**

73 WORDS

90% MATCHING TEXT

73 WORDS

Frame : It is used for writing small braille characters on one side of the paper. The corner pins are arranged in such a way braille can be read without removing the paper from the frame; when the top section is lifted, the paper remains attached to it. [iv] Pocket Braille Frame : The four-line pocket braille frame produces small braille characters on one side of the paper. This is specially used for making small and occasional notes. 254 [

SA SED-14 Final.docx (D93662759)**64/108****SUBMITTED TEXT**

19 WORDS

84% MATCHING TEXT

19 WORDS

to suit individual needs. The pins of all stylii are made of stainless steel and the handles are of

SA SED-14 Final.docx (D93662759)**65/108****SUBMITTED TEXT**

34 WORDS

86% MATCHING TEXT

34 WORDS

Braille Kit : It is rexine coated or a decorative wood box 36 cms × 28.5 cms. with a weight of 3085 Gms and contains the itmes like--■ Braille Frame; ■ Braille Writing Pocket Frame; ■

SA SED-14 Final.docx (D93662759)

66/108	SUBMITTED TEXT	43 WORDS	96% MATCHING TEXT	43 WORDS
<p>writing machine for writing on one side of the paper, enabling to read as it is written. This machine can be compared to a normal type, writer with a major difference that it has only nine keys, three for paper setting and six for embossing</p> <p>SA SED-14 Final.docx (D93662759)</p>				
67/108	SUBMITTED TEXT	12 WORDS	87% MATCHING TEXT	12 WORDS
<p>The braille embosses combinations of six dots in a braille cell. The</p> <p>SA SED-14 Final.docx (D93662759)</p>				
68/108	SUBMITTED TEXT	29 WORDS	82% MATCHING TEXT	29 WORDS
<p>semi-automatic braille duplicating machine. It is useful for taking out multiple copies of the braille matter on the 'Brailon' sheets from the master copy generally prepared on the braille paper.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
69/108	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>machine operates on the principle of vacuum and high temperature.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
70/108	SUBMITTED TEXT	25 WORDS	94% MATCHING TEXT	25 WORDS
<p>The material recorded on cassettes has emerged to be the most popular mode of imparting education to visually impaired persons. As Braille books are very heavy,</p> <p>SA SED-14 Final.docx (D93662759)</p>				

71/108	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>This frame is suitable for teaching arithmetic to visually impaired</p> <p>SA SED-14 Final.docx (D93662759)</p>				
72/108	SUBMITTED TEXT	27 WORDS	86% MATCHING TEXT	27 WORDS
<p>The beam supporting the beads is marked with a raised bar between every third rod. The bars serve to indicate the decimal point and other units of decimal measure.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
73/108	SUBMITTED TEXT	20 WORDS	90% MATCHING TEXT	20 WORDS
<p>Talking Calculator : Audible calculator in synthesized speech useful for calculation, clock, alarm and calendar. Manufactured by casio and sharp companies, Japan. [</p> <p>SA SED-14 Final.docx (D93662759)</p>				
74/108	SUBMITTED TEXT	25 WORDS	92% MATCHING TEXT	25 WORDS
<p>Spur Wheel : A serrated revolving wheel in a plated metal handle. It is used for making continuous embossed lines on the reverse side of the paper. [</p> <p>SA SED-14 Final.docx (D93662759)</p>				

75/108**SUBMITTED TEXT**

111 WORDS

84% MATCHING TEXT

111 WORDS

Compass Set : It includes a foot ruler, a protractor and a set square in nylon and a spur wheel. It enables visually impaired students to use the same techniques as his sighted counter part. the foot ruler and set square have embossed markings for their convenience. The compass has a removable component fitted with a toothed wheel for drawing embossed dotted lines on the reverse of the braille paper. [ix] Geometry Mat : A rubber sheet for use as a base in conjunction with the spur wheel and braille paper for making geometrical drawings. [x] Opisometer : A bell rings each time the disc moves a distance of one meter. Useful for mapping and understanding mathematical problems in length and perimeter. [

SA SED-14 Final.docx (D93662759)**76/108****SUBMITTED TEXT**

96 WORDS

86% MATCHING TEXT

96 WORDS

equipment for obtaining a raised line format of any writing or drawing. The height and texture of the line can be altered. Useful in learning hand writing skills, mathematics, science, drawings & spellings. [ii] Raised Relief Plastic Maps : Vacuum formed plastic maps printed in strong colours with names in letter press for the benefit of person with low vision. The main towns are shown by large dots and principle rivers by depressions. Braille symbols denote the names of seas, main rivers and towns, a key to which is given in the guide. The boundaries on political maps are indicated by raised lines. [

SA SED-14 Final.docx (D93662759)

77/108	SUBMITTED TEXT	103 WORDS	96% MATCHING TEXT	103 WORDS
<p>Relief Globes : A plastic globe in textured relief. The lans masses are shown in different colours. The principle towns are indicated by raised dots; rivers and lakes by depressions. Dotted lines indicate the tropics, arctic and antarctic circles, the international date-line and meridians. The names of oceans and the main land are shown in Braille. Nystrom's Bathymetric world model is raised relief map of the world with oceans drained. All under-water features are exposed. A cassette recording explaining the features is supplied with the product. [v] Braille Diagram Board : Metal sheet fixed on a board with closely formed holes in which round-headed pins are stuck to form maps and diagrams.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
78/108	SUBMITTED TEXT	28 WORDS	82% MATCHING TEXT	28 WORDS
<p>SCIENCE DEVICES : [i] Conductivity Apparauts : Demonstrates the difference in the heat conductivity of copper and iron. It consists of a wooden stand with horizontal heating rods. 259 [ii]</p> <p>SA SED-14 Final.docx (D93662759)</p>				
79/108	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>diagrams are also available for various body systems, anatomy, physiology etc. [</p> <p>SA SED-14 Final.docx (D93662759)</p>				
80/108	SUBMITTED TEXT	20 WORDS	85% MATCHING TEXT	20 WORDS
<p>Three Dimensional Raised Relief Plastic Charts : Rigid PVC sheet, printed and formed in multi-colours charts available-- (a) Botany General :</p> <p>SA SED-14 Final.docx (D93662759)</p>				

81/108	SUBMITTED TEXT	21 WORDS	100% MATCHING TEXT	21 WORDS
<p>includes typical plant cell, plant meiosis, plant mitosis, Ribo-Nucleic Acid, Bacterial forms, spirogyra and Funaria- common moss in botany. (b) Botany Advance :</p> <p>SA SED-14 Final.docx (D93662759)</p>				
82/108	SUBMITTED TEXT	23 WORDS	100% MATCHING TEXT	23 WORDS
<p>depicts fertilization, T.S. dicot leaf, dicot stem, types of placentation. (c) Zoology : Vertebrate and Invertebrate : (d) Human Physiology and Human Body Systems :</p> <p>SA SED-14 Final.docx (D93662759)</p>				
83/108	SUBMITTED TEXT	24 WORDS	100% MATCHING TEXT	24 WORDS
<p>human skeleton, circulation system, heart nervous system, a section of the brain, muscles, digestive system, the ear, the nose and the eye. (e) Human Reproduction :</p> <p>SA SED-14 Final.docx (D93662759)</p>				
84/108	SUBMITTED TEXT	37 WORDS	87% MATCHING TEXT	37 WORDS
<p>Symbol Canes : Made of sections of light metal tubings, generally aluminium or its allyos, joined through the centre by means of an elastic cord. The canes fold up conveniently for carrying in the pocket or handbag. When</p> <p>SA SED-14 Final.docx (D93662759)</p>				
85/108	SUBMITTED TEXT	15 WORDS	100% MATCHING TEXT	15 WORDS
<p>fall into position. Devised for portability and not intended to be used other than as</p> <p>SA SED-14 Final.docx (D93662759)</p>				

86/108**SUBMITTED TEXT**

21 WORDS

87% MATCHING TEXT

21 WORDS

guide aid and an indication that the user is a visually impaired person. This cane is populaely known as a Brailled folding stick. (

SA SED-14 Final.docx (D93662759)**87/108****SUBMITTED TEXT**

15 WORDS

100% MATCHING TEXT

15 WORDS

A stronger version of the symbol cane and intended to be more of a mobility

SA SED-14 Final.docx (D93662759)**88/108****SUBMITTED TEXT**

86 WORDS

80% MATCHING TEXT

86 WORDS

but not a means of support. The four sections, covered with ribbed plasitc sleeving, are joined through the center by means of an elastic cord enclosed in nylon sleeving. It is fitted with an elastic loop handle and a standard nylon tip. (c) Long Canes : A wooden or aluminium stick of 85 to 90 centimeters. Three models are availabnles--■ rigied ■ two pieces and ■ four pieces. 260 The aluminium cane is generally sleeved with PVC material, having a rubber grip and a nylon tip with or without a crook.

SA SED-14 Final.docx (D93662759)**89/108****SUBMITTED TEXT**

50 WORDS

97% MATCHING TEXT

50 WORDS

Electronic Travel Appliances : An ETA is described as a device that sends out signals to sense the environment within a certain range or distance, processes the information received and furnishes. The person with relevant information about the environment. Most of these devices are based on integrated circuits and emit sound or tactile signals.

SA SED-14 Final.docx (D93662759)

90/108	SUBMITTED TEXT	25 WORDS	94% MATCHING TEXT	25 WORDS
<p>ETAs are not available and prevalent in India, it is not very necessary to give description of these devices. However for the sake of information,</p> <p>SA SED-14 Final.docx (D93662759)</p>				
91/108	SUBMITTED TEXT	32 WORDS	80% MATCHING TEXT	32 WORDS
<p>of these devices are noted here. • Lind say Russesl E-model Path Sounder • C5 Laser Cane • Ultrasonic Torch • Sonic Guide • Light Probes • Mowat Sonar Sensor • Nottingham Obstacle Sensor • Electro Cortical Prostheisi • Electro Roftalm •</p> <p>SA SED-14 Final.docx (D93662759)</p>				
92/108	SUBMITTED TEXT	39 WORDS	88% MATCHING TEXT	39 WORDS
<p>Mobility Show Cord : A plastic show card to help visually impaired persons to cross busy roads and to hail a taxi. [iv] Mini Beeper : A battery operated, hand-held electronic gadget having application in mobility, recreation, sports and obstacle location. 261</p> <p>SA SED-14 Final.docx (D93662759)</p>				
93/108	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>Kurzweil Reading Machine : A portable optical scanner that reads type- set</p> <p>SA SED-14 Final.docx (D93662759)</p>				
94/108	SUBMITTED TEXT	21 WORDS	54% MATCHING TEXT	21 WORDS
<p>type-written text and turns into speech. Its features include : (a) a large memory to provide improve processing of incoming text; (</p> <p>SA SED-14 Final.docx (D93662759)</p>				

95/108	SUBMITTED TEXT	16 WORDS	81% MATCHING TEXT	16 WORDS
	<p>textinary of these verbal languages; (e) communication interface which allows it to serve as an input</p> <p>SA SED-14 Final.docx (D93662759)</p>			
96/108	SUBMITTED TEXT	33 WORDS	94% MATCHING TEXT	33 WORDS
	<p>device with other data or text processing equipment. [iii] Optacon : It is book-sized electronic device with a movable camera, the size of a pocket knife and a tactile screen the size of a</p> <p>SA SED-14 Final.docx (D93662759)</p>			
97/108	SUBMITTED TEXT	102 WORDS	70% MATCHING TEXT	102 WORDS
	<p>left index finger feels in vibratory relief. The image the camera sees. The manufacturer claims that an experienced optacon user reads upto 90 words per minute, about half his/her Braille reading speed. [iv] Braille Computers : • Braille Window is the Braille-display for connection to all sorts of IBM compatible personal computers. • Key tone is a portable information handling, word-processor and computer acces device that takes to its user. • EHG-BW/2-PIEZO is a monitor and keyboard which provides out-put in raised dots and can be conveniently used by the visually imparied persons. • Galaxy Piezo is a special computer for the visually imparied and it gives output in embossed dots. • Galaxy</p> <p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-14-Introduction-to-Sensory-Disabilities-English.pdf</p>	<p>left index finger feels in vibratory relief the image the camera sees. The manufacturer claims that an experienced Optacon user reads up to 90 words per minute, about half his Braille reading speed. 20.1.5 Braille computers i. Braille Window: It is the Braille-display for connection to all or of IBM compatible personal computers. ii. Keytone: It is a portable information handling, word processor and computer access device that talks to its user. iii. EHG-BW/2-PIEZO: It is a monitor and key board which provides output in raised dots and can be conveniently used by the visually impaired persons. iv. Galaxy Piezo: It is a special computer for the visually impaired and it gives output in embossed dots. v. Galaxy</p>		
98/108	SUBMITTED TEXT	23 WORDS	94% MATCHING TEXT	23 WORDS
	<p>which presents a tactile image on an array of vibratory pins. The reader passes the camera over printed material with his/her right hand and his/</p> <p>SA SED-14 Final.docx (D93662759)</p>			

99/108	SUBMITTED TEXT	42 WORDS	91% MATCHING TEXT	42 WORDS
<p>Over the years, The Everest has proved to be one of the most reliable Embossers on the market. • Speech Synthesizers A speech system converts text from a computer into spoken words. It is the hardware device that does the speaking in a speech acces system. (</p>		<p>Over the years, the Everest has proved to be one of the most reliable Embossers on the market. ix. Speech Synthesizers: A speech access system converts text from a computer into spoken words. It is the hardware device that does the speaking in a speech access system. ?</p>		
<p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-14-Introduction-to-Sensory-Disabilities-English.pdf</p>				

100/108	SUBMITTED TEXT	113 WORDS	91% MATCHING TEXT	113 WORDS
<p>is a special computer for the visually impaired with speech output. 269 • Brille'n Speak is pocket size note taker. It can be used for word processing, as a calculator, as a clock and a calendar. It can store 200 pages of Braille text. • Versa-Braille II+ is recognised as a convenient Braille operating system. It can be used for editing, programming and word processing. The input is from sixkeys and output is in the form of raised dots. It is a product of Telesensory Systemot Inc. • Index Braille Index Braille is a Sweden based privately owned business with a mission devoted to development and production of Braille Embosser. The company has introduced Double-sided Braille Embosser, popularly known as "Index Everest".</p>				
<p>SA SED-14 Final.docx (D93662759)</p>				

101/108	SUBMITTED TEXT	62 WORDS	90% MATCHING TEXT	62 WORDS
<p>External device : It connects to a computer externally and comes with a speaker and a socket for head phones and can be moved around to different machines. (b) Internal device : It comes as a chip or circuits board that must be inserted inside the computer with-sockets for speakers and headphones. It can be moved around to different machines, it works faster than an external device. (</p>				
<p>SA SED-14 Final.docx (D93662759)</p>				

102/108	SUBMITTED TEXT	43 WORDS	96% MATCHING TEXT	43 WORDS
<p>based device : It is loaded as software on a compateble computer and it gives speech out through the sound system of the computer itself. The Microsoft voice is useful for reading the documents and for operating window commands with the help of multimedia kit.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
103/108	SUBMITTED TEXT	38 WORDS	92% MATCHING TEXT	38 WORDS
<p>Language Software : The Indian InSTITUTE of Technology (IIT) Chennai has developed Braille Software as well as language software which enables a visually impaired person to access computers for Braille as well as language outputs in all the Indian Languages.</p> <p>SA SED-14 Final.docx (D93662759)</p>				
104/108	SUBMITTED TEXT	35 WORDS	90% MATCHING TEXT	35 WORDS
<p>Kelley. P., & Gale. G. (1998). Towards Excellence : Effective Education for students with vision impairments, sydney : North Rock Press. □ Lowenfeld, B. (1973). Visually Handicapped child in school and society; Americal Foundation For The Blind,</p> <p>SA SED-14 Final.docx (D93662759)</p>				
105/108	SUBMITTED TEXT	19 WORDS	78% MATCHING TEXT	19 WORDS
<p>R. S. & Advani. L (1995). Perspective in Disability and Rehabilitation. New Delhi : Vikash Publishing House Pvt. Ltd. □</p> <p>R. S.; and Advani, Lal (1995): Perspectives in Disability and Rehabilitation, New Delhi: Vikas Publishing House Pvt. Ltd.,</p> <p>W http://mpbou.edu.in/slm/bedsede/secd02.pdf</p>				
106/108	SUBMITTED TEXT	18 WORDS	91% MATCHING TEXT	18 WORDS
<p>National Institute for the visually handicapped (12015) Information booklet on visual impairment in India, Dehradun, Govt. of India. □</p> <p>SA SED-14 Final.docx (D93662759)</p>				

107/108	SUBMITTED TEXT	11 WORDS	78% MATCHING TEXT	11 WORDS
	teachers of visually impaired--Sudesh Mukhopadhyay, N. K. Jangera, M.N.G. Mani, M.		Teachers of Visually Impaired – Sudesh Mukhopadhyay, N.K. Jangira, M.N.G. Mani & M.	
	W http://mpbou.edu.in/slm/bedsede/secd02.pdf			
108/108	SUBMITTED TEXT	13 WORDS	89% MATCHING TEXT	13 WORDS
	for the teachers of the visually impaired--National Institute for the visually handicapped, Dehradun. □		for the teachers of the visually handicapped – National Institute for the Visually Handicapped, Dehradun	
	W http://mpbou.edu.in/slm/bedsede/secd02.pdf			

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1 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA - B
B-8 : Introduction to Neuro Developmental Disabilities (LD, MR [ID], ASD)
A COLLABORATIVE PROGRAMME OF NETAJI SUBHAS OPEN UNIVERSITY AND REHABILITATION COUNCIL OF INDIA
2 Chairman Prof. Subha Sankar Sarkar, Vice Chancellor, Netaji Subhas Open University, Kolkata Convener Prof. Atindranath Dey, Director, School of Education, Netaji Subhas Open University, Kolkata Course Writers Sub Unit - 1 Mr. Abhedananda Panigrahi Sub Unit - 2 Mrs. Antara Choudhury Sub Unit - 3 Mrs. Swastika Dasgupta & Mr. Prabir Naskar Editor Dr. Bishnupada Nanda Processing General and Format Editing Ms. Swapna Deb & Mr. Prabir Naskar In-house Processing In-charge Ms. Swapna Deb & Mr. Samir Chakrabarti The Self Instructional Material (SIM) is prepared keeping conformity with the B.Ed.Spl. Edu.(MR/HI/VI) Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session. AREA - B CROSS DISABILITY AND INCLUSION COURSE CODE - B8 TITLE : INTRODUCTION TO NEURO DEVELOPMENTAL DISABILITIES ©
All rights reserved. No part of this work can be reproduced in any form without the written permission from the NSOU authorities. Dr. Ashit Baran Aich Registrar, (Actg.)

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA - B

B-8 : INTRODUCTION TO NEURO DEVELOPMENTAL DISABILITIES (LD, MR [ID], ASD)

6

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7 Netaji Subhas Open University AREA - B

B-8 : INTRODUCTION TO NEURO DEVELOPMENTAL DISABILITIES (LD, MR [ID], ASD) B-8 Introduction to

Neuro Developmental Disabilities UNIT - 1 : LEARNING DISABILITIES, NEEDS AND INTERVENTION 9-61

UNIT - 2 : INTELLECTUAL DISABILITIES :

NATURE, NEEDS AND 62-108 INTERVENTION UNIT - 3 : AUTISM SPECTRUM DISORDER : NATURE NEEDS AND 109-187 INTERVENTION

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9

Introduction to Neuro Developmental

Distibilities (B 8) Unit-1 Learning Disabilities, Needs and Intervention Structure : 1.1. Introduction – Definition, types and characteristic 1.1.1 Objective 1.1.2 Definitions 1.1.3 Types and characteristic 1.1 Introduction Now we often here a term Learning Disability. It is a different problem in education. We cannot identify such a children with that particular disability by his or her external behaviour. We have already meet with such types of children in our educational field. Some children cannot achieve the target in the class due to their learning disability.

History suggest that the term learning disabilities originated with and became popularized by Dr. Samuel Kirk based on his writings in the early 1960s and comments that were made at the April 6, 1963 Conference on Exploration into Problems of the Perceptually Handicapped Child. His proposed label was "enthusiastically received and helped to unite the participants into an organization known as the Association for Children with Learning Disabilities, the forerunner of today's Learning Disabilities Association" (Learner, 2000). I have used the term "learning disabilities" to describe "

a group of children who have disorders in development in language, speech, reading, and associated communication skills needed for social interaction.

In this group I do not include children who have sensory handicaps such as blindness or deafness, because we have methods of managing and training the deaf and the blind. I also exclude from this group children who have generalized mental retardation, (Kirk, 1963, p.2) During the latter part of the 1960s, there became greater awareness about 10 learning disabilities, both from the general public and Congress. In response, the U.S. Office of Education was charged with creating a federal definition for what constitute a learning disability. Samuel Krik chaired this committe. In 1986, the first annual report of the National Advisory Committe on Handicaped Children, headed by Dr. Kirk, worte : Children with special learning disabiltilities

exhibit

a disorder

in one

or more of the

basic, psychological processess involved in understanding or in using spoken or written

languages. These

may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic. They include conditions which have been referred to

as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc.

They do not include

learning

problems

which

are

due primarily

to visual hearing, or motor

handicaps, to mental retardation, emotional disturbance, or

to environmental

disadvantage. (

Special Education for Handicapped Children, 1968) By the end of 1968, "specific learning disability" (abbreviated SLD or LD) became a federally designated category of special education (U.S. Office of Education, 1968) and in 1969, the

Specific Learning Disabilities Act was enacted, Public Law 91-230. In 1975, Congress enacted P.L. 94-142, the Education for All Handicapped Children's Act. Here, the defination of a learning disability was formalized for children in special

education. Under P.L. 94-142,

a specific learning disability was defined as follow. "...

a disorder

in one

or more of the

basic

psychological processes involved in understanding or

in using

language, spoken or written,

that

may
manifest itself in
an
imperfect ability to listen, think,
speak, read, write, spell, or
do
mathematical calculations,
including conditions such as perceptual
disabilities,
brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia."

However,
learning
disabilities do
not include
learning problems that are primarily the result of visual, hearing or
motor
disabilities,
of
mental retardation,
of emotional disturbance, or of environmental, cultural or economic,
disadvantage.

The
continuance of
the P.L. 94-142 definition in federal law prompted further analysis. In the 1980s, a coalition of parent and professional
organizations, described as the National Joint Committee on Learning Disabilities (NJCLD), criticized the definition under
P.L. 94-142 for including concepts that were unclear or difficult to use identify children with learning disabilities. In
response to the criticisms, the NJCLD proposed an alternative definition.

11
Learning
disabilities is a general term that refers
to
a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking,
reading, writing, reasoning,
or
mathematical abilities.

These disorders are intrinsic to the individual
and
presumed
to be
due to central nervous system dysfunction,
and may occur across the
lifespan.

Problems in
self-regulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not by
themselves constitute a learning disability.

Although learning disabilities may occur concomitantly with other
handicapping conditions
or with extrinsic influences, they are not the direct result of those conditions or influences (NJCLD, 1994). Today, children in special education are protected under Public Law 108-446, The individuals with
Disabilities Education Improvement Act (IDEA 2004). The definition under IDEA has not changed in its criteria and
guidelines for what constitutes a learning disability. Under current federal law the following language was established.

The term "specific learning disability" means a disorder in 1 or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.

We are more conscious about this problem. Many educationist and psychologist have emphasized on learning disability. As we are in 21 st century we can confirm the education of all types of children. In this unit you are going to study about the definitions, types and characteristics, tools and areas of management of learning disability. Definition, Types and Characteristic :

As should be evident, the debate surrounding what constitutes a learning disability continues on a

strong as ever. Remember, this is a multidisciplinary field that embraces sometimes competing viewpoints as the very nature of the construct and its causes. It is perhaps best to envision LD as "a family or syndrome of disabilities affecting a wide range of academic and/or behavioural performance (Gargiulo, 2004, p. 206). In particular, regardless of the definition used, children with learning disabilities have intellectual functioning within the normal range, there is a 12 discrepancy between potential and achievement, the learning disability is not due to other causes, there is difficulty in learning, and there is a presumption of central nervous system dysfunction. 1.1.1.

Objectives Upon completion of these subunits, you

will be able to : Define Learning Disability Describe the types of Learning Disability Explain the characteristics of Learning Disability. 1.1.2.

Definitions Learning Disability is an important meaningful word. The person who has learning disability may have rigid personality, cognitive ability and development characteristic also. The perceptual problem and lack of communication skill are only seen in this kind of disability. This kind of disability is not seen externally as such as other disabilities. So this type of disability is called Hidden Disorder (Anderson 1970). Therefore we can say that if a child cannot adjust with his curriculum due to other disabilities we can't say that the child is with learning disability. Because it is a different type of disability and a child cannot able to learn properly due to other causes of disability. But if a child has the particular cause of learning disability the child categorized as the learning disabled. Dr. Kirk (1963) said in a conference at Chicago – "

A learning disability refers

to retardation disorder, or delayed development in one or more of the processes of speech, language, reading, writing, arithmetic,

or other school subject resulting from a psychological handicap caused by a possible cerebral dysfunction and/or emotional or behavioural disturbances.

It is not the result of mental retardation, sensory deprivation, or cultural and Instructional factors.

Kirk

also said that LD refer to a retardation, disorder of delayed development in one are more of the processes of special language, reading, spelling, written or arithmetic resulting from a possible cerebral dysfunction and emotional or behavioural disturbance. U.S. Office of Education 1977 definition. By the early 1970s NACHC definition of 1968 had become the most popular one among state departments of education 13 (Mercer, Forgnone, & Wolking, 1976). This no doubt figured into the USOE's virtual adoption of the NACHC definition for use in the implementation of P.L. 94-142 :

The term "specific learning disability" means a disorder in one or more of the psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, speak, read, write, spell, or to do mathematical calculations.

The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. The term does not include children who have learning disabilities which are primarily the result of visual, hearing, or motor handicaps, or mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage. (

USOE, 1977, p. 65083). Early during this period, several new and revised definitions surfaced : the ACLD (now the LDA) definition of 1986, the Interagency Committee on Learning Disabilities (ICLD) definition of 1987, and the NJCLD revised definition of 1988. In the meantime, the definition in federal law covering learning disabilities remained virtually unchanged. ACLD / LDA definition (1986). The LDA definition is distinctive for its emphasis on the lifelong nature of learning disabilities, its lack of an exclusion clause, and its reference to adaptive behaviour : Specific Learning Disabilities is a chronic condition of presumed neurological origin which selectively interferes with the development, intergration, and/or demonstration of verbal and/or nonverbal abilities. Specific Learning Disabilities exists as a distinct handicapping condition and varies in its manifestations and in degree of severity. Throughout life, the condition can affect selfsteem, education, vocation, socialization, and/or daily living activities. (ACLD, 1986, p. 15). ICLD definition (1987). The ICLD, consisting of representatives from several federal agencies, was charged by Congress to report on several issues. Although Congress did not direct them to do so, they did formulate a definition. Their definition was essentially the same one as the 1981 NJCLD definition, except for two changes. It mentioned deficits in social skills as a type of learning disability, and it added attention deficit disorder as a potential co morbid condition with learning disabilities :

Learning disabilities is a generic term that refers to

a
heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning,
or mathematical
abilities,
or of social skills.

These disorders are intrinsic to the individual and presumed to be
due to central
14 nervous system dysfunction.

Even though

a
learning disability may occur concomitantly
with other handicapping conditions (e.g., sensory impairment, mental retardation,
social and emotional disturbance),
with socioenvironmental influences (e.g., cultural differences, insufficient
or inappropriate instruction,
psychogenic factors), and especially with attention deficit disorder, all of which may cause learning problems,

a
learning disability
is not the direct result of those conditions or influences. (ICLD, 1987, p. 222) NJCLD revised definition (1988). The NJCLD revised definition was in response to the LDA definition's emphasis on the lifelong nature of learning disabilities and the ICLD's listing of social skills deficits as a type of learning disability. The NJCLD revised definition agreed with the former but disagreed with the latter :

Learning disabilities is a general term that refers to

a
heterogeneous group of disorders manifested by
significant difficulties in the acquisition and use of listening, speaking,
reading, writing, reasoning,
or
mathematical abilities.

These disorders are intrinsic to the individual,
presumed to be
due to central nervous system dysfunction,
and may occur across the

life span.

Problems

of selfregulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability.

Although learning disabilities may occur concomitantly with other handicapping conditions (for example, sensory impairment, mental retardation, serious emotional disturbance) or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences. (

NJCLD, 1988, p. 1). Individuals with Disabilities Education Act (IDEA)

Reauthorized definition (1997). The definition in federal law has remained virtually unchanged since the one included in P.L. 94-142 :

A.
IN GENERAL. --

The term " specific learning disability" means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken, or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.

B. DISORDERS INCLUDED.--

Such term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. C. DISORDERS NOT INCLUDED.--

Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic

disadvantage. (

IDEA

Amendments of 1997, Sec. 602(26), p. 13)

15 Continuation or Research Strands of the Learning Disabilities Research Institutes As we noted earlier, Keogh (1983) noted that four of the learning disabilities research institutes funded by the USOE in the late 1970s and early 1980s (Columbia University, University of Illinois at Chicago, University of Kansas, University of Minnesota, and University of Virginia) approached learning disabilities as a strategic, information processing problem and developed their intervention within this framework. She pointed out that the institutes' data on outcomes were very promising. McKinney (1983) reported that the institutes' intervention research demonstrated that students with learning disabilities are capable of learning task-appropriate strategies that enable them to succeed in academic learning and adaptive functioning. Although it is conjecture, it is easy to postulate that the institutes' rigorous research standards and encouraging findings provided a springboard for future research. Columbia University. The Columbia institute's research in reading most likely helped facilitate the proliferation of reading intervention research that has occurred in the field of learning disabilities. For example, Lyon (1988) reported that the National Institutes of Health (NIH) has received more than \$25 million to study how students with and without disabilities learn to read. Today, findings from the NIH studies are having a significant impact on the reading instruction provided youngsters with learning disabilities. Judith Birch of Columbia University recently teamed with numerous NIH researchers to develop a very informative video series that present research-based practices in teaching reading to students with learning disabilities. According to public law 94-142, section 602-15 (April 13, 1978) "

Children with specific learning disabilities" means those children who have a disorder

in one

or more of the basic psychological processes involved in understanding

of

using language, spoken or written which disorder may

manifest itself in

imperfect ability to listen think, speak, read, write, spell or do mathematical calculation

such disorders include

such conditions

as perceptual handicaps brain injury, minimal brain dysfunction, dyslexia and developmental aphasia.

Those children who suffer from learning problem due to visual hearing or any physical disability they are not included under this section. The children who also suffer from mental retardation, emotional disorder or any environmental disorder are not included under LD. This definition has two dimensions.

16 1. The children with learning disabilities face the problems in hearing, thinking, speaking, reading, writing, spelling, mathematical calculations etc. 2. They have no such problem which them physical, mental or behavioural handicapped.

Public law : 94-142 has accepted above definition Federal Registrar (1977) has given importance on four dimension of this definition. 1. Academic difficulties : The children with learning disabilities suffer from some problem in education and mathematical calculations also than the other children of some age. 2. Discrepancy between potential and achievement : The children with learning disabilities have poor educational achievement rather than their cognitive capacity this is also called aptitude achievement discrepancy. 3. Exclusion of other factors : If a child faces learning problem due to visual disability, hearing disability or speech and language disorder or mental retardation, any physical problem, emotional disorder or any environmental disorder we can't say that the child is learning disabled. 4.

Neurological disorder : A child can suffer from some learning problems due to neurological disability. We cannot categorize him/her under

learning disability. National Joint Committee (1991) has given a definition "

Learning disabilities are

a generic term that refer to
a heterogeneous group of disorders
that are
manifested by significant difficulties
in the acquisition and use of writing, reasoning or mathematical abilities.
These disorders are intrinsic to the individual
and
are presumed
to be
due to central nervous system dysfunctions.
Even though
a
learning disability may occur
with other
handicapped
conditions (e.g. sensory impairment, mental retardation, social and emotional disturbances,
insufficient or inappropriate instruction, psychological factors). It
is not the
real result of those conditions or
influences."
According to the
definition of National Joint Committee (1991) 'Central nervous system dysfunction refers to there is no damage in the
brain or in the system of
17 perception of the child. But it has some different activities in their brain rather than other general children. In America,
office of Education (1997) has given a
definition about
learning disability."
A disorder
in one
or more of the
basic
psychological processes involved in understanding or in using language, spoken or written
which may manifest itself
in
on
imperfect ability to listen; think, speak, read, write, spell or
do
mathematical calculation.
The
term includes such
conditions as perceptual handicaps brain injury, minimum brain dysfunction, dyslexia and developmental aphasia.
The term does not include
children who have
learning problem which
are
the result of visual, hearing or motor handicaps, mental
retardation,
and emotional disturbance or of environmental, cultural or economic disadvantage.
Therefore, according to we can say that learning disability which is a problem is related with one or more psychological
process of the children in about the use of oral and written language and understanding the meaning. This kind of
disability is

speaking, reading, writing, spelling, or mathematical calculations. This disability is related with the perceptual conditions, brain injury, minimal brain dysfunction, dyslexia, developmental problems. But who have visual, hearing or motor disability, mental retardation, emotional disorder or social and economical barrier are not included under the term--learning disability. 1.1.3 Types and characteristic The term "

learning disability" is an umbrella term describing of more specific learning disabilities.

Definitions of these problems are not standardized; however, we do know that learning disabilities are due to genetic and/or neurobiological factors or injury that alters brain functioning in a manner which affects one or more processes related to learning. These disorders are not due primarily to hearing and/ or vision problems, socio-economic factors, cultural or linguistic differences, lack of motivation or ineffectual teaching, although these factors may further complicate the challenges faced by individuals with learning disabilities. Learning disabilities may co-exist with various conditions including attention, behavioural and emotional disorders, sensory impairments or other medical conditions. The experts classify the learning disabilities on the basis of features surman of Rizzo suggest three type of learning disabilities.

18 1. Minimal Brain Dysfunction (MBD) : The doctors think that MBD is a special type of learning disability. The damage in brain of the child causes this type of disability. The child who has damage in his/her brain may show some behavioural problems such as per concentration irritability, slowness of thought, forgetfulness, impulsive behaviour, easily included fatigue etc. Kurt Goldstein (1942) noticed that the persons who got injury in their brain in the First World War lost their capacity of abstract thought. Thereafter Strauss & Kephart (1955), Strauss & Lehtinen (1947), Werner & Strauss (1940) et. Al. Decided from their experiments that some behavioural approached are related with the damage of brain. These are very high activity level, poor attentionspan, distractibility, impulsive behaviour and emotional instability etc. These behaviour are known as strauss are know as strauss syndrome or Brain Injured syndrome. Strauss did not use the tern learning disability. He thought that through the above problems were seen among the children but no damage of the brain was proved. So these types of children are called 'Strauss Syndrome Children or 'Minimal Brain Dysfunction children.' Clements & Peters (1962) indicated ten features of children with MBT. These are hyperactivity, specific learning deficits in the presence of normal intelligence, perceptual motor deficits, impulsivity, emotional, short attention span, coordination deficits, distractibility, unclear neurological sign; frequently abnormal

E.E.G.S etc. 2. Perceptual motor disabilities : Perception is a process by which any living being make him conscious through his sense organs about his environment. Perceptual motor mence relation and balance in between visual perception and activity based behaviour. Perceptual--motor process is very important motor process is very important for classroom learning. Kephart (1960) suggested that the perceptual motor problem was a cause of learning disability. He thought that the problem started in development disorder. There after the researches who work with the problems of learning disability increase their thought about perceptual and perceptual motor development. Werner & Strauss stated that if any damage accouterd in central nervous system of the child the perceptual motor development was not 19 balanced. Many reserachers have followed him. They agree with themselves that a relation is present in between perceptual motor ability and academic achievement. Barsch (1965), Getman (1065), Frastig (1964) et.,al. indicate that the perceptual motor disability is an another type of learning disability. 3. Psycholinguistic or language disability : Language disability is also accepted as a type of learning disability. The utility of language is very important for learning. The language disability has three types. Inner Language Disorder Receptive Language Disorder Expressive Language Disorder Academic Difficulties : American National Institute of Health has classified Academic Learning Disability into three types : Dyslexia -- Difficulty reading Dysgraphia -- Difficulty writing Dyscalculia -- Difficulty doing math. What is dyslexia ? Children who have an average or above IQ and are reading 1 1/2 grades or more below grade level may be dyslexic. True dyslexia affects about 3 to 6 percent of the population yet in some parts of the country up to 50% of the students are not reading at grade level. This means that the reason for most children not reading at grade level is ineffective reading instruction. The dyslexic child often suffers from having a specific learning disability as well as being exposed to ineffective instruction. Children may have dyslexia or a learning if they have one or more of the following symptoms : Letter or word reversals when reading. (Such as was/saw, b/d, p/q). Letter or word reversals when writing.

20 Difficulty repeating what is said to them. Poor handwriting or printing ability. Poor drawing ability. Reversing letters or words when spelling words that are presented orally. Difficulty comprehending written or spoken directions. Difficulty with right--left directionality. Difficulty understanding or remembering what is said to them. Difficulty understanding or remembering what they have just read. Difficulty putting their thoughts on paper. Children with dyslexia do not exhibit these symptoms due to poor vision or hearing but because of brain dysfunction. The eye and ears are working properly but the lower centers of the brain scramble the images or sounds before they reach the higher (more intelligent) centers of the brain. This causes confusion as well as frustration for the learner. When a child is having difficulty learning, a comprehensive neurodevelopment exam is important. This includes testing of hearing, vision, neurological development, coordination, visual perception, auditory perception, intelligence, and academic achievement. Often, perception problems can be helped with simple exercises which either help to improve a specific problem or teach techniques to compensate for a problem. These often can be done at home. In a few cases, a referral to an educational or speech therapist may be helpful. What causes dyslexia and reading problems? The main reasons for reading problems are: Ineffective reading instruction Auditory perception difficulties Language processing difficulties. Over 180 research studies to date have proven that phonics is the BEST WAY

21 to teach reading to all students. They also have shown that phonics is the ONLY WAY to teach reading to students with dyslexia and other learning disabilities. Unfortunately, 80% of our nations schools do not use an intensified phonics approach for reading instruction. They either use the whole word (see & say) approach or a cursory use of phonics along with the whole word method. While most people can learn to read using the whole word approach, it is not the best way to learn. It teaches through memorization of word pictures and guessing. Unlike Chinese or Japanese which are picture languages, the English language is a phonetic language. With the exception of the United States which dropped phonics in the 1930's, all other countries that have a phonetic language, teach reading through phonics. There are only 44 sounds while there are about 1 million words in English. These facts readily explain why having to memorize 44 sounds as opposed to memorizing hundreds of thousands of words is the most efficient way to learn to read. Reading and writing is simply "talking on paper." Children learn to talk by imitating sounds and then combining the sounds to form words. The brain is programmed to learn language in this fashion. Therefore, the most efficient way to learn to read is through phonics because it teaches children to read the same way they learned to talk. Children and adults who do not learn to read through an intensive phonics program often have one or more of the following symptoms: Below grade level reading achievement Slow reading Poor comprehension Fatigue after reading only for a short while Poor spelling skills Lack of enjoyment from reading Some children have auditory discrimination problems. This may have been the result of having chronic ear infections when they were young. Others may be born with this learning disability. Correction involves educational exercises to train the brain in discrimination and to over teach the formation of the sounds used speaking and reading.

22 Another group of children have visual perception problems. They may actually reverse letters or words. They have difficulty matching the word image on the page with a previously stored image in their brain. Exercises that train the brain to "see" more accurately may help but instruction with phonics is the best approach to overcome this problem. Language development problems can contribute to poor reading and listening comprehension along with difficulty in verbal and written expression. Learning appropriate word attack skills through phonics along with special help in receptive and/or expressive language skills improves this type of learning disability. Helping Children with Reversals: It is not unusual for children to reverse letters and words when they read or write up to the age of 6 or 7. This is due to immaturity in brain development. Children who have problems with reversals usually also have problems with left-right directionality. Below are some exercises that have been found to help improve directionality and reduce reversals. Symptoms: Spatial confusion--unable to differentiate left-right, on self, other, or paper. Confuses letter pairs as b-d, m-w, p-q. Confuses words such as was-saw, on-no. Remediation: 1. Simplify tasks so that only one new discrimination is made at a time. 2. Make each simple discrimination automatic before the next one is introduced. Overteach 'b', then overteach 'd', before presenting both together. 3. Each discrimination that causes repeated errors should be worked with by itself until the problem is overcome. 4. Trace, then write, the confused letter or word and pronounce it as written. 5. Use short frequent practice periods. Lengthen the time between practice sessions as the material is retained. 6. If the child is confused about his own left/right, use a ring, watch, ribbon or band on his writing arm. Colour cue side of desk or paper or word as a starting place. 7. Gradually increase the difficulty of material to discriminate. If errors are made, go back to simple practice. 8. Suggestions for Improving Laterality:

23 Trace hands on paper. Label "right", "left". Play "Simon Syas" – "Touch right foot; raise left hand," etc. Child follows the directions in drawing lines up, down, right or left, etc. and in touching parts of body. Child connects dots on blackboard to make a completed pattern; repeats process on paper. Child shows hands in sequence pattern : left, right, left, right, etc. Use marching as a variation. Child names objects on right and on left. He moves to different parts of the room and repeats. Arrange story pictures in sequence, left to right. Use lined paper for writing. Use weighted wristband to designate right or left hand. Tracing activities, left to right. Mark left with small "x." Use colour tracing to repeat. When beginning writing the lessons teach the child to begin as close to left edge of sheet as possible (then can move only toward the right). In reading, use markers, "windows," and other left-to-right directional aids. What is dysgraphia ? Dysgraphia means difficulty with handwriting. There are several different kinds of dysgraphia. Some people with dysgraphia have handwriting that is often illegible and shows irregular and inconsistent letter formations. Others write legibly, but very slowly and/or very small. When these individuals revert to printing, as they often do, their writing is often a random mixture of upper and lower case letters. In all cases of dysgraphia, writing requires inordinate amounts of energy, stamina and time. Dysgraphia can interfere with a student's ability to express ideas. Expressive writing requires a student to synchronize many mental functions at once : organization, memory, attention, motor skill, and various aspects of language ability. Automatic accurate handwriting is the foundation for his juggling act. In the complexity of remembering where to put the pencil and how to form each letter, a dysgraphia student forgets what he or she meant to express. Dysgraphia can cause low classroom productivity, incomplete homework assignments, and difficulty in focusing attention.

24 Emotional factors arising from dysgraphia often exacerbate matters. At an early age, these students are asked to forego recess to finish copying material from the board, and are likely to be sent home at the end of the day with a sheaf of unfinished papers to be completed. They are asked to recopy their work but the second attempt is often no better than the first. Because they are often bright and good at reading, their failure to produce acceptable work is blamed on laziness or carelessness. The resulting anger and frustration can prevent their ever reaching their true potential. What cause dysgraphia ? A few people with dysgraphia lack only the fine-motor coordination to produce legible handwriting, but some may have a physical tremor that interferes with writing. In most cases, however, several brain systems interact to produce dysgraphia. Some experts believe that dysgraphia involves a dysfunction in the interaction between the two main brain systems that allows a person to translate mental into written language (phoneme-to-grapheme translation, i.e. Sound to symbol, and lexicon-to-grapheme translation, i.e. mental to written word). Other studies have shown that split attention, memory load, and familiarity of graphic material affect writing ability. Typically, a person with illegible handwriting has a combination of fine-motor difficulty, inability to revisualize letters, and inability to remember the motor patterns of letter forms. Who is qualified to diagnose dysgraphia ? Dysgraphia cannot be diagnosed solely by looking at a handwriting sample. A qualified clinician must directly test the individual. Such a test includes writing self-generated sentences and paragraphs and copying age-appropriate text. The examiner assesses not only the finished product, but also the process, including posture, pencil grip, fatigue, cramping or tremor of the writing hand, eyedness and handedness, and other factors. The examiner may assess fine-motor speed with finger-tapping and wrist turning. What is the treatment for dysgraphia ? Prevention, remediation and accommodation are all important elements in the treatment of dysgraphia. Many problems can be prevented by early training. Young children in kindergarten and grade one should learn to form letters correctly; kinesthetic memory is powerful and incorrect habits are very difficult to eradicate. Muscle training and over-learning good techniques are both critical for the

25 remediation of dysgraphia. Specifically designed exercises are needed to increase strength and dexterity. A specialist can recommend the most appropriate plan of exercises. For all students, kinesthetic writing, that is writing with eyes closed or averted, is a powerful reinforce. Work needs always to begin with the formation of individual letters written in isolation. Alphabets need to be practiced daily, often for months. Finally, individuals can benefit from a variety of modifications and accommodations. One effective method is to teach the use of a word processor, bypassing the complex motor demands of handwriting. Many students may find learning the keyboard by the alphabet method easier than beginning with the home keys. For many, touch typing offers a whole new opportunity to learn to spell through a different kinesthetic mode. Students should also experiment with different writing tools; some people with dysgraphia may find pencil grips helpful. Other bypass methods include allowing a student to answer questions orally or into a tape recorder instead of writing, modifying written assignments so that less writing is required, and allowing extended time to complete tests and assignments. Copying from the board is an especially difficult task. Teachers need to provide notes. Photocopying the notes of another student is one possibility. Providing an outline, with spaces left for the student to fill in information is another. Writing on a slightly, inclined plane may be helpful.

Dyscalculia—Difficulty doing math :
Dyscalculia is difficulty in learning or comprehending arithmetic, such as difficulty in understanding numbers, learning how to manipulate numbers, and learning facts in mathematics. It is generally seen as a specific developmental disorder. Dyscalculia can occur in people from across the whole IQ range, often, but not always, involving difficulties with time, measurement, and spatial reasoning. Estimates of the prevalence of dyscalculia range between 3 and 6% of the population. A quarter of children with dyscalculia have ADHD. Mathematical disabilities can occur as the result of some types of brain injury, in which case the proper term is acalculia, to distinguish it from dyscalculia which is of innate, genetic or developmental origin. Dyscalculia has been associated with female children who have Turner syndrome. Symptoms : The following are seen in primary school, and well established by educational researchers :

26 1. Delay in counting. Five to seven year-old dyscalculic children show less understanding of basic counting principles.
2. Delay in using counting strategies for addition. Dyscalculic children tend to keep using inefficient strategies for calculating addition facts longer than their peers.
3. Difficulties in memorizing arithmetic facts. Dyscalculic children have great difficulty in memorizing simple addition, subtraction and multiplication facts (eg. $5 + 4 = 9$), and this difficulty persists up to at least the age of thirteen. [6-10]
4. Lack of "number sense". Dyscalculic children may have a fundamental difficulty in understanding quantity. They are slower at even very simple quantity tasks such as comparing two numbers (which is bigger, 7 or 9?), and saying how many there are for groups of 1-3 objects. The brain areas which appear to be affected in dyscalculia are areas which are specialised to represent quantity.
5. Less automatic processing of written numbers. In most of us, reading the symbol "7" immediately causes our sense of quantity to be assessed. In dyscalculic individuals this access appears to be slower and more effortful. Thus dyscalculic children may have difficulty in linking written or spoken numbers to the idea of quantity. Dyscalculia involves frequent difficulties with everyday arithmetic tasks like the following :
Difficulty reading analog clocks
Difficulty stating which of two numbers is larger
Inability to comprehend financial planning or budgeting, sometimes even at a basic level, for example, estimating the cost of the items in a shopping basket or balancing a checkbook
Difficulty with multiplication-tables, and subtraction-tables, addition tables, division tables, mental arithmetic, etc.
Difficulty with conceptualizing time and judging the passing of time.
May be chronically late or early.

27 Problems with differentiating between left and right
Inability to visualize mentally
Difficulty reading musical notation
Difficulty with choreographed dance steps
Difficulty working backwards in time, (e.g. What time to leave if needing to be somewhere at 'X' time)
Difficulty comprehending things relating to occurrences in different time zones
Difficulty navigating or mentally "turning" the map to face the current direction rather than the common North = Top usage.
Having particular
difficulty mentally estimating the measurement of an object or distance (e.g., whether something is 10 or 20 feet (3 or 6 meters) away).
Inability to grasp and remember mathematical concepts, rules, formulae, and sequences
Inability to concentrate on mentally intensive tasks
Mistaken recollection of names. Poor name/face retrieval. May substitute names beginning with same letter.

28 1.2 Tools and areas of Assessment Structure : 1.2.1 Identification and Assessment : 1.2.2 Tools 1.2.3 Assessment Strategies Introduction : According to the discrepancy model, L.D., students have discrepancy between their academic performance and intellectual ability. "

The child does not achieve adequately for the child's age or meet state-approved grade-level standards in one or more of the following areas (

i) oral expression, (ii) listening cooperation, (iii), (iv) basic reading & writing skills, (v) reading comprehension, (vi) mathematics calculation

or (vii) mathematical problem solving; or that the child does not make sufficient progress to meet state or age approved grade-level standards." Objectives : To learn Identification and Assessment of Learning disability Students 1.2.1

Identification and Assessment : For identification of learning disability, educational assessment is essential. Educational assessment is multi-dimensional process that involves much more than test administration. "Assessment is the process of collecting data for the purpose of making about students (Satvia & Ysseldyke, 1995). McLoughlin and Lewis (1994) discuss five primary purpose of educational assessment : (a) Screening to locate who may have learning difficulties. (b) Determining eligibility i.e., collecting data that enable diagnosticians to identify a student as having learning difficulty. (c) Planning a program for placement and specific interventions. (d) Monitoring students progress through periodic data assessment.

29 (e) Evaluating a programme annually in remediation of the learning practices. In USA, Public Law : 94-142 (November 1975) ensures that all students with disabilities receive a free, appropriate public education for which assessment must be done in non-discriminatory or unbiased manner. Therefore, PL : 94-142 (1975) established a set of procedures to protest against inappropriate assessment and placement practice. 1.2.2 Tools For learning disabled student we may use some of tools for the assessment i.e. Reading Achievement – Swarup Mehata. NIVANS BATTERY TEST Visual Motor Perceptual Measure (Gestalt Test) Screening Check – List of LD Auditory Skill Test – Woodcock Psycho Educational Battery – Woodcock & Johnson. 1.2.3 Assessment Strategies : Assessment learning disabilities requires that we assess an individual student's academic and social learning. However, besides finding out what a student knows or can do, we also must have a basis for comparing the student's performance to what we assume is normal or typical for students similar in age, gender, cultural group, intelligence, and opportunities to learn. The same strategies are used to assess learning disabilities and all students' learning, but particular attention is paid in the former to low performance in specific areas differs from what the student's other characteristics lead us to expect (Hallahan, Kauffman & Lloyd, 1999). Various assessment strategies include : (a) Neuro-Psychological assessment – focuses on how brain function affects learning (b) Contextual assessments which includes : (i) Interviews with the student and important others.

30 (ii) Observations of the student in the classroom and other place in school. (iii) Error analysis to discover predictable mistakes. (c) Standardized testing, which includes : (i) Norm referenced tests of cognitive ability and achievement – compare the student to a large normative group. (ii) Criterion-referenced tests – what specific standards of performance the student has reached. (iii) Non-referenced tests – may reveal how the students approach problems. (d) Teacher-made tests – cover material presented in class. (e) Curriculum-based assessment – systematic and frequent sampling of the student's performance on the instructional tasks in the daily curriculum. (f) Behavioural assessment – observation and recording of specific target behaviours. (g) Interactive assessment – observation of the student's response to instruction during testing. (h) Authentic assessment, which include : (i) Performance assessment – samples of what the student can do following might be used for performance assessment. ? Constructed-response items, in which the student must offer a response rather than choose from alternatives ? Essays, letters, instructions, speeches or oral response to questions ? Experiments and their results or reports ? Exhibitions and other performances (ii) Portfolio assessment – collections of student work over a period of time.

31 1.3 Strategies for reading, writing and maths Structure 1.3.1 Introduction 1.3.2 Objectives 1.3.3 Reading strategies 1.3.4 Strategies for writing 1.3.5 Strategies for mathematics 1.3.1 Introduction The strategy is method that the teacher can use to help the students to complete a given task, or a way for the student to think about the task is explained. Therefore, such strategies of teaching are needed that help a learner with learning disabilities to acquire new information to solve problems and to transfer learning to related situations. Here are the six characteristics of effective teaching strategies (Ibid, p. 148- 149) (a) The strategy takes account of how the student is currently thinking about the task. (b) The strategy provides for both the action of the teacher and the action of the student. (c) The strategy encourages generalization and transfer. (d) The strategy matches the highest level of thinking which the student is capable of. (e) The strategy generated through teacher student interaction. Therefore, the teachers must know how the student is currently thinking to stop providing misdirected instruction. So the teacher will carefully understand students mental structures, what the students need to learn, imagine the steps in between, generate disequilibrium, teachers switches roles to move to new step in the teaching process, and playing with the new concept to stabilize the new structure and transfer likely.

32 1.3.2 Objective : To learn strategy of reading for learning Disability students To learn strategy of writing for Learning Disability students To learn strategy of mathematics for Learning Disability students 1.3.3 Reading Strategies : Reading involves skill, it involves thinking and affects the entire personality of the reader. It makes a man perfect. Reading means reading with comprehension and with logical thinking. It is the key to the wealth of experience. It includes learning, reflection, judgement, analysis and synthesis, problem solving behaviour, inference and organization, comparison of data, or what is being read (Thronkike) Some

of the following suggestions and strategies may help children who are experiencing problems with decoding, comprehension, or reading retention.

Many of those listed are accommodations that work around a child's differences by offering alternative approaches at home and

at school. Look for those that you think might work best and, when applicable,

talk to your child's teacher about using some of

them in class.

Play word games. Word games and puzzles are fun and also build vocabulary and word understanding. Try crossword puzzles, word bingo, etc. Read every day. Encourage children to read directions, labels and signs in the classroom, at home, in the car, and at stores or shops, and have them take turns reading aloud with a classmate, parent, or sibling.

Discuss in class or at home what you are reading. Model reading as an enjoyable activity. You might informally discuss what you are reading with your child or let

him or

her see family members or teachers enjoying reading. Have DEAR time several times a week where everyone "Drops Everything And Reads" for 20 minutes. Put learning to use. Help children remember by having them explain, discuss, or apply information they have just read, letting them "teach" you facts or ideas they have learned from their

33 reading, or encouraging them to act out characters from their reading selections. Listen to books. Child may benefit from listening to his or her textbooks and trade books on

tape or

by using assistive technologies like screen readers. Read to child every night. Read novel above his or her reading level to stimulate and enrich language, creativity, and interest. Ask structured questions and encourage the child to predict

multiple endings to each chapter. Engage children's senses while learning. Children with learning disabilities learn best when they use many of their

senses to

get information. Multisensory instruction allows the child to see, hear, touch,

and act

our words. For example, to learn letters children may read the printed letter, say the letter name, shape the letter out of clay, trace the letter onto paper, and

form their bodies into the shape of the letter. Remediation in Reading : Difficulties with reading fluency are nearly universal among individuals with learning disabilities in reading. Reading fluency is the ability to read text not just accurately, but also and effortlessly. Fluency is characterized by appropriate intonation and expression during oral reading, as well as by a high degree of accuracy and speed in recognizing individual words in the text. Accurate word decoding is necessary, though not sufficient, for fluent reading. Thus, a student who reads quickly, but with many decoding errors or substitutions of words, is not "fluent." Reading fluency is important for at least three reasons. First, if students need to put effort into reading individual words, they tend to lose comprehension. Second, students with poor fluency often experience reading as laborious and difficult, so they lose motivation to read. Lack of motivation to read results in less practice, further compounding the difficulties of struggling readers. And third, as they advance in school, students with poor fluency have difficulty keeping up with the high volume of reading required for academic success beyond the elementary grades. Some following remedial recommendation for reading disorder. A. Errors in reading 1. Omissions : Omits letter. eg, Belt & Bet or whole words when reading. Remedy: Teach him to scan the complete word. 2. Additions and insertions : eg., play & played or care & careful. Remedy : Help to him to understand the context word, to comprehend the meaning of the what he is reading, to identify the word quickly; in choral reading and reading with a taped reading. 3. Substitutions : Substitute words which look the same. eg., house & home, guess & guest, us & biscuit. Remedy : Use flash cards, choral reading and rhyming. 4. Repetition : Repeating words. Remedy : Silent reading before loud reading, use phrase cards, develop stroke of sight words. 5. Reversals : Twist symbols like p&q, b&d, was&saw. Remedy : Establish the concepts of right and left, teach them to distinguish between letters like, P,p,q,h,m,r,e,a,d,q,f and use of colours. 6. Word by word Reading : Loses his place of reading, using no intonation, expression, punctuation, pausing. Remedy : Increase the pace of reading by moving a piece of paper, read along with the child in a faster pace, use flash card. 7. Sound Blending : Cat & Kat. Remedy : Meaningful word patterns and words in context. B. Teaching word identification : Letter with similar configurations, eg., h-n, i- j, v-w, m-n, -d and pair words, lap-lip, bat-dad, tip-tin, house-horse. C. Teach phonics : the (the, thin), ph (Phone, phantom) etc. D. Teaching words meaning. E. Comprehension skills. Among students with reading disabilities, two patterns of difficulties are especially common. In the first pattern, a student has difficulty reading words accurately and also reads in a slow, labored fashion. In the second pattern, a student may have achieved reasonably accurate word decoding, especially after remediation in phonemic awareness and phonics, but still reads very slowly relative to other students his or her age. Fluency deficits in individuals with reading disabilities may be linked to several underlying factors. One especially important factor involves a cumulative lack of exposure to printed words. Struggling readers receive much less exposure to words

35 (e.g., through independent reading both in and out of school) than do skilled readers. If struggling readers' difficulties are not remediated early, this cumulative deficit in exposure to words may be extremely difficult to overcome. In addition, some scientific investigators have linked problems in developing reading fluency to underlying deficits in naming speed, or the speed with which children can retrieve the names of familiar items, such as letters or numbers. Other researchers view these difficulties as reflecting a single underlying phonological deficit, the core deficit in most individuals with reading disabilities. The use of fluency measures in early identification : Measures involving fluency can be very useful in identifying at-risk readers in the early elementary grades. Depending on the age of the children, these measures may involve identifying letters, real words or nonsense (made-up) words out of context, or reading grade-appropriate passages. The measures are timed and the child's score is simply the number of letters or words read correctly per minute. Children must be tested individually because the measures involve oral reading; however, typically these measures are easy to administer, take only a few minutes of time, require only minimal training of teachers, and are excellent predictors of children's risk status. Thus, fluency measures can be used in general education settings to monitor the progress of all children and to identify early those who are in need of additional help. Early identification and appropriate intervention (which may or may not include special education) can help to prevent the cumulative deficits which make it so difficult for older struggling readers to catch up to their age peers. Instruction and remediation in fluency : Once serious fluency problems have developed, they can be resistant to remediation. However, several approaches have shown promise for addressing fluency difficulties. An especially helpful technique involves repeated oral reading of text under timed conditions. In this technique, the teacher selects an appropriate level passage—one that is not too difficult—for a child to read aloud repeatedly. The child rereads the passage until he or she reaches a predetermined criterion for accuracy and rate, then moves on to another, more difficult passage. A somewhat similar approach, but one that does not necessarily use timing, involves having children reread familiar books aloud several times, with appropriate guidance and feedback from the teacher. Other approaches to developing reading fluency include the use of timed speed drill on individual words (e.g., common sight words), readers' theatre, paired or partner reading, and encouraging independent reading (e.g., by making books available to children that are interesting and at an appropriate level of difficulty). Teaching basic phonics and skills for decoding multisyllabic words, such as syllabication strategies and structural analysis, is essential for students whose reading is not accurate. Without a foundation of accurate decoding, students cannot become fluent. However, by itself, phonics instruction will not meet students' needs for building fluency. Rather, fluency must be directly addressed, through the kinds of approaches discussed above, as part of a comprehensive program of reading instruction.

1.3.4 Strategies for writing : Introduction

Writing is both a social and a cognitive process. In the world outside the classroom, people write to communicate with an audience, drawing on their knowledge of content and writing, strategies for planning and revising, and basic writing skills. Writing development and disabilities in terms of five components: the social context for writing the writer's knowledge planning processes text production evaluation and revision self-regulation It will outline components of effective writing instruction, to help parents assess the quality of instruction in their child's classroom. The goals of good writing instruction for students with disabilities are the same as those for all students. All students need to develop their knowledge about the purposes and forms of writing, basic writing skills, strategies for planning and evaluating their work, and motivation. However, struggling writers need more support and more intensive, explicit instruction in skills and strategies. A high-quality writing program will provide a balance between opportunities for children to engage in writing that is meaningful to them, and to receive explicit

37 instruction in the skills and strategies they need to become proficient writers. Development of the self-regulation strategies and motivation needed for independent writing are also important. The writing classroom should provide : a context for regular, meaningful writing instruction in handwriting, spelling, and sentence formation, as needed instruction in strategies for planning, revising, and self-regulation during the writing process attention to development of motivation for writing use of technology to support the writing process (this important topic will be addressed separately in a future article) Developmental Hierarchy of Writing Tasks i. scribbling ii. Tracing – (a) Connected letters or figures (b) Disconnected letter or figures iii. Copying – (a) From a model (b) From memory (c) Symbolic and non-symbolic iv. Completion tasks – (a) Figure, (b) Word completion--supply missing letters and sentence completion. v. Writing from direction : writing from letters as they are spoken,w writing words and sentences and supply missing word, supply missing sentence. Source : Central Processing Dysfunction in children : a review of Research J. C. Chalfant and M. A. Scheffin, NINDS Monograph no-9, Bethesda Md : U.S. Department of Health, Education and Welfare, 1969, p. 112. Remediation : According to mercer, (1997, pp, 466-469) Teacher should help the students develop a positive attitude towards handwriting encouraging progress and stressing the importance of the sill. In upper elementary grades and in secondary classrooms, greater emphasis should be placed on identifying specific deficits in student's daily routine work. Marketing must be on the basis of students handwriting quality. The teacher needs to help each student develop his skills in the area like

38 muscular control, eye hand coordination and visual discrimination before the students is ready to begin handwriting. The proper position of the paper pencil must be taught before extensive handwriting. Multi-sensory approach should be used in teaching letter forms--vision, hearing and touch. Letter with easier strokes (viz. E, F, H, I, L, T, I, I, and t) may be taught first (before teaching b, f, h, p, q etc). 1.3.5 Strategy for Mathematics Introduction : Dyscalculia is a mathematics-related disability resulting from neurological dysfunction. Students who are diagnosed with Dyscalculia have average to above- average intellectual functioning and a significant discrepancy between their math skills and their chronological-age-peer norms. For a diagnosis of Dyscalculia, it must be determined that the math deficit is not simply related to issues such as poor instruction, vision, hearing or other physical problems, cultural or language differences, or developmental delays. In Accommodating Math Students with Learning Disabilities, author Rochelle Kenyon lists the following strategies for teaching a student with math-related disabilities. Avoid memory overload : Assign manageable amounts of work as skills are learned. Build retention by providing review within a day or two of the initial learning of difficult skills. Provide supervised practice to prevent students from practicing misconceptions and "misrules." Make new learning meaningful by relating practice of subskills to the performance of the whole task. Reduce processing demands by preteaching component skills of algorithms and strategies. Help students to visualize math problems by drawing. Use visual and auditory examples.

39 Use real-life situations that make problems functional and applicable to everyday life.

Do math problems on graph paper to keep the numbers in line.

Use uncluttered worksheets to avoid too much visual information. Practice with age-appropriate games as motivational materials. Have students track their progress. Challenge critical thinking about real problems with problem solving. Use manipulatives and technology such as tape recorders or calculators. This is was adapted from the following source : Garnett, K., Frank, B., & Fleischner, J. X. (1983). A strategies generalization approach to basic fact learning (addition and subtraction lessons, manual #3; multiplication lesson, manual #5). Research Institute for the Study of Learning Disabilities. New York, NY : Teacher's College, Columbia University.

Some of the following math strategies and suggestions may help children who are experiencing problems with mathematics. Identify strategies that you think will help your child and, if appropriate, talk to your child's teacher about using some of the strategies in school. Maintain consistency and communication across school and home settings. Parents, tutors, and classroom teachers should coordinate and use the same instructional approach. Teach basic concepts using concrete object. For example, let children explore number concepts by counting the legs of a chair to find the number four or by subtracting crayons from a box. The progression from understanding concrete materials, pictorial representations, and abstract number representations may take some children longer than others. Provide specialized materials. To help children organize their calculations, have them use graph paper (or lined paper turned sideways) to keep numbers in columns. Encourage the use of scrap paper to keep work neat, highlighters to underline key words and numbers, and manipulatives such as base-ten blocks or fraction bars. Make your expectations explicit. Tell children the procedures you would like them to use when solving a problem, model each procedure for them, then have them tell you what they are expected to do. Some students benefit by having a math notebook filled with examples of completed problems to which they can refer if they become overwhelmed or confused.

40 Provide time for checking work. Emphasizing that completing math assignments is a process, encourage children to become comfortable reviewing their work, making changes, or asking questions when they are unsure of their answer. Give children opportunities to connect mathematical concepts to familiar situations. For example, when introducing measurement concepts, have children estimate their measurements before measuring classmates' and family members' heights or weighing their book bags' when empty and when full. Help children apply math concepts to new situations. For example, show them how to use percentages to understand the price of a pair of shoes on sale at the mall or the amount of their allowance they spend on snacks. Provide access to programs or tutors that can help a child improve his or her math skills. Tutors can assist children with weak math sub-skills, such as multiplication and division. Provide tutors during summer months or after school to boost performance and ensure that the child retains his or her skills. Help children keep track of problematic areas. When doing math homework, children may benefit from having their most common errors listed on flashcards. They can then refer to the cards while completing their assignments. Play math games. To encourage automaticity with math facts, students may benefit from playing math games (i.e. dice, playing cards) and listening to commercially available audiotapes that provide a fun way of learning math facts.

The PBS Parents Activity Search can help you find great games from PBS Children's television series.

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41 Unit 1.4 : Curriculum Adaptation, IEP, Further Education Structure 1.4.1 Introduction 1.4.2 Objectives 1.4.3 Curriculum Adaptation 1.4.4 IEP 1.4.5 Further Education 1.4.1. Introduction There is no recipe for adapting general education curriculum to meet each student's needs. Each teacher, each student, each classroom is unique and adaptations are specific to each situation. Keep in mind that curriculum does not always need to be modified. By providing multi-level instruction you will find that adapting a lesson may not always be necessary. Differentiating instruction and providing multiple ways assess allows more flexibility for students to meet the standards and requirements of the class. At other times, the curriculum can be made more accessible through accommodations. In addition, supports for one student may not necessarily be the same in all situations, e.g., a student who needs full time support from a paraprofessional for math may only need natural supports from peers for English, and no support for art for learning disability students. And, supports should not be determined by the disability label, instead supports should be used when the instructional or social activity warrants the need for assistance (Fisher and Frey, 2001). The forms and examples on the following pages provide information about curriculum and types of adaptations that could be considered in developing the appropriate strategy for a particular student. 1.4.2. Objectives To learn curriculum adaptation for L.D. students To learn IEP for L.D. students To learn further education for L.D. student 1.4.3. Curriculum Adaptation A Curriculum Adaptation and Decision-making Process : This decision-making flowchart can be used to conceptualize the process of selecting and implementing curriculum adaptations. It should be used as a tool for a team in determining an individual student's needs.

42 Identify the student's individual educational goal and objectives to be emphasized during general education activities. Articulate the expectations for the student's performance in general education activities? Determine what to teach As a team, determine the content of the general education activity, theme or unit study Determine how to teach As a team, determine if, without modification, the student can actively participate and achieve the same essential outcomes as non-disabled classmates. If the student cannot achieve the same outcomes... Select of design appropriate adaptations? ? ? ? Select instructional arrangement Select lesson format Employ student-specific teaching strategies Select curriculum goals specific to the lesson Engineer the physical and social classroom environment Design modified materials Select natural supports and supervision arrangements? ? ? If the above adaption strategies are not effective, design an alternative activity Evaluate effectiveness of adaptations

43 A Curriculum Adaptation and Decision-making Model : Examine the Structure of the Instruction : 1. Can the student activity participate in the lesson without modification? Will the same essential outcome he achieved? 2. Can the student's participation be increased by changing the instructional arrangement? From traditional arrangements to : Cooperative groups Small groups Peer partners Peer or cross-age tutors 3. Can the student's participation be increased by changing the lesson format? Interdisciplinary / thematic units Activity-based lessons, games, simulations, role-plays Group investigation or discovery learning Experiential lessons Community-referenced lessons 4. Can the student's participation and understanding be increased by changing the delivery of instruction or teaching style? Examine the Demands and Evaluation Criteria of the Task 5. Will the student need adapted curricular goals? Adjust performance standards Adjust pacing Same content but less complex Similar content with functional/direct applications Adjust evaluation criteria system (grading) Adjust management techniques Examine the Learning Environment 6. Can the changes he made in the classroom environment or lesson location that will facilitate participation?

44 Environmental / Physical arrangements Social rules Lesson location Examine the Materials for Learning 7. Will different materials be needed to ensure participation? Same content but variation in size, number, format Additional or different materials/devices Materials that allow a different mode of input Materials that allow a different mode of output Materials that reduce the level of abstraction of information Examine the Support Structure 8. Will personal assistance be needed to ensure participation? From peers or the general education instruction? From the support facilitator? From therapists? From paraprofessionals? From others? Arranges Alternative Activities that Foster Participation and Interaction 9. Will a different activity need to be designed and offered for the student and a small group of peers? In the classroom In other general education environments In community-based environments Curriculum Adaptations : It is important to correlate adaptations with the IEP. In other words, we are not adapting for adaptations sake but, to meet the student's needs as identified on an IEP.

45 a. Curriculum as is. This is type we forget most frequently. We need to constantly be looking at the general education curriculum and asking if the students of IEPs may gain benefit from participating in the curriculum as is. We need to keep in mind that incident learning does occur. Curriculum as is supports outcomes as identified in standard curriculum. b. Different objective within the same activity and curriculum. The student with an IEP works with all the other students in the classroom participating in the activity when possible but, with a different learning objective from the other students. This is where the principle of partial participation fits examples include. A student with a short attention span staying on task for 5 minutes. Using a switch to activate a communication device to share during a class discussion. Expressing one's thoughts by drawing in a journal instead of writing. Holding a book during reading time. Understanding the effect World War II has on the present rather than knowing the names and dates of key battles. c. Material or environmental adaptations. The material or environmental changes are utilized so that participation in the general education curriculum by the student with the IEP may occur. Examples include : 5 spelling words from the weekly list instead of the standard 20. Completely a cooking assignment by following picture, directions rather than written direction. Changing the grouping of the class from large group to small groups (possible with the additional support staff). Changing the instructional delivery from lecture to the cooperative learning format. Using a computer to write an assignment instead of paper and pencil. Reading a test to a student. Highlighting the important concepts in a textbook. Having the student listen to a taped textbook. Using enlarged print. Move in this direction only when necessary

46 Overlap does occur among the five types of curriculum adaptation. Using an assistive technology device. Using visual cues such as picture and/or word schedules for those who have difficulty staying on task. Using a note taking guide listing the key concepts during a lecture. d. Providing Physical assistance. Assistance from another person may be needed for a student to participate in a classroom activity. If possible, it is better to use natural supports (peers) as these will be the people always present in the student's life. If the use of peers is not possible, then either the support teacher, the paraprofessional, the classroom teacher, the classroom aide, or a parent volunteer may provide the assistance. Most peers and staff will need training in the correct way of providing physical assistance. In addition, we need to keep in mind the principle of partial participations. Examples include : Starting a computer for an student with an IEP to use. Guiding a hand during handwriting. Assisting in activating a switch. Completing most of the steps of an activity and having a student with an IEP do the remainder. Pushing a student in a wheelchair to the next activity. e. Alternative/substitute curriculum. This is sometimes referred to as functional curriculum as it usually involves the acquisition of "life skills". The decision to use alternative/substitute curriculum is a major change and needs to be reflected on the IEP. This decision should be carefully made after weighing all or the pros and cons of using an alternative curriculum. The alternative curriculum may or may not take place in the general education classroom. Examples include : Community-based instruction (which all students may benefit from!) Learning job skills in the school cafeteria. Learning how to use a communication device. Doing laundry for the athletic department. Learning cooking/grooming skills at the home. Move in this direction only when necessary

47 Nine Types of Adaptions : Input Adapt the way instruction is delivered to the learner. For example : Use different visual aids; plan more concrete examples; provide hands-on activities; place students in cooperative groups. Output Adapt how the learner can respond to instruction For example : Allow a verbal vs. written response; use a communication book for students; allow students to show knowledge with hands on materials. Time Adapt the time allotted and allowed for learning, task completion or testing. For example : Individualize a timeline for completing a task; ...learning differently (increase or decrease) for some learners. Difficulty Adapt the skill level, problem type, or the rules on how the learner may approach the work. For example : Allow a calculator for math problems; simplify task directions; change rules to accommodate learner needs. Level of Support Increase the amount of personal assistance with specific learner. For example : Assign peer buddies, teaching assistants, peer tutors or crossage tutors. Size Adapt the number of items that the learner is expected to learn or compete. For example : Reduce the number of social studies terms a learner must learn at any one time. Degree of Participation Adapt the extent to which a learner is actively involved in the task. For example : In geography, have a student hold the globe, while others point out the locations. Alternate Goals Adapt the goals or outcome expectations while using the same materials. For example : In social studies, expect one student to be able to locate just the states while others learn to locate capitals as well. Substitute Curriculum Provide the different instruction and materials to meet a learner's individual goals. For example : Individualize a timeline for completing a task; pace learning differently (increase or decrease) for some learners. From : Ebeling, D. G., Ed. D., Deschenes, C. M.Ed., & Sprague, J., Ph.D. (1994). Adapting curriculum and instruction. The Center for School and community Integration, Institute for the Study of Development Disabilities.

48 Adaptations : Stage 1 General Adaptations Blueprints or formats for adapting predictable activities and routines Stages of Adaptations Stage 2 Specific Adaptations Time-limited adaptations for a particular lesson, activity or that. Instructions Adapt the taught and over learning is demonstrated ADAPTATIONS Stagout response or output Difficulty/ amount Modality Format/ materials Instructional stimulus or input Difficulty/ amount modality Format/ materials Ecological Adapt the setting where, when and with whom Who Adapt staffing, grouping Where Adapt the schedule When Adapt the place Curricular Adapt what is taught Alternative Teach functional skills plus embedded social, communication and motor skills Simplified Change level of difficulty or include fewer objectives Supplementary Add social, communication, study or processing skills to general curriculum From : Janney, R., Ph.D., and Snell, M., Ph.D. (2000) Modifying Schoolwork; Baltimore, MD; Paul Brooks Publishing Company

49 1.4.4 IEP IEP A federal law called the Individuals with Disabilities Education Act (IDEA) requires that public schools create an IEP for every child receiving special education services. Kids from age 3 through high school graduation or a maximum age of 22 (whichever comes first) may be eligible for an IEP. The IEP is meant to address each child's unique learning issues and include specific educational goals. It is legally binding document. The school must provide everything it promises in the IEP. What does an IEP contain ? IEPs are designed to meet kids' unique needs. That means that every IEP will look different. But by law, all IEPs must contain the following elements: Child's present level of educational performance (PLOP) : This is thorough description of your child's current abilities, skills, weaknesses and strengths. It's the part of the IEP that explains how the child's learning issues affect his ability to learn the general education curriculum. PLOP (also sometimes called PLP or PLAAFP) includes details on how your child handles academic subjects and everyday or "functional" activities, like socializing. The results of the child's evaluations and tests : This should include district- wide and state assessments. Special education and related services to be provided : The IEP spells out what kinds of support and services your child will receive. If your child is going to have speech therapy, for instance, it will say how many minutes a week he will receive this therapy. Accommodations and modifications : These help your child learn the general education curriculum. Accommodations are changes in how a child shows what he has learned. They can help your child work around his learning issues. For example, he may be given extra time on tests. Supplementary aids and services : These are supports to help a child learn in the general education classroom. L.D. student included in general classroom. They might include a one-on-one, aide, highlighted classroom notes, equipment or assistive technology, such a software. 50 Annual educational goals : These should be realistic, achievable and measurable. The IEP lists the academic and functional skills that the IEP team thinks the child can achieve by the end of the year. Annual educational goals should help your child participate in the general education classroom. If the child has multiple or severe disabilities, the law requires that the IEP list short-term goals. These are also called objectives or benchmarks. A description of how the child's progress will be measured and reported to you : By law, the IEP must explain how the school will track the child's progress toward goals. And it must describe how the school will share those results. For instance, one goal might be that the child be able to read at a third-grade level. The IEP will specify how that will be tracked--informal and formal assessments, for instance--and how often those results will be reported to you. If these interim reports show that your child's progress has stalled, the IEP team may discuss new interventions. An explanation of how much your child will participate in general education classes and extracurricular activities : Participation at the fullest level possible is required by law. This is called the least restrictive environment. The date the IEP will go into effect : Many states have formal timelines for this. Depending on your child's age and situation, his IEP might also include : A transition plan : This kicks in when the child turns. Transition planning includes services and support to help a student graduate from high school and achieve post-high school goals. Extended school year services : Some students receive special educational services outside of the regular school year, such as during the summer or, less commonly, during extended breaks like winter break. 1.4.5. Further Education : There is sometimes a misconception that people with learning disabilities will not opt for a college placement prior to attending a day-centre. There has often been limited scope for those with learning disabilities to progress into further education and full-time employment. But people with learning disabilities may often feel that they want to expand their horizons or take their studies to a new level. Further education may offer a wider 51 range of options in terms of long-term planning. However, the focus on students with learning, disabilities tends to fall on shorter-term college studies, with less emphasis on progression to employment. In some cases, a learning disabled person will progress to college, with only around 11% going on to employment. In other cases, the individual may simply progress to attending a day centre and not enter employment at all. Therefore, people with learning disabilities may not always be aware of the further education opportunities and support open to them. Progression And Support : The UK Government's white paper Valuing People asserts that people with learning disabilities should have the same rights and opportunities as everyone else with regards with post 16 education. Objective 7 of the Valuing People paper states, "To enable people with learning disabilities to lead full and purposeful lives within their community and to develop a range of friendships, activities and relationships." It also states that Learning Disability Partnership Boards, the Learning and Skills Council (LSC) as well as colleges should support choices and ambitions of people with learning disabilities, and that they should be able to realise their potential. Person-Centered Planning and Further Education : It is the way forward for supporting people with a learning disability into further education. This also includes getting carers and family involved in supporting planning in post-16 education opportunities, but with an emphasis on the student being at the heart of the provision rather than an assumption that they will have to fit into existing provisions.

52 1.5. Transition Education, Lifelong education : 1.5.1 Transition Education 1.5.2 Lifelong Education 1.6 Unit Summary 1.7 "Check Your Progress" 1.8 References 1.5.1. Transition

Education The term transition refers to passing from one state or condition to another. Many important transitions occur throughout each person's life, and many of them are associated with predictable life events, such as beginning preschool, leaving elementary school, and entering middle adulthood. One of the most critical transition periods for students with learning disabilities (LD) is the transition from school to young adulthood. The 1997 amendments to the Individuals with Disabilities Education Act (IDEA) defined transition services for this particular transition as : a coordinated set of activities for a student, with a disability, that: (a) is designed within an outcome oriented process, that promotes

movement from school to post school activities, including postsecondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services independent living, or community participation; (

b) is based on the student's needs, taking into account the student's preferences and interest; (c) includes instruction, related services,

community experiences, the development of employment and other post-school objectives, and when appropriate, acquisition of daily living skills and functional vocational evaluation (*602).

This concept is straightforward and fairly simple, including three major components (Storms, O'Leary, & Williams, 2000).

First, every student and his or her family should be coached to (a) think about post ? high school goals and (b) develop a plan for how to achieve those goals. Second, a high school experience should be designed so that the student acquires the skills and competencies necessary to obtain his or her desired post ? high school goals. Finally, the linkages to post ? high schools

53 services, supports, and programs need to be identified and made before the student exits high school. Transition Planning Important for Individuals with LD : Even though transition planning has been mandated for all students with L.D. for more than 10 years, transition planning for individuals with LD has lagged behind that of other groups. A major reason for this lack of attention has been an assumption that individuals with LD have a mild disability that primarily affects academic achievement; therefore, they have the ability to move from secondary to postsecondary environments without a lot of difficulty. Unfortunately, this is not the case for many students with LD. The results of a number of recent studies have suggested that many adolescents with LD do encounter difficulties in making the transition to adult life, including problems related to unemployment, underemployment, job changes, participation in community and leisure activities, pay, dependency on parents and others, satisfaction with employment, postsecondary academics, and functional skills. 1.5.2.

Lifelong Education : 'Lifelong education' the "ongoing, voluntary, and self-motivated" pursuit of knowledge for either personal or professional reasons. Therefore, it not only enhances social inclusion, active citizenship, and personal development, but also self- sustainability, rather than competitiveness and employability. The concept Lifelong Learning was introduced in Denmark as early as in 1971. Evolved from the term "life-long learners" created by Leslie Watkins and used by Professor Clint Taylor (CSULA) and Superintendent for the Temple City Unified School District's mission statement in 1993, the term recognizes that learning is not confined to childhood or the classroom but takes place throughout life and in a range of situations. Allen Tough (1979), Canadian educator and researcher, asserts that almost 70% of learning projects as self-planned. As per normal life L.D. students can learn as lifelong learning processes.

54 1.6. Unit Summary Learning Disability : Learning disability is a classification that includes several areas of functioning in which a person has difficulty learning in a typical manner, usually caused by an unknown factor or factors. Given the " difficulty learning in a typical manner", this does not exclude the ability to learn in a different manner. Therefore, some people can be more accurately described as having a "Learning Difference", thus avoiding any misconception of being disabled with a lack of ability to learn and possible negative stereotyping. While learning disability, learning disorder and learning difficulty are often used interchangeably, they differ in many ways. Disorder refers to significant learning problems in an academic area. These problems, however, are not enough to warrant an official diagnosis. Learning disability on the other hand, is an official clinical diagnosis, whereby the individual meets certain criteria, as determined by a professional (

psychologist, pediatrician, etc.). The difference is in degree, frequency, and intensity of reported symptoms and problems,

and thus the two should not be confused. When the term "learning disorder" is used, it describes a group of disorders characterized by inadequate development of specific academic, language, and speech skills. Types of learning disorders include reading (dyslexia), mathematics (dyscalculia) and writing (dysgraphia). Tools and Areas of Assessment : Learning disabilities are neurological disorders that affect a person's ability to interpret information and create problems with language, coordination, self-control or the ability to concentrate. Learning disabilities can cause difficulties in tasks such as reading, writing and doing math. When a child is struggling there are steps that parents can take to help. Formal assessment tools are a key part of the process to finding and identifying a learning disorder and getting a child the right support.

55 Strategies for reading, writing and maths Curriculum Adaptation : Even a child with many needs is to be involved with non-disabled peers to the maximum extent appropriate. Just because a child has learning disabilities or needs Reading Strategies Strategies to see when reading. Access background knowledge. Predict what will be learned or what will happen. Figure out unknown words Self-monitor and self-correct Make mental pictures. Connect what you read with what you already know. Extract information from texts, charts, graphs, maps, and illustrations. Identify and interpret literary elements in different genres. Summarize what has been read Make inferences and draw conclusions. Writing Strategies The Essential Writing Skills: Generate ideas in a variety of ways. Organize ideas based on purpose for writing Use a variety of sentence lengths and patterns Write so thoughts flow smoothly and are easy to read. Carefully choose the most effective words to express the ideas. Choose the tone and point of view that suit writing purpose Use personal style to make writing unique. re-read, reflect, revise, and edit. Math Strategies Explore and investigate math ideas. Connect new math ideas with what already know. Figure out the big ideas in math. Computations quickly and accurately Makes reasonable estimations. Use mental math Make sense of problems Use a variety of strategies to solve math problems. Explain and give reasons for math thinking. Work hard at math.

56 modifications to the general curriculum does not mean that he or she may be removed from the general education class. If a child is removed from the general education class for any part of the school day, the IEP team must include in the IEP an explanation for the child's nonparticipation. Because accommodations can be so vital to helping children with disabilities access the general curriculum, participate in school (including extracurricular and nonacademic activities), and be educated alongside their peers without disabilities, IDEA reinforces their use again and again, in its requirements, in its definitions, and in its principles. The wealth of experience that the special education field has gained over the years since IDEA was first passed by Congress is the very resource you'll want to tap for more information on what accommodations are appropriate for students, given their disability, and how to make those adaptations to support their learning. IEP An individualized Education Program, or IEP, is an agreement between school and parent that outlines the special education and related services to be delivered to a child who has been found eligible for services under the Individuals with Disabilities Education Act (IDEA). The document provides several important statements about the progress to be accomplished and the specific amounts of special education and related services to be delivered in order to achieve the desired progress. In addition, an IEP outlines to be furnished both in daily instructional settings and in state- and district-wide testing. It also details how progress will be determined and a method by which parents will be regularly advised of that progress. Further Education In terms of inclusiveness in education, this means providing adequate support services for people with varying degrees of learning disability that wish to enter into further education. This can include support such as helping a person with learning disabilities use public transport services and other services that they will need to use frequently in order to continue into independent further education. Transition Education A transition plan is the section of the Individualized Education Program (IEP) that outlines transition goals and services for the L.D. student. The transition plan is based on a high school student's individual needs, strengths, skills, and interests.

57 Transition planning is used to identify and develop goals which need to be accomplished during the current school year to assist the student in meeting his post-high school goals. Lifelong Education During the last fifty years, constant scientific and technological innovation and change has had a profound effect on learning needs and styles. Learning can no longer be divided into a place and time to acquire knowledge (school) and a place and time to apply the knowledge acquired (the knowledge). Instead, learning can be seen as something that takes place on an ongoing basis from our daily interactions with others and with the world around us. It can take the form of formal learning or informal learning, or self-directed learning for L.D. students.

1.7. "Check your progress" : 1. What is Learning Disability ? 2. What is the characteristic of Learning Disability (L.D.) ? 3. What are the types of L. D. 4. Discuss about strategies for reading, writing and maths. 5. Discuss about Curriculum adaptation for L.D. students. 6. What is IEP ? Discuss about IEP for L.D. students. 7. What is Transition Education ? Discuss about transition education for L.D. students.

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Unit - 2

Intellectual Disability:

Nature, Needs And Intervention Structure 2.1 Introduction 2.2 Objectives 2.3 Definition, Types and Characteristics 2.3.1. Definition 2.3.2. Types 2.3.3. Characteristics of Target Group 2.4 Tools and Areas of Assessment 2.4.1 Assessment 2.4.2 Types of Assessment 2.4.3 Tools and areas of Assessment 2.5 Strategies for Functional Academics and Social skills 2.5.1 Functional academics 2.5.2 Social Skills 2.6 Assistive Devices, Adaptations, Individualized Education plan, Person Centered Plan, Life Skill Education 2.6.1 Assistive Devices 2.6.2 Adaptations 2.6.3 Individualized Education plan (IEP) 2.6.4 Person Centred Plan 2.6.5 Life Skill Education 2.7 Vocational Training and Independent Living 2.8 " Check Your Progress" 2.9 Let Us Sum Up 2.10 References

63 2.1 Introduction An intellectual disability (also commonly referred to as a developmental disability among other terms) is, simply stated, a disability that significantly affects one's ability to learn and use information. It is a disability that is present during childhood and continues throughout one's life. A person who has an intellectual disability is capable of participating effectively in all aspects of daily life, but sometimes requires more assistance than others in learning a task, adapting to changes in tasks and routines, and addressing the many barriers to participation that result from the complexity of our society. 2.2

Objectives After going through this unit you will be able to:- ? Understand the concept of

Intellectual Disability ? Describe the types

and characteristics of Intellectual Disability ? Explain the

scope of

assessment ? Understand the meaning of assessment ? Explain the purposes of assessment ? Understand the types of

assessment ? Describe the Strategies for Functional Academics and Social skills ? Understand the concept of

Assistive Devices, Adaptations, Individualized Education plan, Person Centered Plan, Life Skill Education ?

Explain

the

meaning of Vocational Training and Independent Living 2.3 Definition, Types and Characteristics 2.3.1

Definition

Internationally the definition of Mental Retardation has moved away from medical model to rehabilitative model. Current trend is to describe the condition by using functional and educational terms rather than clinical terms. Definitions are listed

chronologically to demonstrate the variations in describing condition of Mental Retardation. a. Definition of Mental

Retardation - American Association of Mental Retardation (AAMR) 1983:

64 As per American Association on Mental Deficiency, also previously known as American Association on Mental

Retardation - Mental Retardation refers to a

significantly sub - average general intellectual functioning resulting in or associated with concurrent deficits

in adaptive

functioning. b. Definition of Mental Retardation - Persons with Disabilities Act 1995:

Mental Retardation means a condition of arrested or incomplete development of a person, which is

specially characterized by sub-normality of

intelligence manifesting before age of 18 years. c. Definition of Mental Retardation -

American Association of Mental Retardation (AAMR) -1992: Refers to significantly sub-average intellectual functioning,

existing concurrently with or more of the following applicable adaptive skill areas: Communication Self-care

Home Living Social Skills Community Use Self-direction Health and Safety Functional Academics Leisure Work

In adopting this definition and accompanying classifications system, AAMR (1992) suggested that Mild, Moderate, Severe

and Profound classification categories in previous definitions to be substituted with "levels" of support needed by an

individual using term listed below: Intermittent: Support of high or low intensity is provided as and when needed.

Characterized as episodic or short-term during life - span transitions. Limited: Supports are provided consistently over

time, but may not be extensive at any one time. Supports may require fewer staff members and lower expense than more

intense levels of support.

65 Extensive: Supports are characterized by regular involvement (daily) in at least some environment (work or home) and

not limited (example: Long-term support & long-term home living support). Pervasive: High intensity supports are

provided constantly, across environment, mostly and may be of life sustaining and intrusive nature. Pervasive

supports typically

involve a variety of staff members. This definition essentially restates the 1993 AAMD definition, except that it describes

the developmental period age as 22 years, consistent with the USA federal definitions of developmental disabilities. d.

Definition of American Association of Mental Retardation (AAMR) - 2002 Definition reads, "Mental Retardation

is

a disability

characterized by significant limitations, both in intellectual functioning and in adaptive behavior,

as expressed in conceptual, social and practical adaptive skills,

the disability originating

before the age of 18 years. The complete and accurate understanding of Mental Retardation implies that a particular state of functioning, which begins in childhood, having many dimensions and affected positively by individualized supports. As a model of functioning, it includes the context and environment within which the person functions and ecological approach that reflects the interaction of the individual with the environment.

The outcomes of interaction are with regard to independence, relationships, societal contributions, participation in school and community and to personal well-being. e. Definition of Intellectual Disability

Intellectual disability is a disability characterized by significant limitations in both intellectual functioning and in adaptive behaviour, which covers many everyday social and practical skills.

This disability originates before the age of 18. (

American Association on Intellectual and Developmental Disabilities (AAIDD)- 2010) All the key terms are explained below: 1)

Intellectual Functioning

Intellectual functioning—also called intelligence—refers to general mental capacity, such as learning, reasoning, problem solving, and so on. One way to measure intellectual functioning is an IQ test. Generally, an IQ test score of around 70 or as high as 75 indicates a limitation in intellectual functioning.

66 2) Adaptive Behaviour Adaptive behaviour is the collection of conceptual, social, and practical skills that are learned and performed by people in their everyday lives. ? Conceptual skills—language and literacy; money, time, and number concepts; and self-direction. ? Social skills—interpersonal skills, social responsibility, self-esteem, gullibility, naïveté (i.e., wariness), social problem solving, and the ability to follow rules/ obey laws and to avoid being victimized. ? Practical skills—activities of daily living (personal care), occupational skills, healthcare, travel/transportation, schedules/routines, safety, use of money, use of the telephone. Standardized tests can also determine limitations in adaptive behaviour. 3)

Age of Onset

This condition is one of several developmental disabilities—that is, there is evidence of the disability during the developmental period, which is operationalized as before the age of 18. 4) Additional Considerations But in defining and assessing intellectual disability, the AAIDD stresses that additional factors must be taken into account, such as the community environment typical of the individual's peers and culture. Professionals should also consider linguistic diversity and cultural differences in the way people communicate, move, and behave. Finally, assessments must also assume that limitations in individuals often coexist with strengths, and that a person's level of life functioning will improve if appropriate personalized supports are provided over a sustained period. Only on the basis of

such many-sided evaluations can professionals determine whether an individual has intellectual disability and tailor individualized support plans. 2.3.2

Types A child may be classified as having an intellectual disability at one of the levels listed below. Mild intellectual disability (MID). (1) Intellectual functioning ranging between an upper limit of approximately 70 to a lower limit of approximately 55;

67 (2) Deficits in adaptive behaviour that significantly limit a child's effectiveness in meeting the standards of maturation, learning, personal independence or social responsibility, and especially school performance that is expected of the individual's age level and cultural group, as determined by clinical judgment. Moderate intellectual disability (MOID). (1) Intellectual functioning ranging from an upper limit of approximately 55 to a lower limit of approximately 40; and (2) Deficits in adaptive behaviour that significantly limit a child's effectiveness in meeting the standards of maturation, learning, personal independence or social responsibility, and especially school performance that is expected of the individual's age-level and cultural group as determined by clinical judgment. Severe intellectual disability (SID). (1) Intellectual functioning ranging from an upper limit of approximately 40 to a lower limit of approximately 25; and (2) Deficits in adaptive behaviour that significantly limit a child's effectiveness in meeting the standards of maturation, learning, personal independence or social responsibility and especially school performance that is expected of the individual's age-level and cultural group as determined by clinical judgment. Profound intellectual disability (PID). (1) Intellectual functioning below approximately 25; and (2) Deficits in adaptive behaviour that significantly limit a child's effectiveness in meeting the standards of maturation, learning, personal independence or social responsibility and especially school performance that is expected of the child's age-level and cultural group, as determined by clinical judgment. 2.3.3

Characteristics of Target Group The general characteristics of children with Intellectual Disability are: 1. Delayed development in developmental milestones. 2. Poor language development. 3. Short attention span and poor communication. 4. Poor motor integration and coordination.

68 5. Poor social skill. 6. Poor memory. 7. Poor in thinking, generalization, reasoning and imagination. 8. Poor or delayed concept formation. 9. Poor in scholastic or in academics. 10. May be associated with a typical physical feature i.e. small head/ large head, small eye etc.

The signs and symptoms of intellectual disability are all behavioural. Most people with intellectual disability do not look like they are afflicted with such, especially if the disability is caused by environmental factors such as malnutrition or lead poisoning. The so-called typical appearance ascribed to people with intellectual disability is only present in a minority of cases, all of which are syndromic.

Children with intellectual disability may learn to sit up, to crawl, or to walk later than other children, or they may learn to talk later. Both adults and children with intellectual disability may also exhibit some or all of the following characteristics: ? Delays in oral language development ? Deficits in memory skills ? Difficulty learning social rules ? Difficulty with problem solving skills ? Delays in the development of adaptive behaviors such as self-help or self-care skills ? Lack of social inhibitors Children with

intellectual disability learn more slowly than a typical child. Children may take longer to learn language, develop social skills, and take care of their personal needs, such as dressing or eating. Learning will take them longer, require more repetition, and skills may need to be adapted to their learning levels. Nevertheless, virtually every child is able to learn, develop and become a participating member of the community. In early childhood, mild intellectual disability (IQ 50–69) may not be obvious, and may not be identified until children begin school. Even when poor academic performance is recognized, it may take expert assessment to distinguish mild intellectual disability from learning disability or emotional/behavioral disorders. People with mild intellectual disability are capable of learning reading and mathematics skills to approximately the

69 level of a typical child aged nine to twelve. They can learn self-care and practical skills, such as cooking or using the local mass transit system. As individuals with intellectual disability reach adulthood, many learn to live independently and maintain gainful employment. Moderate intellectual disability (IQ 35–49) is nearly always apparent within the first years of life. Speech delays are particularly common signs of moderate ID. People with moderate intellectual disability need considerable supports in school, at home, and in the community in order to participate fully. While their academic potential is limited, they can learn simple health and safety skills and to participate in simple activities. As adults they may live with their parents, in a supportive group home, or even semi-independently with significant supportive services to help them, for example, manage their finances. As adults, they may work in a sheltered workshop. People with severe or profound intellectual disability need more intensive support and supervision their entire lives. [5] They may learn some activities of daily living. Some require full-time care by an attendant. 2.4 Tools and Area of Assessment 2.4.1

Assessment

Assessment is an inevitable process in daily life for understanding, adjustment, and for taking decision for future action.

Assessment is carried out in a family, in classroom, in the religious places, in the market, in the corporate office, in the execution of Government duties and responsibilities and all other everyday work of the society. It is a vital part of the scientific method of understanding and intervention.

Assessment starts from collection of information and continues in making decision for appropriate action to be taken for improvement of the individual.

This process is very much useful in

different essential services like - physical health, mental health, guidance and counselling, educational process, training, employment, and performance appraisal etc. In all these services collection of information for particular purpose, analysis of the information and making a decision for future course of action for improvement are essential features.

Definition Assessment in general is a process of collection of information about an individual or a group and taking a decision for that particular individual or group for future course of

70 action. Assessment refers to the process of gathering and analysing information in order to make instructional, administrative and/ or guidance decisions about or for an individuals (Wallace, Larsen, and Elksnin, 1992). Definition of assessment focuses on three aspects :- 1. Collection of information 2. Analysis of information 3. Making decision for instructional, administrative and guidance.

2.4.2 Types of Assessment Special Educational Assessment involves collection of information relevant to educational need of the children. This includes personal data, educational performance, the resources, the family involvement in training, and voluntary supports that could be gained for training mentally retarded student. For all these information, it is essential to collect information through different methods. These methods are :- a)

Formal b) Informal Formal In this method, the information is collected by administering test/ behavioural scales / checklist, interview or administering questionnaire. The information is collected through very structured situation. It needs lots of preparation for the tester or observer. Informal In this method, the information is collected through natural interaction between the subject and observer. As because the information is being collected in a natural situation, there is a chance of getting appropriate response from the subject. Different Tests are constructed for Assessment. Constructions of the tests are also vary as per the process of construction. There are two types of tests. These are Norm Referenced Test and Criterion Referenced Test. Norm referenced assessment and Criterion referenced assessment are named on the basis of the test used in the assessment process. The details of these two assessment process is given below :-

Norm Referenced Assessment Norm Referenced Assessment is the more traditional approach to assessment. These tests and measurement procedures involve test materials that are standardized on

71 a sample population and are used to identify the test takers ability relative to others. It is also known as formal assessment. Norm referenced assessment is defined as a procedure for collecting data using a device that has been standardized on a large sample population for a specific purpose. Every standardized assessment instrument will have certain directions that must be followed. These direction specify the procedure for administering the test and ways to analyse and interpret the results and reporting them. Examples of the more commonly known formal assessment devices are the Wechsler Intelligence Scales for children - Revised (WISC-R), the Illinois Test of Psycholinguistic Ability (ITPA). The Stanford- Binet Intelligence Test and the Peabody Picture Vocabulary Test - Revised (PPVT-R) and Peabody Individual Achievement Test (PIAT). Advantages of Norm-Referenced Assessment Norm Referenced tests are widely used in special and remedial education for many reasons. * First, the decision of categorizing the children as exceptional or special is mainly based on the test results of NRTs. *

Second,

it is easy to communicate test results to parents and others unfamiliar with tests. *

Third,

norm-referenced tests have received the most attention in terms of technical data and research. They are specifically useful in problem identification and screening.

Disadvantages of Norm-Referenced Assessment The use of norm referenced tests data for the purpose of educational programming is questioned in many instances for the following reasons. * Information obtained from norm-referenced testing is too general to be useful in everyday classroom teaching. Many educators disregard the prognosis and interpretative types of data provided by standardized tests because the information is often not directly applicable to developing daily teaching activities or interventions. What does knowing a student's WISC-R score or grade equivalent in reading specifically tell a teacher about what and how to teach ? For instance, what is important is to know whether the student needs to learn initial consonants or is he having difficulty with comprehension. * NRTs tend to promote and reinforce the belief that the focus of the problem is within the student. It is because the primary purpose of NRTs is to compare one

72 student with another. However, although a student

may differ from the norm, the real problem may not be within the student but in the teaching, placement or curriculum. Educators must begin to assess teacher behaviours, curriculum content, sequencing and other variables not measured by norm referenced tests.

Criterion Referenced Assessment Criterion Referenced Assessment is concerned with whether a student is able to perform a skill as per the criteria set, or not. In contrast to norm-referenced assessment, which compares one persons performance to others, criterion referenced assessment compares the performance of an individual to the pre-established criteria. In criterion- referenced test, the skills within a subject are hierarchically arranged so that those that must be learned first are tested first.

In math, for example addition skills would be evaluated (and taught) before multiplication skills. These tests are usually criterion referenced because a student must achieve competence at one level before being taught at a higher level.

Advantages of Criterion Referenced Assessment The criterion referenced test results are useful :- * to identify specific skills that need intervention * to determine the next most logical skill to teach as the implications for teaching are more direct with criterion referenced tests. * to conduct formative evaluation, that is, the performance of the student is recorded regularly or daily when the skills are being taught.

This makes it possible to note the student progress, to determine if intervention is effective and to help decide the next skill to be taught if achieved, if not to decide what other strategies or methods and materials are to be used for teaching. Disadvantages of Criterion Referenced Assessment * Establishing the passing criteria for a specific skill is a problem in criterion referenced testing. For example, if a test were needed to determine whether student had mastered high school mathematics, there is a problem of determining exactly which skills should be included in the test. Further, should a student pass the test if 90% of the questions are answered correctly or only if 100% are correct ? These decisions must be carefully considered, because setting inappropriate criteria may cause a student to struggle unnecessarily with a concept.

73 * It is difficult to decide exactly which skills should be included in the test. * There is also a problem that the skills assessed may become the goals of instruction rather than selecting the skills that the student should know. Due to this, the teachers may narrow down their instruction and teach in accordance with what is measured on the test rather than what is truly required for the student to know. Continuous Assessment Assessment is an ongoing process. In the process of Special Education to the children with Intellectual Disability, their abilities are assessed periodically to plan the future training programme. A flow diagram of which is given below :- Assessment Programme Planning Implementation Evaluation Suggested Modification In the above diagram, evaluation is carried out after implementation of the programme to see the level of achievement compared to set criteria. Evaluation is restricted to the programme planned for the child. Assessment covers the other non-planned area for training. Assessment after each year or after a particular period of training is inevitable for decision making about the child. For example, a student of Primary class in a Special School for the Intellectually Disable children is assessed at the joining time for programme planning. After one year and completion of 4 years in that class assessment is carried out for further decision making both for administrative purpose and training purpose. Assessment is a continuous on-going process which is a vital part of Special Education. 2.4.3 Tools and Areas of Assessment In special education assessment, the same tool can be used for diagnostic, prescriptive and evaluation purposes. Purposes for assessment include monitoring student

74 understanding during a lesson, checking student progress during a specific programme implementation and evaluating student achievement at the end of training programme. In the first two instances, the assessments are called Formative Evaluation; in the latter instance, it is Summative Evaluation. It is used to measure how well students have learned key content and skills as defined by the learning segment's goals and objectives. The selection of assessment tools and methods vary depending on the purpose for which the assessment is to be carried out and the type of the data that has to be gathered. Following are the various tools available for special educational assessments developed for the Indian context. 1.

Madras Developmental Programming System (MDPS) The first Indian comprehensive Behavioural Scale developed in 1975 at Chennai,

the then name Madras to use for assessment of behaviour potential and programme planning of mentally retarded children. This scale

could be used for any age, sex and level of retardation in our country. This is a Criterion Referenced Assessment Scale, which provides an inbuilt system for periodic assessments and evaluation, which helps for planning, execution and monitoring of special education, and related services for children with

mental retardation. Description This scale

could be used for individualized Educational Programming and in classroom teaching. There are 18 domains in the scale and each domain comprises of 20 items. The items in the domains are sequentially arranged in most of the domains.

The domains are listed below :- 1. Gross Motor Activities 2. Fine Motor Activities 3. Meal Time Activities 4.

Dressing 5. Grooming 6. Toileting 7. Receptive Language 8. Expressive Language 9. Social Interaction 10. Reading

75 11. Writing 12. Numbers 13. Time 14. Money 15. Domestic Activities 16. Community Orientation 17. Recreation, Leisure Time Activities 18. Vocational

Administration The administration of this scale is very simple. The user should have an assessment kit ready on different items of the domains

and collects information by a) direct observation, b) report from the parents, caretakers and others informal.

The item already the student achieves is marked by A and fails is marked by B. at the end of the administration all the A's and B's are counted in each domain and entered at the right side column of the domain. The A's are coloured with blue and the B's are coloured with red. The blue area indicates the student's performance and red area indicates the needs to be given training. Use The scale is widely used for both IEP and assessment and management in the classroom due to its unique features like :- 1.

Contains wide area of behavioural domain. 2. Details of items in each area. 3. The items of many areas are sequentially arranged. 4. Easy administration. 5. Helps in curriculum development. 6. Helps in Educational Grouping of the children and summative evaluation. 7.

Helps in formative evaluation of the curriculum transaction. 8. Helps in monitoring the special educational services. 9. Could be used throughout the schooling of the student.

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NIMH - Vocational Assessment and Programming System for Persons

with Mental Retardation (NIMH-VAPS) This scale was developed at NIMH under the supervision of Ms. A.T. ThressiaKutty in 1998. The scale is developed to assess

the general ability, vocational potential and work behaviour of the mentally retarded adults. This aims at assessing the vocational potentiality of an adult with MR and helps in planning and execution of vocational training. It provides information on work readiness skills, helps to identify suitable jobs in the community. It is useful for formative and summative evaluation of the vocational training also. It could be used in training set up in the institution, sheltered workshop or workshop or open employment system while job training. Description The scale is mainly divided into 4

parts :- 1. Vocational Profile. 2. Generic Skill Assessment Checklist. 3. Job Analysis Format. 4. Work Behaviour Assessment Checklist. Generic Skills Assessment Checklist Personal 04 Communication 05 Social Behaviour 10 Functional Academics 30 Safety Skills 07 Domestic Behaviour 13 Mobility and Hand Functioning 05 Occupational Skills 06 TOTAL 80 Job Analysis Format I Main Work Area I Additional Duties I Work Related Skills

77 VOCATIONAL ASSESSMENT Trainee Assessment Community Assessment Generic Skill Assessment Job Identification (Specific Skills Personal Job Analysis Communication Job Matching Social Behaviour Job Training Functional Academics Job related Skills and Safety Domestic Mobility Work Behaviour Training Job Placement Supported Employment / Open Employment / Sheltered Employment / Self Employment

78 | Personal | FA | Sex | Education | Recreation | Independent Living Skills Work Behaviour | Job Requirement | Job Training Procedures | Trainers Responsibilities | Parents Cooperation Work Behaviour - Assessment Checklist | Physical Appearance | Personal Interaction | Regularity & Punctuality | Communication/ Social Manners | Quality & Quantity Aspects of Work Scoring System Performance of each item by the trainee must be observed and codes must be given against each item as per the instruction given below :- Description Code Always 3 Attention 2 Rare 1 Never 0 Use | Provides information on jobs selected | Identifies areas in which training is needed

79 | Emphasizes on the job training. | Evaluates work related skills and work behaviour. | Targets employment for all trainees who are assessed. | Extends support for job retention. 3.

Behavioural Assessment Scale for Indian Children with Mental Retardation (BASIC-MR)

This behavioural scale was developed at NIMH under the guidance of Peshwaria R. and Venkatesan A. in the year 1992.

This is developed to assess and evaluate the performance of the children with mental retardation of various level and age group. This has

two parts. 1. BASIC-MR Part-A 2. BASIC-MR Part-B BASIC-MR Part-A

is used for understanding the strength and needs of the children with mental retardation to develop the educational programming. Part-B is used to assess the problem behaviours of the children with mental retardation to intervene to reduce the problem behaviour which are the main hindrances for their learning. Both the parts are useful for assessment of adaptive behaviour and maladaptive behaviour of children with mental retardation for classroom management.

Description BASIC-MR Part-A has seven areas and each area has forty items. The details of the test is given in the table:-

Sl No. Domain No. of Items 1. Motor (Gross Motor & Fine Motor) 40 2. Activities of Daily Living (ADL) 40 3. Language (Receptive & Expressive) 40 4. Reading - Writing 40 5. Number - Time 40 6.

Domestic - Social 40 7. Pre-Vocational - Money 40

80 BASIC-MR Part-B has ten areas. Different areas have different varying number of items. The details of the test is given in the table :- Sl No. Domain No. of Items 1. Violent & Destructive Behaviours 16 2. Temper Tantrums 04 3. Misbehaviours with Others 07 4. Self Injurious Behaviour 10 5. Repetitive Behaviour 08 6. Odd Behaviours 08 7. Hyperactivity 03 8. Rebellious Behaviours 06 9. Anti-Social Behaviours 09 10. Fears & others 04

Administration BASIC-MR Part-A : The information is collected through observation, interview the parents and report from the teachers and caretakers. The degree of performance in each item could be noted by different points.

The description of the points is described below :- Scoring Description Code Independent 5 Clueing 4 Verbal Prompting 3 Physical Prompting 2 Total Dependent 1 Not Applicable 0

81 Use It is used for the following purpose :- 1. Assessment to understand the strength and needs of children with mental retardation. 2. Programme planning for IEP & Group Teaching 3. Evaluation of performance 4. Monitoring of the programme 5. Report writing 4.

Functional Assessment Checklist for Programming (FACP-NIMH) Functional Assessment Checklist for Programming - FACP-NIMH was developed at NIMH in the Department of Special Educational under the supervision of Dr.Jayanthi Narayan.

It was developed keeping in view that, it would lead to appropriate programming. It also provided inbuilt periodic evaluation facility for monitoring progress and modifying the programmes. It also provides quantitative and qualitative measurement of the student's progress. The FACP has 7 parts. These are: - 1.

Pre-Primary 2. Primary-I 3. Primary-II 4. Secondary 5. Pre-Vocational-I 6. Pre-Vocational-II 7. Care Group

Grouping is done for the purpose of maintaining uniformity in special education, time bound programming and for easy transaction of curriculum in special school for the children with mental retardation. The different checklists are developed for different classes. The particular checklist contains minimum required skill for that class and scope of inserting items those are required for each domains of the checklist. The items to be inserted is being decided by the special educator involved assessment. This is being done as per the need of the student according to his socio-cultural background. After completion of stipulated training in particular class decision will be taken for promotion.

82 Promotion procedure could be easily administered through evaluation. After achieving more than 80% task prescribed in a particular group the student could be promoted to the higher class. Each checklist has 5 domains. These are: - 1. Personal 2. Social 3. Academic 4. Occupational 5. Recreational Administering Checklist The student's performance on each item must be noted. The information regarding the student's performance could be collected by observation through activities, report from the parents, the caretakers and from the last records. Performance could be recorded as code given below :- Encoding the students performance for the domains - Personal Social Academic & Occupational Performance Code Description Yes + The student can perform the item with no help. Occasional causes C The student reads to be given classes which requires thinking by the student to perform the task. Verbal Prompting VP Telling each subtasks verbally to the trainee like - rinse hands, 'pick up soap' apply so on. Physical Prompting PP Physically helping the student to complete the task. No - Student is totally dependent on the task hence one has to completely perform the task for the student. No Exposure NE Lack of opportunity to learn.

83 Scoring Recreational Activities Code Description

A Takes initiative and participate effectively. B Participates when other initiates. C Involves self but not aware of rules. D Observes with interest. E Not interest (Indifferent) NE No Exposure

Usefulness of FACP 1. The items are easy to understand. 2. Necessary activities are enlisted. 3. Necessary items are to be observed for a particular class. 4. Scope of including items necessary in a particular domain for students from specific cultural background. 5. Proper weightage could be given to their performance. 6. It has scope for monitoring and evaluation. 7. It could be used for curriculum transaction and reference for promotion. 5.

Upanayan - A programme of Developmental Training for Children with Mental Retardation This is an assessment tool for young children. This programme covers children in the age group of 0-6 years. The programme consists of a checklist, a user manual, a set of activity cards and material for assessment and training. Description The checklist covers five areas of development viz., motor, self-help language, cognitive and socialization. Each domain has 50 items totaling upto 250. The items are arranged in a sequence based on normal development.

84 Administration The activity cards are colour coded to separate each domain from the others. The manual contains a list of materials to be used during assessment. The record formats are provided to note the background information and the assessment data periodically. If a student performs an activity it is marked "A" and the student does not perform the task it is marked "B". The programme is computerized so that the parent can be given the respective activity cards needed for training their student. The programme is intended for home training in home based and center based intervention. 6. Portage Guide to Early Education This is developed

by S.M. Bluma, M. Shearer, A.H. Frohman and Jean M. Hilliard (USA). It

is basically a system for teaching skills to pre-school children with developmental delays. The portage project is a home based training system, which directly involves parents in the education of their children in the early childhood i.e., 0- 6 years of age. The training is provided by a specially trained teacher or a public health worker with a special training and experience in the field of student development. However, the key person in the home-based programme is parents/ family members. It can be used by Para-professionals like the staff of Anganwadis, Balwadis, non- professionals like parents, siblings,

and professionals such as pre-school educators, psychologists, and doctors. Description

The portage checklist covers areas such as infant stimulation, self-help, motor, cognitive, language and socialization. In each area, the activities are listed in a sequential order corresponding to the age. In addition to the checklist, there are activity cards for each skill, which explains the materials and procedure to be used to train the student. The checklist also provides age norms for each task on the margin, which help the trainer estimate the age equivalence of the student's functioning. Administration The first step is to check through the listed skills in all the areas and record the performance of the student against each skill under the column entry behaviour. There is also the provision to mark date of achievement and remarks. A separate provision is made (Activity chart) to record activities, achievement and targets. As the format accommodates daily and weekly recording of progress, there is close monitoring.

85 2.5

Strategies for Functional Academics and Social Skills 2.5.1

Functional academics Functional academics is merely academics made functional

designed to teach skills which allow each student

to succeed in real-life situations at home, school, work and in the community. The functional academics curriculum includes a range of areas namely: ? Pre-requisite concepts ? Maths ? Reading ? Writing ? Communication ? Community orientation ? Skill oriented activities

etc..... Given these areas

the teachers tailor the academic programs to the age, gender, needs and functioning of the student. Each of the subcomponent is divided into skill level and task analyzed to sequential steps which ranges from early childhood to transitional skills. Such skills are not taught in isolation but as part of multi-sensorial approach. Key outcome of functional skills is for the students to exercise maximum sense of control, engage in self-directed behaviour and autonomy over his/her environment. Functional

Reading Functional Reading is defined as a

student's actions or responses resulting from reading printed words (

Brown and Parlmutter, 1971). Functional term is related to application of learnt skills in real community settings. Hence

words selected for reading must be "functional" allowing the reader to become independent in community living. As

stated by Polloway and Patton (1993), reading is the key to personal and social adjustment and for successful

involvement in community activities. Kirk and Monroe (1948) outline three goals that help develop frame for teaching

readers with disability: Primary goal for all students who are mildly or moderately disabled for learning academics, is to

develop "ability to read for protection and survival". This includes examples like – Directions in community, Sign Boards in

community, Labelson consumer products for daily use and significant symbols that direct for safety and survival such as

symbol for toilets, danger symbol, signage for restaurant etc.

86 Second goal is for reading to gain "information and instruction" which implies an individual to deal with application for jobs, reading news-papers to be updated on current happenings for general knowledge, reading advertisements,

facilitate usage of telephone and address book for accessing social contacts. Third goal is to read for "pleasure". For most

of students with Mental Retardation this is an essential pre-requisite and a realistic goal which helps them engage in

making simple accessible choices in daily life at home and outside home in community. Teaching Functional Reading:

Teaching functional reading has several approaches as stated by Auckerman (1971), however he endorses an eclectic

method is necessary for meeting individualized needs of students with Mental Retardation. However approaches are

separately explained for purpose of clarity in selecting approaches rationally to suit each child with disability meaningfully

and disability level wise. (i) Sight Word Vocabulary (Whole Word Approach): By helping student recognize the "whole

word" at one time and later introducing the awareness to decode each letter to spell appropriately helps child first pay

attention to group of familiar alphabets in a cluster. Later while decoding the student can become familiar with sequence

of placement of letters and the rational for spelling the word by associating sound with specific letter and arrangement of

letters and corresponding sounds that represent placement of letters in given word spelling. We use this technique for

the student to identify his or her own name and then the alphabets in it. Start with the student's name to read and write.

The letters in the name have to be associated with the pics first, then letter-letter matching and then writing the whole

name. Matching left -right then diagonal and then placing the letters in the required sequence for the name. Similarly for

surname, home address. Once these are achieved father's name, mother's name, sister's name, brother's name. Start

with words the students can associate and is relevant for them through this method. (ii) Errorless Discrimination (Walsh &

Lamberts, 1979): Here teacher can present the whole word in isolation and read aloud by pointing to the word beginning

with 3 to 4 letter words then slowly progressing using same method to read complex words increasing in letters from 5

to 6 and onwards according to the child's pace and ability to progress in reading, in 4 to 6 trials.

87 Functional Writing One of the important mode of communication is written expression. This demands eye - hand coordination, motor co-ordination, sense of direction and recognition of symbols (pictures/letters/ numbers/words /punctuation etc). Some writing tasks require "left to right" orientation in horizontal direction (for writing words), whereas some tasks require vertical orientation (for writing numbers in arithmetic problems as in addition or subtraction). Writing involves Four Stages: i. Tracing ii. Joining Dots iii. Copying iv. Writing by Memory (including spellings of words and sequence of words in a sentence). Functional Arithmetic Numbers play an important role in our lives. Our communication involves reference to negotiating quantities. Schwartz and Budd (1983), define Functional Mathematics as "use of mathematics needed for vocational, consumer, social, recreational and home making activities". Functional mathematics includes: Functional Arithmetic: At the preschool level of education and primary, the students need to count parts of the body, things in the classroom, blades of the fan, legs of an animal, table, fingers of one hand, etc. Pre-Computational Skills: Development of maths skills follows a sequence: Relative position of one in quantities - such as being aware of terms to describe quantities "more"/ "less"/ "few"/ "none" even before introducing number values. Teach the student to identify "1" object only. Then introduce the symbol "1" only after student successfully identifies real object in "1" quantity. Then place the object under the flash card with written symbol "1". Finally ask the student to read the numeral "1" by showing the flash card. Teach the student further numbers only after learning concept of "1" successfully. Place "one more" after "1" and then by counting say "1" and "2" in orderly manner. Also encourage to identify which of the body parts are in "2" numbers on one's own body. Same procedure will follow for teaching higher numbers in sequential order. Counting items in daily use must follow "left to right" orientation. Writing Numerals: This includes - Tracing, Copying and Writing from Memory. Cardinal and Ordinal Numbers: Numbers indicating "quantity" is called a "cardinal numbers" (Ex: How many boys have visited house.) and those values that identify "position" are called as "ordinal numbers" (Ex- in case you are searching a house address, often directions read left turn and third house on the left side, this denotes position of the house (ii) Computational Skills: It includes basic skills in addition, subtraction, multiplication, division etc. (iii) Application Skills Daily experience in our life requires application of maths skills, some include money, time, capacity, weight and mass, length and distance. All these areas involve some form of measurement, which is based on relative comparisons. Money - It helps us compare worth of objects. Instruction about money should follow sequence throughout, in relation to practical experiences. Therefore it should be planned in such a way that each student's needs in terms of utility are met. They can be asked to make the totals of list of grocery items on calculator. Students can be sent to purchase a few items from the shop. They can make a total of clothes for laundry or given for ironing. Time - While defining time we are comparing a period between two events with predetermined duration. First thing while teaching time is to build concept of events happening in sequence. An important pre-requisite for telling time is an identification of clock and calendar. To relate parts of the day and night and understand its relevance with reading time in clock. Understanding progress of time in days, weeks and months year wise and relate use of calendar. It is important that student honours daily routine for respecting time limits for getting ready to school, mealtime, TV watching, or visiting friends or places and differentiate between school and holiday schedule. Student must also comprehend frequency of events that occur weekly, monthly and yearly, such as festivals and birthdays occur once a month but Sunday comes once in a week and school going is a daily routine.

89 Weight / Mass / Length / Distance: We use measurement in day-to-day activities to describe "how much", "how long", "how far" concepts very frequently for making important decisions. Comparative statements like more vs. less, big vs. small, heavy vs. light are used meaningfully in daily practical real situations. These relative measurements are very essential for daily living, therefore adaptive options for measurement are necessary to use in teaching students with Mental Retardation for regular use. a. Capacity / Volume: Introduce that liquids like water, oil, milk and petrol are measured in unit of Litres (Ltr) and Millilitre (ml), which refers to "capacity / volume". b. Weight and Mass: Drawing from example of measuring liquids, introduce concept of weight of objects or person how they may be heavy or light and therefore unit of measurement for that is "Kilogram", "grams". c. Length and Distance: Length of bench, plot and height of a person is measured in feet and cloth is measured in metres or centimetres. Distance between places or locations like distance between two cities is measured by Kilometres or metres. These are all measurement concepts used in daily life. These concepts can be taught with simple exercises for students.

2.5.2 Social Skills Appropriate social behaviours are necessary for any person to be an acceptable member of the society. Every human being is expected to follow certain standards of social behaviour, set by the society according to the cultural norms and age level of the individuals. In case of persons with mental retardation, intensive training is needed to cultivate appropriate social behaviours. Instead of keeping them away from the society, giving them chances to mix in the society from the childhood itself will lead them towards gaining social competency. The training should be started very early in life. The family, the relatives, neighbours, friends, and the society at large are responsible for the social skills training of the persons with mental retardation. ? The following social skills are need to be taught: 1 Waits for needs to be fulfilled 90 2 Plays with peers sharing objects 3 Greets others 4 Obeys Commands 5 Says 'Please', 'Thank you', 'Sorry' appropriately 6 Helps parents in household tasks 7 Asks permission 8 Takes turn 9 Participates appropriately at meal time 10 Dresses and grooms appropriate to the situation 11 Visits relatives and friends 12 Participates in social functions 13 Behaves appropriately with the opposite sex 14 Returns borrowed materials 15 Identifies human service persons and community helpers HOW TO TRAIN? ? Give chances to learn the skills through regular selected activities. ? Gradually reduce the number of repeated instructions and observe his performance in natural environments. ? Include him as a family member, in all family get together. ? Give him chances to participate in social and religious functions. Outings help in enhancing social skill training. ? Accept the intellectually disabled child as a member of the family and the community. Intensive training is needed to cultivate appropriate social behaviours in the persons with Mental Retardation. The training should started early in life. The family, the relatives, neighbours, friends and the society at large are responsible for the social skills training of the persons with mental retardation. The persons with mental retardation need stimulation, repeated chances, supervision and training to develop proper skills.

91 2.6

Assistive Devices, Adaptations, Individualized Education Plan, Person Centered Plan, Life Skill Education 2.6.1

Assistive Devices

Assistive technology is the term used to describe devices used by people with intellectual disabilities and/or other disabilities that help

compensate for functional limitations and increase learning, independence, mobility, communication, environmental control and choice.

This term also refers to direct services that assist individuals in selecting, acquiring or using such devices. How do people with intellectual disabilities use assistive technology? Communication: Low to high tech communication devices can be the

means for communication for a person who cannot communicate with his or her voice, due to physical and/or cognitive reasons.

Environmental Controls: Devices to control the environment are important to people with severe or multiple physical disabilities and/or cognitive disabilities, who have limited ability to move about in their environment or control electrical appliances. Technology allows a person

to control electrical appliances, audio/video equipment such as home entertainment systems or to do something as basic as lock and unlock doors.

Mobility: Simple manual to sophisticated computer-controlled wheelchairs and mobility aids such as walkers and canes are available for a person who cannot walk.

Education: The computer can be a tool for improved literacy, language development, mathematical, organizational, and social skill development. Alternative ways to access computers are available for people who cannot operate a keyboard. A variety of software is available to help computer-users who have visual impairments and facilitate improved spelling and literacy skills for individual users with print disabilities. Activities of Daily Living: Examples are: ? Devices to assist a person with memory difficulties to complete a task

or to follow a certain sequence of steps from start to finish, such as making a bed or taking medication ?

Directional guidance systems with auditory cues to help a person travel from one place to another

92 ? Devices to help a person shop, write a check, pay the bills, or use the ATM machine Employment: In response to the Americans with Disabilities Act, employers are making the workplace more cognitively accessible. This may require worksite modifications by the employer, to permit the employee to perform a job. For example, an audiotape might be used to prompt a worker to complete each task in a job. Sports and Recreation: Adaptations can be made to computer games which allow the game activity to be slowed down

for a user who cannot react as quickly to game moves and decision-making.

Specially adapted sports equipment is available to compensate for functional limitations, such as specially designed ball ramps that are used in bowling. How can assistive technology benefit people with intellectual disabilities?

Assistive technology can help people with intellectual disabilities overcome barriers towards independence and inclusion. Technology can compensate for a person's functional limitations.

People with intellectual disabilities should be introduced to assistive technology as early as possible. The AT device should be available for use throughout the day and

in natural settings, including home, school, work and recreation. There should be consistency in the kind of technology available, how it is used, and methods for instructing the user on operating the device. Transitions from one device to another should be made as smooth as possible by building on and integrating previously learned skills. Technology solutions

should be flexible and customized to accommodate the unique abilities of each person with intellectual disabilities.

There is a growing use of assistive technology with infants and young children, particularly with communication devices introduced to facilitate early language development. 2.6.2 Adaptations

Adaptations retain the learning outcomes of a prescribed curriculum, and are provided so the student can challenge the regular learning outcomes. A child on an adapted program may be well below the standard of the class, but still may be able to minimally meet the grade level expectations. Class or grade level comparisons in establishing if a student meets expectations should be avoided. These adaptations can include alternate formats, instructional strategies and assessment procedures.

Adaptations include, but are not limited to: ? extended time for assignments or tests, ? a learning assistance support block is scheduled to develop and practice study skills,

93 ? audio tapes or a peer helper to assist with assigned readings, ? a computer to facilitate the completion of written assignments, ? alternatives to written assignments to demonstrate understanding, ?

separate settings for tests and exams, and ? supervised breaks for tests and exams.

Adaptations/Accommodations: For Mild to Moderate Intellectual Disability: ? Do not use complex sentences with a person who is mentally slow. ? Concentrate on concrete ideas and skills. An individual with Intellectual Disability often has trouble with abstract concepts. ? Make instructions clear and concise. Break directions down into small steps or tasks. ? Demonstrate whenever possible. Showing is often more effective than telling. ? Be patient, persistent, and consistent. ? Provide warmth and acceptance. Promote a sense of security through a smile, words of praise, or physical expressions of affection. ? Show respect. Do not be condescending. Talk to the individual as a person; talk to an adult as an adult, not as a child. ? Don't have low expectations for a person with Intellectual Disability. Given training and support, a person with retardation can be gainfully employed and totally integrated into society as a valuable, contributing member. For Severe to Profound Intellectual Disability: ? Use the accommodations listed above. ? Do not react with pity, anxiety, or a variety of other negative emotions when first meeting a person with a severe handicap. ? Use age-appropriate conversation. ? Use age-appropriate activities. ? Include these individuals in community and family activities. Even an individual with profound retardation profits from events that provide integration/interaction with persons who are not handicapped. In fact, this is the way he/she learns

94 best. Being exposed to every phase of community life allows him/her to learn the behaviours necessary for achieving maximum participation in society. Parents must be made fully aware of adaptations to their child's program on an ongoing basis and formal reports or IEP's should note the adaptations being made.

2.6.3 Individualized Education Plan (IEP)

To make teaching and learning effective for Person with Intellectual Disability, an individual educational program is prepared to meet the individual need of the child as every child is unique and needs are specific. Hence, a comprehensive evaluation is carried out to facilitate the process of program planning. The evaluation involves health history, education history, family history etc. mental ability, sensory ability, adaptive behaviour, maladaptive behaviour, academics status and many other elements. Intellectual impairment in mental retardation is characterized by poor or less ability to understand and learn. The individual differences between people with mental retardation are varied to such an extent that every child needs can only be met through a well planned IEP. Special educator, principal, teachers, parents and other professionals as per requirements of the multidisciplinary team (Occupational Therapist, Physiotherapist, Social worker, nurses, psychologist etc.) who are concerned with the needs of the students need to participate in the meetings to develop and evaluate the IEP. The well formatted written IEP document serves as a management tool for intervention. Depending upon the child needs the IEP should have program in PT, OT, ST along with the special education programme. In totality the IEP helps in implementing, monitoring and evaluating the program. Components of IEP Globally IEP contains a specific format with all the components, intact to write IEP. This is written in two parts. Part-1

1. Demographic data It includes, child's name, age, sex, education, mother tongue, address, parents name, occupation, income, date of filling the IEP, registration number, class and roll no. etc. on specific heads on which information is required.

2. Significant information about the "person with mental retardation" Any significant and specific information in relation to the child may be documented. E.g. Sensory preference, learning time preference, attention span, rate of learning etc.
3. Goals: Goals selected on annual basis which the teachers expect the students to achieve over a period of one year as per curricular content is documented.
4. Associated condition: Many person with mental retardation have an additional disability or more are technically referred to as multiple impairment/ disability. For e.g. Mental Retardation, Visual Impairment, Mental Retardation and Hearing Impairment, Mental Retardation and Cerebral Palsy, Mental Retardation and Epilepsy, Mental Retardation and Autism etc. Curricular strategies and planning may differ in cases with additional impairments.
5. Staff responsible: The person responsible for implementation of the IEP is documented for administrative and clinical reasons.

PART-B

1. Skill: Specific statements of what skill / task / activity to be taught is documented in the specific terms. E.g. writing names of month of year.
2. Baseline or current level: The current level or baseline performance level of the student in reference to the task/ skill/activity for teaching is documented. E.g. can write names, 3-4 letter words.
3. Specific objectives or Behavioral objectives: This is the statement that specific what the student will learn(content) what the student will do with the content(behavior), performance level of the student in the content(criteria) and how much is the time period required for achieving the target(duration).
4. Material and learning aids: Learning aids make learning meaningful and easier. Every child has unique needs hence; learning aids effective for one child may not be effective for other child. Depending upon what is to be taught and child specific interest, level and needs learning aids may differ for same activity.
5. Procedure: How to motivate the child to learn the activity and how the task will be taught is described stepwise under procedure. This all includes different strategy to be used to make the learning effective.
6. Evaluation: The student's performance in the particular task chosen against the set criteria as per the specific objective is noted.

96 Some more information on the IEP content Background information: This information is noted briefly focusing on educational relevant details which help in IEP planning. Child family background (siblings, socio economic status, educational status, status of family members); birth and developmental history, school history, occupational history are required for appropriate IEP planning and family intervention. For e.g. for a rural child with illiterate parents more sketches, less written matter and material as per rural availability will be required. Child having history of epilepsy without medical intervention may have to be referred to medical intervention. Assessment of current level of functioning: Without being subjective and adding any interpretation the teacher notes down the exactly what the child does while performing a specific activity. The teacher at this stage doesn't says no or doesn't point out the mistakes. Assessing the current level required skill and efficiency and to be done with accuracy. A wrong assessment will lead to a long goal i.e. to high or too low goal. A total assessment of a child may take a week or more and a natural environment is preferred for assessment. Certain specific information like toileting, bathing skills etc. may be availed from the parents. The teacher must make a good interpretation of the parent remarks. The assessment will include various skills in motor, self help, socialization, language, domestic activity, recreational activities, academics activities, time and money concept. For a slow learner and high functioning MR assessment may have to be conducted for grade level functioning using the regular school books. Here silent reading, oral reading, reading comprehension, spelling, writing ability, dictation, writing on own, arithmetic ability, arithmetic comprehension etc. may have to be tested. Assessment of the detailed pre vocational skills need to be conducted. Various assessment tools used for assessment in our country are:- 1. Madras Developmental Programming System (MDPS). 2. Functional Assessment Checklist for Programming (FACP). 3. Behavioural Assessment Scale for Indian Children having Mental Retardation (BASIC – MR) 4. PORTAGE 5. UPNAYAN 6. NIMH-Vocational Assessment Programming System(VAPS)

97 Goal By considering the child past achievement, rate of achievement, current level, practical use of the activity, priority need of the child, time required of the training, parental involvement level and teachers skills; goals are selected. The activities of the daily living goals are the priority areas. Priority goals may differ for home based training and school based programmes. Short term objectives It means breaking down of annual goals into smaller units. Specific strategy can be worked out for the achievement of the objectives. The objectives would contain the condition in which the child would perform, who would perform, what behaviour would be performed, what would be the criteria of the performance and duration for the achievement of the objectives. The objectives are stated in behavioural terms specifying observable behaviour and criteria for mastering. It clearly tells what is expected from students and what is to be done. 2.6.4 Person Centred Plan Person centred planning has been used for over 20 years and, in that time, there has been much learning. It cannot be explained with a simple one-sentence definition. In fact, the use of the word 'planning' leads to significant misunderstandings and a focus on doing a 'plan', rather than the more important essential components of listening and thinking with the person, learning what it is the person and their family want, and responding to providing the supports needed to achieve the goals and aspirations of the person and their family and friends. The process is embedded in the person's social and cultural context and therefore reflective of, and responsive to, their personal, social and cultural circumstances. Probably the best way to ensure that its complexity is understood is to quote from some of the people who have written about, practised and taught person centred planning over the years. Helen Sanderson describes it as: "...a process of continual listening and learning, focused on what is important to someone now, and for the future, and acting upon this in alliance with their family and friends. It is not simply a collection of new techniques to replace individual program planning. It is based on a completely different way of seeing and working with people with disabilities which is fundamentally about sharing power and community inclusion."¹ (Sanderson, H. (2000) PCP: Key Features and Approaches, <http://www.helensandersonassociates.co.uk>)

98 The NSW Community Participation Program Guidelines state that service providers should move to person centred planning and identified five key issues. These are that: _ the person is at the centre _ their wider social network is involved as full partners _ there is a partnership between the person, their family and the service provider _ the whole of life is considered _ there is continued listening, learning and action. (NSW Community Participation Program Guidelines 2006, DADHC, www.dadhc.gov.nsw.au) 2.6.5 Life Skill Education Life skills have been defined by the World Health Organization (WHO) as "abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life".

They represent the psycho-social skills that determine valued behaviour and include reflective skills such as problem-solving and critical thinking, to personal skills such as self-awareness, and to interpersonal skills. Practicing life skills leads to qualities such as self-esteem, sociability and tolerance, to action competencies to take action and generate change, and to capabilities to have the freedom to decide what to do and who to be. Life skills are thus distinctly different from physical or perceptual motor skills, such as practical or health skills, as well as from livelihood skills, such as crafts, money management and entrepreneurial skills. Health and livelihood education however, can be designed to be complementary to life skills education, and vice versa. Key Life Skills

Life skills include psychosocial competencies and interpersonal skills that help people make informed decisions, solve problems, think critically and creatively, communicate effectively, build healthy relationships, empathize with others, and cope with managing their lives in a healthy and productive manner. Essentially, there are two kinds of skills - those related to thinking termed as "thinking skills"; and skills related to dealing with others termed as "social skills".

While thinking skills relate to reflection at a personal level, social skills include interpersonal skills and do not necessarily depend on logical thinking. It is the combination of these two types of skills that are needed for achieving assertive behaviour

99 and negotiating effectively. "Emotional" can be perceived as a skill not only in making rational decisions but also in being able to make others agree to one's point of view. To do that, coming to terms first with oneself is important. Thus, self management is an important skill including managing/coping with feelings, emotions, stress and resisting peer and family pressure.

Young people as advocates need both thinking and social skills for consensus building and advocacy on issues of concern. The Ten core Life Skills as laid down by WHO are: 1. Self-awareness 2. Empathy 3. Critical thinking 4. Creative thinking 5. Decision making 6. Problem Solving 7. Effective communication 8. Interpersonal relationship 9. Coping with stress 10. Coping with emotion The method used in teaching of Life Skills builds upon the social learning theory and on what we know of how young people learn from their environment; from observing how others behave and what consequences arise from behaviour. It involves the process of Participatory learning using 4 basic components: 1. Practical activities 2. Feedback and reflections 3. Consolidation and reinforcement 4. Practical application to day to day life challenges. 2.7 Vocational Training and Independent Living Approximately 156 million in the world (nearly 3% of world's population) are persons with intellectual disability. It is estimated that 1.8% (18.53 million) of total population constitutes Persons with disability in India. The prevalence of intellectual disability is 100 94 out of 1,00, 000 population (NSSO 2002). There is a paradigm shift in the approach to disability rehabilitation from charity mode to right based. This enables inclusion of persons with disabilities in all aspects of society. Inclusion of persons with disability in Employment is a trend being practiced all over the world. For many people who have disabilities, work is an important goal, but because of physical and attitudinal barriers in the workplace and society, they were denied productive work in competitive work environments. However, Persons with intellectual disability have been proving their skills in specific jobs. Department of Adult Independent Living (DAIL) of National Institute for the Mentally Handicapped (NIMH) strives towards improving quality of life of Persons with Intellectual Disability through vocational training and placement services. As part of these services, the Adult persons with intellectual disability are trained to acquire vocational and independent living skills. Independent living means living like anyone else with same limitations and same opportunities. Persons with intellectual disability also observe the same style of living like other individuals of their society. The ability of Persons with intellectual disability to be productive was linked to social behaviour and practice and bore very little relationship to their intelligence (Cornelius D.J.K, 2009). The competencies and the instructional areas related to vocational training are listed below: Competencies Instructional area Managing family finances - Identifying coins, rupee notes and making a change. - Writing cheque. Managing a home - Decorating and maintaining Classroom. - Aware of basic home repairs. - Planning balanced meals - Eating proper food - Understanding the need of vitamin Caring for personal needs - Developing hygiene and grooming skills - Learning common games 101 - Learning first aid skills - Obtaining knowledge of common illness and when to seek medical attention. Buying and preparing food - Mathematics- basic skills. - Developing table manners - Planning & preparing nutritious meals - Obtaining knowledge about super market - Storing food - Kitchen cleanliness Buying and caring for clothes - Reading & following label directions - Using a clothes washing machine - Ironing - Selecting clothes (Choosing clothes, styles) - Sorting clothes for laundry. Engaging in civic activities - Social skills - Identifying own country and state - Aware of the right for voting. - Aware of personal rights as a citizen - Basic knowledge of politics - Chief- Minister, Governor, Prime Minister, President - Election. Recreation and leisure time - Physical education

102 - Aware of community recreation - Spectator sports. Getting around the community - Reading transportation schedule - Reading traffic signs. - Understanding the function of traffic police. - Planning a trip - Riding a bicycle
Achieving self- awareness - Identifying values and emotions. - Identifying conflicts and coping with stress - Expressing feelings (anger, joy) - Experiencing group interaction - Developing awareness of body. Acquiring self confidence - Understanding potential of Performance - Developing awareness of strength and weakness. - Awareness of personal behaviour - Accepting praise and criticism - Accepting teasing - Listening actively to others Achieving socially responsible behaviour - Developing acceptable behaviour during outings. - Involving in activities to improve strength and overcome weakness - Recognizing the rights of self & others.

103 - Expressing realistic ambitions and hopes. Maintaining adequate interpersonal skills - Ability to develop and maintain friendship. - Identifying different levels of friendship. - Developing self organization in home, school and community - Developing ability to listen, ask questions, and respond appropriately. - Developing appropriate relationship with opposite sex. Achieving independence - Completing assigned responsibilities Achieving problem solving skills - Accepting consequences for personal action. - Taking assistance in difficulties. Communicating adequately with others - Recognition and responding appropriately during emergency situations. - Realizing the need for reading and writing. Knowing and exploring occupational Possibilities - Realizing the need of work. - Developing an attitude to get trained and seek on employment. Making appropriate occupational courses - Obtaining knowledge of various types of jobs.

104 - Identifying appropriate types of work. - Identifying strength and weakness for the jobs. - Identifying possibilities for entry level job. Exhibiting appropriate work habits - Following written and verbal instructions. - Aware of the team concept. - Developing ability to take turns. - Developing ability to agree/ disagree appropriately. - Developing awareness of the importance of attendance, punctuality, quality of work, and productivity - Realizing the need for physical exercise for well being and success toward work and community living. Since the ultimate aim of education is to provide opportunity for employment, the vocational training is crucial for employability. 2.8 "Check Your Progress" 1) Define Intellectual Disability. Briefly discuss the types and characteristics of Intellectual Disabilities.

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105 2) Discuss briefly about the different assessment tools available in Indian context to assess the children with Intellectual Disabilities.

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..... 3) What are the promotional procedures of FACP?

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..... 4) What is assessment ?

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..... 5) Write a few examples for NRT and a few for CRT.

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..... 6) What are the purposes of assessment you find in your case of assessment for IEP?

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106 7) Explain the need and importance of social skills training for persons with mental retardation.

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..... 8) Mention 5 social skills, which are to be taught at primary and secondary levels.

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..... 9) Define IEP. State the components of IEP.

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..... 10) Briefly discuss the importance of Vocational Training.

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2.9 Let Us Sum Up ?

Intellectual disability is a disability characterized by significant limitations in both intellectual functioning and in adaptive behaviour, which covers many everyday social and practical skills. This disability originates before the age of 18. (

American Association on Intellectual and Developmental Disabilities (AAIDD)- 2010) ? Types and Characteristics of ID. 107 ? Each Mentally Retarded child

is unique in nature. Special Education can identify the unique need of each child through proper assessment and plan intervention activities as per the requirement. Assessment is a pivotal and the first step of rehabilitation programme for the

Mentally Retarded children. The following points need to be attended by the students. ? Assessment is a collection and organisation of information for making administrative and/ or instructional decision for an individual or group. ?

Assessment is carried out for various purposes. Some of these purposes are:- (a) initial screening and identification, (b) determining eligibility, (c) determination of current performance level and educational need, (d) decision about classification and programme placement, (e) determination and evaluation of teaching programmes and strategies, (f) development of educational programme, (g) monitoring students performance, (h) evaluating the effectiveness of educational intervention programme. ? Assessment report should be clear so that it will be useful both by the assessor and the assessee. ?

There are different types of assessment. Based upon the manner of data collection it is formal and informal assessment and based upon the construction of test assessment could be Norm Referenced Assessment (Test) or Criterion Referenced Assessment (Test). ? NRA/NRT helps more in administrative decisions where as the CRA/CRT helps more in instructional purpose. ?

Most of the psychological test such as Development Test, Intelligence Test and Aptitude Test are NRT in nature where as most of the behavioural scale used in Special Education are CRT in nature. ? For school age children, the first criterion referenced scale developed to suit Indian conditions is Madras Developmental Programming System (MDPS). Later, BASIC- MR and Functional Assessment Checklist for Programming (FACP) were developed. Similarly, with the emphasis on early childhood special education, Upanayan checklist and Portage kit, translated in Hindi and adapted to Indian culture are developed and are used for assessment and programming in early intervention programmes.

111 Unit-3.1 Definition, Types and Characteristics. Structure 3.1.1 History and brief note about Autism 3.1.2 What is Autism 3.1.3 Signs and symptoms of autism in babies and toddlers 3.1.3.1 Early signs of autism in babies and toddlers 3.1.4 What causes autism 3.1.5 Characteristics Associated with Autism Spectrum Disorders 3.1.5.1 Common Characteristics in Autism Spectrum Disorders. 3.1.5.2 Related Characteristics in Autism Spectrum Disorders 3.1.6 Types of Autism 3.1.6.1 Differential Diagnostic Feature: Autism and Related disorder 3.1.6.1 Treating Autism 3.1.1 History and Brief Note History In 1943, Leo Kanner released an article titled "Autistic Disturbances of Affective Contact" It was in this article that 'autism' was first used to describe 11 children exhibiting what are now recognized as symptoms of autism Kanner noted that: "The basic desire for aloneness and sameness has remained essentially unchanged..." It was based upon this observation that he decided to use the word 'autism' itself, because of it's meaning in Greek which is 'self Autistic adults and children alike were being mLsdiagnosed in the early twentieth century.

112 The word autism has been derived from 'auto' and 'ism', which means 'to be with oneself. In 1906, Eugene Bleuler, a Swiss psychiatrist used autism as an adjective. Initially childhood schizophrenia was used to refer to this condition. Later, after several researches Leo Kanner (1943) used autism as a noun and differentiated autism from schizophrenia when he described 11 self-absorbed children who had "autistic disturbances of affect contact." Autism is the most common of the Pervasive Developmental Disorders, affecting an estimated 2 to 6 per 1,000 individuals. Autism can't be identified distinctively in any subgroup, viz., race, ethnic or SES in its number or intensity. Current estimates suggest that approximately 400,000 individuals in the United States have autism. In India's current population, it is estimated that approximately 1.7 million autistic persons in the country have autism or autistic-like symptoms. Autism is three to four times more likely to affect boys than girls. Autism occurs in individuals of all levels of intelligence. Approximately 75 percent are of low intelligence while 10 percent may demonstrate high intelligence in specific areas. One common misconception about autism is that: it is a condition that only affects children. The truth is children with autism grow up to become adults with autism. While the disorder is not rare, the majority of autistic people has not been diagnosed and do not receive the services they need. This problem occurs in many countries, but is especially true in where there is a tremendous lack of awareness and misunderstanding about autism even among the medical professionals, who may either misdiagnose or under diagnose the condition. So, diagnosis of autism is a major problem in science before entering into its intervention. At first, autism can be described by the symptoms like.

113 AUTISM A lone even with others U unusual play T waddle and twirl object I indifference to other people S trance movements and mannerism M sot have a learning disability 3.1.2 What is Autism Definition ASD is a lifelong neurodevelopmental disability, a behaviorally defined syndrome that is recognized by the manifestation of behavioral characteristics across multiple areas of functioning. Characteristics are observed, to varying degrees, in social relationships, communicative competence, pattern and range of interests, and sensory responsiveness. These characteristics are generally evident during the child's early years, and must adversely affect educational performance. The definition of ASD has been written sufficiently broad to encompass children who exhibit a range of characteristics related to ASD. This includes Autistic Disorder, Rett's Disorder, Childhood Disintegrative Disorder, Asperger's Disorder, and Pervasive Developmental Disorder Not Otherwise Specified, Children with mental retardation or significant behavior disorders are not automatically excluded since, in many cases, these conditions coexist with ASD. Autism means a developmental disability. Now Autism is called a Neuro-biological disorder, significantly affecting verbal and non verbal communication and social 114 interaction, generally evident before age 3. It adversely affects a child's educational performance. Other characteristics often associated with "Autism are-engagement in repetitive activities, stereotyped motor movements, unusal responses to sensory experiences and resistance to enviornmental changes.

Autism

is a complex developmental disability that typically appears during the first three years of life

It

is widely recognized as a neuron developmental disorder that affects the functioning of the brain. It is a

spectrum disorder Children with autism are unable to interpret the emotional states of others, failing to recognize anger, sorrow or manipulative intent

It impacts

the normal development of the brain in the areas of social interaction and communication skills

Children and adults with autism typically have difficulties in verbal and non-verbal communication, social interactions, and leisure or play activities

Stereotypic (self-stimulatory) behaviors may be present. In some cases, aggressive and/or self-injurious behaviors might be present

It is not a behavioral, emotional or conduct disorder. It is not a mental illness. There are no medical tests that can be used to diagnose autism.

3.1.3 Signs and symptoms of autism in babies and toddlers. If autism is caught in infancy, treatment can take full advantage of the young brain's remarkable plasticity. Although autism is hard to diagnose before 24 months, symptoms often surface between 12 and 18 months. If signs are detected by 18 months of age, intensive treatment may help to rewire the brain and reverse the symptoms. The earliest signs of autism involve the absence of normal behaviours but not the presence of abnormal ones so they can be tough to spot. Some autistic infants don't respond to cuddling, reach out to be picked up, or look at their mothers when being fed.

115 3.1.3.1 Early signs of autism in babies and toddlers. Doesn't make eye contact (e.g. look at you when being fed). Doesn't smile when smiled at. Doesn't respond to his or her name or to the sound of a familiar voice. Doesn't follow objects visually. Doesn't point or wave goodbye or use other gestures to communicate. Doesn't follow the gesture when you point things out. Doesn't make noises to get your attention. Doesn't initiate or respond to cuddling. Doesn't imitate your movements and facial expressions. Doesn't reach out to be picked up. Doesn't play with other people or share interest and enjoyment. Doesn't ask for help or make other basic requests.

3.1.4 What causes autism? A specific cause is not known, but current research links autism to biological and neurological differences in the brain

but also environmental influences play a role as well. Recent researchers have shown that autism does run in families, but not in a clear-cut way. Siblings of people with autism have a 3 to 8 percent chance of being diagnosed with the same disorder. It can be safely said that:

Autism is not caused by bad parenting or 'refrigerator mothers' as was suggested by psychiatrist Bruno Bettelheim in the 1950s.

3.1.5 Characteristics Associated with Autism Spectrum Disorders. Characteristics: According to DSM IV, Autism is such a developmental disorder under P.D.D., that includes three qualitative deficits-

116 1. Lack of Socialization 2. Lack of Communication 3. Lack of Flexibility. These three are together called 'Autistic Triad'

1. Lack of Socialization: Deficit in social emotional reciprocity. Deficit in maintaining, developing and understanding relationship to parents, friends and siblings. Deficit in eye contact. Inefficiency in pretend play and turn taking. Cannot ask for help or cannot help other too. Attention deficit needs an overview of one's work and educational experience.
2. Lack of Communication: Deficit in verbal and non verbal communication behaviour used for social interaction. Echolalia. Pronominal reversal. Immediate and delayed verbal imitation. Monotone. Use of Jargon. Lack of joint attentions. Lack of emotional and body gesture.
3. Lack of Flexibility: Stereotype or repetitive motor movements, use of object and speech. Maintenance of sameness. Highly restricted, fixated interest that are abnormal in intensity and focus. Self injurious activities.

117 Self stimulatory activities. Hypo and Hyper activity to sensory input.

3.1.5.1 Common Characteristics in Autism Spectrum Disorders. Social Characteristics. May exhibit poor eye contact. May not differentiate between strangers and those seen every day or show anxiety towards strangers. May have a narrow range of emotions inappropriate displays. May not enjoy social games like peek-a-boo or patty cake. May lack pretend/imaginative play skills. May not show an awareness of others. May have difficulty reciprocating emotionally and socially and have difficulty relating to others. Often demonstrate little or no interest in establishing friendships, or have difficulty in developing and maintaining friendships. Difficulty initiating or sustaining play with peers or groups. May lack understanding of social cues, gestures, emotional expressions. May lack understanding of how others feel/express moods, May have strange fears or lack fear of real danger. May repeat preferred play schemes over and over again. Communication Characteristics. May have difficulty in reading and showing emotion (e.g. little smiling or bland face). May be unusually quiet. May not respond to name, or appear not to hear or attend. May not babble and coo. Language may be delayed. Stereotyped or idiosyncratic speech is common -may have echolalia (repeating words or phrases they hear) either immediately or later. Used to say a few words, but now does not. Often have trouble imitating or using nonverbal gestures and appropriate facial expressions to communicate.

118 May have difficulty initiating interaction with others. May appear not to be interested in communicating with others. May not imitate or demonstrate functional and pretend play. May not point or wave bye-bye. Abnormal pitch, intonation, rhythm, stress. Grammatical structure may appear immature. Difficulty understanding & interpreting pragmatic language. Behavior Characteristics May dislike being held or stiffen when held. Exhibits repetitive body movements such as hand or finger flapping or rocking. May be extremely sensitive to some auditory stimuli. May not respond to some auditory stimuli. May exhibit stereotyped and repetitive use of language or idiosyncratic language. May persevere on certain activities. May demonstrate persistent preoccupation with parts of objects. May resist changes in routines; unreasonable insistence on following routine. May lack fear of real danger. May explore environment by inappropriate methods such as licking, smelling and handling objects. Avoids looking at other people. Avoids contact with other people, preferring to touch objects. Learning Characteristics Will perform unevenly within and across skill areas, sometimes demonstrating exceptionalism in some areas. Resists changes in the learning environment. Has difficulty waiting or using unstructured time. May not generalize skills to other settings. Has problems with abstract and conceptual thinking; requires concrete interactions. Uses and interprets speech literally; doesn't usually read facial expressions, body language or other social cues.

119 May be impulsive, compulsive, or perseverate on certain activities; behavior is inconsistent. May be distracted by auditory or visual stimuli. Has trouble with organizational skills, planning, or making choices. Relies on learned routines, cues, and other learned patterns. 3.1.5.2 Related Characteristics in Autism Spectrum Disorders Sensory/Motor Characteristics May be over or under sensitive to certain sensory stimuli. These are Sounds, Tastes, Visual input, Textures and Smell May have insensitivity to pain/ high pain threshold. Poor fine motor skills (e.g. writing may be extremely difficult and laborious or sloppy, off the lines, and out of the boundaries). Gross motor skill difficulties. These are: Difficulty with coordination, Balance problems and Playground activities or sports may be difficult. Limited awareness of the physical presence or needs of others. Unaware of their bodies place in space. Attention / Organization Characteristics Poor Concentration: Poor organizational skills: < Often off task < May lose papers, assignments, etc. < Distractible < Desk may be messy < Overloads easily < Backpack never emptied < May be disorganized < May not be able to predict or organize things needed for homework: book, packet, etc. < Difficulty sustaining attention. < May not remember homework < Papers can be messy and written work unorganized < Difficulty knowing how and where to start work. 3.1.6 Types Autism spectrum disorders are disabilities with many variations in symptoms and/ or behaviours. Furthermore, people with autism spectrum disorders vary widely in abilities, intelligence, and behaviours across those indicators. In other words, characteristics associated with autism spectrum disorders may be observed in a range 120 of mild to very severe forms. For example, some children do not speak; others have limited or even advanced language skills. Those with more advanced language skills tend to use a small range of topics, as well as have difficulty with abstract concepts and pragmatic (practical) language skills. Repetitive play skills, a limited range of interests, and impaired social skills are generally evident as well. Unusual responses to sensory information such as loud noises, lights, and certain textures or food or fabrics are also common. Because the three disability groups included in autism spectrum disorders are syndromes (i.e., a collection of symptoms), different children experience distinct characteristics with varying degrees of impairments. Each child is at different developmental levels from other children. Each child will be ready to learn certain skills at different ages. The Diagnostic and Statistical Manual for Mental Disorders (DSM-1V-TR) is used to classify disabilities and provides refined definitions of autism spectrum disorders. ASD are a set of disability groups that are identified under the heading of Pervasive Developmental Disorders (PDD). PDD are characterized by severe and pervasive impairment in several areas of development, including social interaction skills, communication skills, or the presence of stereotyped behaviour, interests and activities. Figure 1-Shows the five disability disorders under the umbrella of FDD.

121 Pervasive Developmental Disorders Pervasive Developmental Disorder Asperger's Autistic Childhood Disintegrate Rett's Disorder Not Otherwise Specified Syndrome Disorder Disorder Autism spectrum disorders (see figure 2) account for three of the five Pervasive Developmental Disorders: pervasive developmental disorder-not otherwise specified, Asperger's Syndrome, and autistic disorder. The term, autism spectrum disorder, implies that the three disorders share common characteristics, but also have unique qualities that allow for a differential diagnosis of each. Consequently, the severity of impairment varies within and across each individual diagnosed with an autism spectrum disorder. Figure 2 - Autism Spectrum Disorders (ASD) Autism Spectrum Disorders (ASD) Pervasive Developmental Disorder Not Asperger's Syndrome Autistic Disorder Otherwise Specified A brief description of the three categories under the term ASD is provided below. Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS) The category of Pervasive Developmental Disorder-Not Otherwise Specified is used when a child does not meet the diagnostic criterion for other disabilities, but does display a severe and pervasive impairment in the development of social interaction or communication skills or the presence of restricted, repetitive, and stereotyped patterns of behaviour, interests and activities. Asperger's Syndrome Children with Asperger's Syndrome have significant difficulties in social interaction and may exhibit restricted, repetitive and stereotyped patterns of behaviour, interests and activities. Asperger's syndrome causes observable significant impairment in social, occupational or other important areas of functioning.

In contrast to Autistic Disorder student with Asperger' Syndrome do not display clinically significant delays in language acquisition although there may be deficits in the practical use of language and social-communication skills. Students with Asperger's Syndrome typically do not demonstrate cognitive delays during the first three years of life. Autism/Autistic Disorder Children with autism have significant difficulties in social interaction, expressive and 122 receptive communication and may exhibit restricted, repetitive and stereotyped patterns of behaviour, interest, and activities. Onset of autism may be evident before age three, with observable delays and/or abnormal functioning in social interaction, language, or symbolic play. 3.1.6 Differential Diagnostic Feature : Autism and Related disorder 3.1.6 Treating Autism Behavioral Interventions - Research suggests that early, intensive behavioral interventions may improve outcomes for children with autism and help the children achieve their maximum potential.

Sensory Integration - Integration and interpretation of sensory stimulation from the environment enhances cognition.

Diet: People with autism are more susceptible to allergies and food sensitivities than the average person. The most common food sensitivity in children with autism is to gluten and casein.

Vitamin Therapy: Parents have reported that they have tried B6/magnesium and/or DMG, often with good or even spectacular results.

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124 3.2 Tools and Area of Assessment Structure : 3.2.1 Interdisciplinary and Multidisciplinary assessment 3.2.1.1 Interdisciplinary assessment 3.2.1.2 Multidisciplinary assessment 3.2.2 Different Diagnostic tools for ASD 3.2.3 Assessment of ASD 3.2.3.1 Child Health History a. Prenatal History b. Perinatal History c. Past Medical History d. Review of Systems 3.2.3.2 Developmental and Behavioral History of the Child 3.2.3.3 Family Medical and Mental Health History 3.2.3.4 Medical Evaluation 3.2.3.4.1 Components of a Medical Examination 3.2.3.4.1. a-Physical and Neurodevelopment Examination 3.2.3.4.1. b-Developmental Neurological Examination 3.2.3.5 Laboratory Tests 3.2.3.6 Genetic Testing and Consultation 3.2.3.7 Neurological Laboratory Evaluation 3.2.3.8 Other Laboratory Investigations 3.2.3-9 Sensory Evaluation 3.2.3.10 Direct Behavior Observation 3.2.3.11 Play Environment 3.2.3.12 Degree of Structure

125 3.2.3.13 Observation Domains 3.2.3.14 Cognitive Assessment 3.2 Tools and Area of Assessment Tool is a monitor to Guidelines and to refers to the identification of children birth through age 5 most likely to have an ASD and/or developmental delay and it applies to children different age level and also to the process of initiating the evaluation of a child's different in this age groups. The terms Assessment used to describe the intervention planning process. 3.2.1 Interdisciplinary and Multidisciplinary assessment The interdisciplinary and multidisciplinary processes stress the importance of gathering information from a variety of disciplines that have unique knowledge of a particular aspect of the child and family. Professionals most often involved with persons with ASD include psychologists, psychiatrists, neurologists, pediatricians, other physicians, speech pathologists, audiologists, occupational therapists, social workers and behavioral and educational specialists. Input from all involved professionals may be necessary to obtain a complete picture of the child and family for effective service planning. 3.2.1.1- Interdisciplinary assessment requires respect, integration and coordination among professionals with diverse backgrounds. The interdisciplinary team model is the preferred model in the evaluation and assessment of ASD. The interdisciplinary process involves professionals from various disciplines providing their unique contributions regarding aspects of the child's development and family functioning. The defining feature of this approach is the ability to integrate and synthesize information through an interactive group process. Members are aware that their interpretation informs the whole and are able to formulate conclusions and recommendations based upon the combined efforts of all. The members are psychologists, psychiatrists, neurologists, pediatricians, other physicians, speech pathologists, audiologists, occupational therapists, social workers and behavioral and educational specialists. 3.2.1.2-Multidisciplinary process can take with the child and family participating in numerous sessions or it can take place over the course of several months. Professionals in a multidisciplinary process often operate without benefit of collaboration with other team members and often draw separate conclusions based

126 upon their particular experience. This is a highly stressful process for children and families. Information gathered using the multidisciplinary model is often redundant, and the results from other multidisciplinary team member evaluations may not be available at the time they are needed by another team member. At times, professionals may repeat portions of previous assessments, regardless of the information available, due to lack of a relationship with the other professional and/ or concerns regarding knowledge or conclusions drawn. 3.2.2 Diagnostic tools for ASD There are many areas to assess of children with ADS. Some important diagnostic tools for ASD which should be mentioned are - 1) Clinical Assessment: CARS rating system (Childhood Autism Rating Scale) developed by Eric Schopler in the early 1970s. Behavior. Using a 15-point scale, professionals evaluate a child's relationship to people, body use. and adaptation to change, listening response, and verbal communication. The Checklist for Autism in Toddlers (CHAT) is used to screen for autism at 18 months of age. It was developed by Simon Baron-Cohen in the early 1990s to see if autism could be detected in children as young as 18 months. The screening tool uses a short questionnaire with two sections, one prepared by the parents, the other by the child's family doctor or pediatrician. The Autism Screening Questionnaire is a 40 item screening scale that has been used with children four and older to help evaluate communication skills and social functioning. The Screening Test for Autism in Two-Year Olds, being developed by Wendy Stone at Vanderbilt, uses direct observations to study behavioral features in children under two. She has identified three skills areas - play, motor imitation, and joint attention - that seem to indicate autism. Autism Diagnostic Interview -Revised (ADI-R) The ADI-R (Rutter M, Le Couteur et al., 1989) is a standardized (93 items), structured interview based on ICD-10 definition of autism for caregivers of individuals with autism before the age of 36 months. It is used for diagnosing autism, planning treatment and distinguishing autism from other developmental disorders. Autism Diagnostic Observation Schedule (ADOS)-ADOS diagnose and assess

127 autism and pervasive developmental disorder (FDD) This semi-structured assessment can be used to evaluate almost anyone suspected of having autism from toddlers to adults, from children with no speech to adults who are verbally fluent adolescents and adults. Autism Behavior Checklist (ABC) The Autism Behavior Checklist (ABC) is a list of questions (57 items in 5 categories) about a child's behaviors. The ABC was published in 1980 (Krug et al., 1980) and is part of a broader tool, the Autism Screening Instrument for Educational Planning (ASIEP) (Krug et al., 1978). The ABC has been used with children as young as 3 years of age. Behavioral Summarized Evaluation (BSE) The Behavioral Summarized Evaluation (BSE) (Barthelme et al., 1992) is a rating scale developed in France and designed to measure changes in behavior in autistic children and adolescents. Social Communication Questionnaire (SCQ) The SCQ is a cost effective way to determine whether an individual should be referred for a complete diagnostic evaluation or not. The questionnaire can be used to evaluate anyone over 4 years age as long as his/her mental age exceeds 2 years. It is available in two forms, namely life time and current form, each composed of 40 yes or no questions. Gilliam Autism Rating Scale (GARS) The Gilliam Autism Rating Scale (GARS) (Gilliam, 1995) is a 42 items (grouped under three subscales) behavior rating scale designed to measure the severity and probability of autism from age 3yrs to 22 yrs Recently two standardized tests on Indian population has been developed. Autism Diagnostic Check-List (ADCL) Autism Diagnostic Check-List (Banerjee, 2007) is a 60 items (with six sub-scales) check list in both English and Bengali version. The test diagnoses and help assessing the impairment in specific area/s for planning of management programmed. Indian Scale for Assessment of Autism (ISAA) Developed by NIMH, ISAA is a 45 itemed scale (6 subscales) to diagnose and assess autism. Above the all types of check list are used to measure and asses the children with ASD in clinical environment that's why it's call Clinical Assessment (2) Behavioural Assessment : The process of understanding the complex behaviour in simpler forms based on 'ABC' model. (3) Observational Assessment : Systematic observation of behaviour helps in monitoring teaching methodologoes. It has two steps—Formal and Informal.

128 (4) Educational Assessment : Selection of tests depends on the purpose for which the assessment to be carried. Like as—N.R.T, C.R.T. (5) Functional Assessment : Assessment of purposeful behaviour. 3.2.3 Assessment of ASD There are many areas of assessments. These are; 3.2.3.1 Child Health History A detailed child health history would include prenatal and perinatal history, a complete health history of the child (including review of pertinent medical records) and family health history. This information can be obtained by the physician or another health care professional (e.g., pediatric nurse, medical social worker) with adequate training and experience in conducting health history interviews. Health care professionals often are able to obtain this information with the provision of basic guidelines, but the information obtained should be reviewed by a physician. Use of a health history questionnaire is acceptable practice with the provision that relevant issues are clarified by an in-person interview. Whether obtained by interview or questionnaire, essential elements of the health history should include the following. a. Prenatal History: Obtain information about previous pregnancies, since previous miscarriages may be a clue to the presence of genetic disorders. Document medical illnesses, which occurred during the pregnancy, since prenatal infections (such as cytomegalovirus and toxoplasmosis) can affect fetal development. Determine medications taken during pregnancy, as they may affect the development of the fetus or predispose the newborn to medical conditions, such as neonatal hypoglycemia in an infant born to a mother with gestational diabetes. Anticonvulsants, for example, are frequently given to mothers with epilepsy. b. Perinatal History: Obtain information about the length of gestation, onset of labor, and any complications that occurred during labor and delivery. If, for example, a Caesarian section had been performed, determining whether an indication of fetal distress would suggest that further information might be helpful, such as exploring for signs of fetal hypoxia.

129 Establish the infant's birth weight, length and head circumference, which are helpful in determining whether intra-uterine growth retardation was present and evaluating gestational age. Document the neonatal course, as it can be quite useful in evaluating the onset of subsequent developmental issues. Early feeding difficulties, for example, can be due to neurological abnormalities of coordination of suck and swallow. c. Past Medical History: Obtain information about all hospitalization, surgeries and significant injuries, especially those with head injuries associated with loss of consciousness. Document and explore previous medical illnesses, as they may provide information about the need for specific medical diagnostic testing or treatment. Examples of this would be recurrent episodes of vomiting and dehydration, which could be caused by a deficiency in amino acid metabolism. Specifically question the possibility of clinical seizure activity, as a significant number of children with ASD (approximately 30 percent) develop seizure disorders over time. Obtain specific documentation of infectious diseases and immunization status. This information may be helpful in determining whether any immunological deficiencies might be present and warrant further evaluation. Determine dietary information, which is extremely relevant, since many children with ASD are on restricted diets, either by self-selection or as part of various treatment methodologies. This information should be specific enough to determine if the child is at nutritional risk due to inadequate intake of various essential nutrients or calories. Explore the presence of any known allergies, including the way the allergy was determined and its manifestations in the child. This information should be utilized to determine whether any further evaluation or treatment is indicated. Explore previous medications that had been administered, including prescribed medications and non-prescription medications. Document any behavioral effects of the medications, in addition to the medical effects. This would be helpful to determine whether paradoxical effects on behavior have been observed. Thoroughly explore the possibility of developmental regression. Many children

130 with ASD have a period of apparently normal development, although with further detailed questioning, it may be clear that signs or symptoms of developmental abnormalities were previously present. It is important to specifically document which developmental skills were previously present and at what ages and to compare those skills to current function. d. Review of Systems: Explore all relevant medical organ systems to determine whether signs or symptoms of underlying medical disorders may be present. Direct special attention to sleep, since many children with ASD have sleep disorders, which can interfere with child and family function. Obtain information about difficulties with falling asleep, night awakening. Specifically elicit signs of problems with hearing and vision. Many children with developmental disorders have impairments in hearing and vision; therefore, obtaining information about parent concerns, past evaluation of vision and hearing acuity (including the methods of testing, child compliance and testing results) and sensory hypersensitivities is important. Obtain information about the possible presence of diarrhea or constipation, since some children with ASD may have gastrointestinal problems. 3.2.3.2 Developmental and Behavioral History of the Child The parent interview should include the developmental and behavioral histories and current functioning of the child. This information is gathered using either questionnaires or direct interviewing. In practice, a combination of both components is best. Questionnaires include objective, easily identifiable developmental information such as developmental milestones, motor skills, eating and sleeping patterns, etc. Other information provided through this format could include history of evaluations, past treatments and interventions, if appropriate. The clinician uses this information to supplement the parent interview. Collection of easily identifiable and verifiable information before the interview allows more time for the clinician to pursue current concerns and obtain detailed information pertaining to specific diagnostic criteria. The clinical content of the parent interview should document the following domains: First concerns about the child's development. This includes the parents' first concerns as well as concerns of others (relatives, PCP) that may have preceded parental concerns. It is also important to ascertain their interpretation of the events at that time (i.e., family move, illness, daycare experience, etc.).

131 Characteristics of the infant's temperament. Social-emotional milestones. This includes engagement in typical baby games (pat-a-cake, peek-a-boo), eye contact during feeding and games, shared attention, greetings and similar significant events. It is sometimes helpful to provide a reference point (i.e., first birthday) to aid with recall. Sensory abnormalities. It is important for the clinician to provide examples to help discriminate atypical patterns from typical developmental patterns. For example, arm flapping and jumping are common in many preverbal children. For example, children respond to exciting stimuli such as the currently popular children's characters, Barney and Elmo. Feeding and sleep problems or patterns. Fine and gross motor development and milestones. Atypical interests and activities. Interest in other children and/or siblings. Patterns of attachment to caregivers. Ability to use nonverbal communicative means such as gesture and facial expression. Communication, including both verbal and nonverbal intent. Preferred activities and play. Other notable characteristics such as loss of skills or deterioration of behavior.

3.2.3.3 Family Medical and Mental Health History

The focus of this portion of the interview is to ascertain the presence or absence of any medical, developmental or psychiatric disorders in the family history that may be related to the current concerns or assist in differential diagnosis. While many genetic conditions may have variable expression within members of the family, a knowledgeable clinician should determine which conditions might be relevant to the child's primary diagnoses or other concurrent medical conditions and require further information. Some conditions, such as tuberous sclerosis, are frequently due to a new genetic mutation, while other conditions, such as fragile X syndrome, may have variable expression in family members. Particular attention should be paid to other family members who have developmental disabilities or metabolic disorders or who died at an early age.

132 3.2.3.4 Medical Evaluation

The American Academy of Pediatrics (AAP) has made recommendations on the role of the pediatrician in the diagnosis and management of ASD (American Academy of Child and Adolescent Psychiatry, 1999). According to the AAP, the purpose of the medical evaluation for children with ASD is to assist with determining the etiology of the disorder, associated medical conditions and any other health conditions that may also be present. Determination of the etiology and associated medical conditions may have numerous important potential benefits, including genetic counseling, family counseling to help the family understand the cause of the disorder, possible treatment options, information about prognosis, potential for prevention (both primary and secondary) and facilitation of the development of a comprehensive database which can be used for epidemiological purposes. Over time, new information, including new clinical genetic syndromes, is expected to be available. It is therefore important for clinicians seeking expertise in ASD to stay involved with the care of children with ASD and to remain informed about current research results.

3.2.3.4.1-Components of a Medical Examination

There are two type of Medical Examination. These are: Physical and Neurodevelopment Examination and Developmental Neurological Examination.

3.2.3.4.1.a-Physical and Neurodevelopment Examination

A comprehensive physical examination including a neurodevelopment examination is an essential part of the- medical evaluation of children with ASD. It should be performed by a qualified health professional with expertise in the area of ASD. One purpose of the general physical examination is to evaluate the child for signs of genetic disorders and specific growth impairments such as microcephaly, macrocephaly or organomegaly; abnormalities of the sensory organs such as cataracts; and manifestations of neurocutaneous syndromes such as neurofibromatosis or tuberoussclerosis. Some examples of the more common disorders, which may be associated with ASD, or must be considered in the differential diagnoses of ASD, and their common manifestations, are as follows: Fragile X Syndrome: Physical features present in young children with fragile X syndrome may include prominent ears (70 percent), high arched palate (63 percent), hyperextensible fingers (49 percent) and a long face (64 percent) (Hagerman, 1999). Features may be present in girls as well as boys, and may present in more subtle ways.

133 Fetal Alcohol Syndrome: To qualify for a diagnosis of fetal alcohol syndrome (Institute of Medicine, 1996), there must be a confirmed history of maternal alcohol exposure during gestation, evidence of growth retardation, characteristic facial features and evidence of central nervous system neurodevelopment abnormalities. The growth impairment may be evidenced by low birth weight for gestational age, decreasing weight over time (not due to nutritional factors alone) or disproportional weight for height. The characteristic facial features include short palpebral fissures, thin upper lip and flattened philtrum. Children who do not meet these specific criteria may be considered for other diagnoses such as alcohol-related birth defects (which may be cardiac, renal, skeletal, ocular or auditory), or alcohol-related neurodevelopmental disorder. Tuberous Sclerosis: Facial nodular lesions (fibrous angiomas) are present in 50 percent of children by the age of 5 years, and may include hypopigmented lesions in an "ash-leaf macular pattern" in other areas of the skin. Teeth may show pit-shaped enamel defects. Hamartomas can develop in any organ, including cardiac, renal, gingival and subungual. Seizures frequently develop in infancy or early childhood. Congenital Infections: Children who have developed symptomatic or asymptomatic congenital infections may later develop symptoms of ASD. Conditions such as congenital cytomegalovirus infections, for example, in young children can manifest, in addition to other medical problems, such physical findings as microcephaly, later onset hearing loss or hepatomegaly.

3.2.3.4.1.b- Developmental Neurological Examination The purpose of the developmental neurological examination is to determine whether there is evidence of developmental neurological abnormalities, as compared to the neurologic function expected of a child at a specific chronological age, which may be associated with other specific developmental disabilities, co-occurring conditions or warrant further neurological laboratory testing. The essential components of the examination are as follows: Head circumference Cranial nerve function Cerebellar function Deep tendon reflexes Postural responses Primitive reflexes

134 Motor examination, including active and passive tone, strength, involuntary movement Tests of gross and fine motor coordination Presence of abnormal reflexes and signs, such as Babinski response

3.2.3.5- Laboratory Tests Medical laboratory testing should be decided upon the basis of the clinical history and physical examination, including the family history. In particular, behaviors such as pica might lead to a decision to perform lead screening. In addition, evidence of growth impairment or failure to thrive might lead to further investigation of thyroid function, and history of cyclic vomiting or protein intolerance might suggest further metabolic screening including amino acid chromatography. Careful consideration should be given to a history of developmental regression, especially if family history or neurological examination provides indication for further testing.

3.2.3.6 Genetic Testing and Consultation It was the opinion of the Guidelines advisory panel that routine laboratory testing, at a minimum, should include performing a high-resolution karyotype and fragile X probe (DNA probe for FMR-1 gene). This will enable the clinician to determine if major chromosomal disorders are present, but not eliminate the possibility of non-chromosomal genetic disorders. For that reason, the medical clinician should determine whether further consultation with a geneticist is indicated or whether further testing should be undertaken to delineate the etiology of mental retardation, if present. An experienced medical clinician should decide further laboratory testing as appropriate and as further research demonstrates the utility of such measures as FISH testing for chromosome 15q abnormalities. The clinician should also consider whether the clinical presentation could be consistent with Rett's disorder, for which a specific genetic test is now available (MECP2). Since other chromosomal abnormalities have been associated with ASD as well (including 7q abnormalities) in a small number of cases, the benefits of further laboratory investigation should be evaluated, and discussed with the family. The importance of genetic testing cannot be overemphasized, since families with a child with ASD have an increased risk of having further children with ASD. The overall risk is considered to be 6 percent, but can be considerably higher (or lower) if a known genetic etiology is determined. This etiology can have implications for genetic risk of ASD for other family members as well. As further research is completed, more specific tests, more specific genetic information for families and more specific treatments for

135 ASD depending upon the etiology may be available. 3.2.3.7-Neurological Laboratory Evaluation Other non-routine tests, which should be considered on an individual basis, include an EEG if there is a history consistent with seizures, documented developmental regression of language or behavior (beyond that consistent with ASD presentation) or clinical neurological abnormalities. A cranial MRI or CAT scan should be considered if clinical neurological abnormalities are present, such as microcephaly, neurological asymmetries or rapidly increasing head circumference. Isolated macrocephaly is not generally an indication for neuro imaging. Special studies, such as a sleep or video EEG may be indicated if the clinician suspects Landau Kleffner syndrome (acquired epileptic aphasia), where subclinical seizure activity leads to a progressive loss of receptive and expressive language. Further laboratory studies, such as urine organic acids, may be appropriate if a degenerative neurological disorder is suspected. 3.2.3.8 Other Laboratory Investigations Other tests, such as allergy testing, trace mineral analysis and immunological investigations should be considered only if clinically indicated based upon the presence of clinical history or additional symptoms or signs. Unless clinically indicated, intrusive neurological testing should not be the routine course of referral before evaluation with a specialist in ASD. 3.2.3.9-Sensory Evaluation Vision Questions or observations about the child’s functional vision should be asked during the diagnostic process. Since strabismus, hyperopia and myopia are common in children with developmental disabilities, the evaluation of visual function is an important part of the medical evaluation. As part of the physical examination, the clinician should perform an eye examination, documenting the extra-ocular movements and pupillary responses as well Hearing All children suspected of ASD should have their hearing screened using appropriate methodology and should be referred for a formal hearing assessment if concerns are present. The child should be referred to a pediatric audiologist as part of the diagnostic work-up if hearing screening cannot be performed or if the child fails hearing screening. Since some children with ASD have difficulties with compliance and cooperation with these 136 3.2.3.10-Direct Behavior Observation Direct observation of the child’s behavior is essential to a diagnostic evaluation for several reasons. First, it allows the clinician opportunities to directly observe the child in unstructured situations. After a period of adjustment, children often display typical play behaviors (or lack of) and other behavior anomalies that may be have concern. Observations can also clarify issues that may come up during the parent interview by helping to elicit observation that is more explicit or ascertaining whether such behavior is typical. With direct observation, situations can be structured or created to clarify these issues (e.g., by a parent or clinician saying “look” to draw attention to an interesting toy, understanding of the gesture can be assessed). Observation can add additional data to parent report. Parents have the utmost knowledge of their child and, often, the highest degree of adaptation to their child’s pattern of communication and behavior. They may not realize how they unknowingly compensate for subtle child deficits (e.g., by standing in front of or close to the child when calling his/her name, thus ensuring eye contact). Finally, observations allow the clinician to observe patterns of interaction with family and unfamiliar adults. This is not essential, but should be accommodated if appropriate. as the eye morphology. In addition, the child’s vision should be screened using acceptable methods for infants, toddlers and preschoolers. This may be functional vision screening or use of other standardized methods. If there are concerns from the parent or diagnosticians, a referral to a pediatric ophthalmologist or optometrist should follow during the assessment for intervention planning phase. The procedures used should correspond to the professional standards of the field. procedures, it may be necessary to sedate the child to perform auditory brainstem evoked potentials. Newborn screening tests are insufficient for assuring adequate hearing as some children may have hearing impairment due to injury or illness (such as repeated ear infections) in the infancy or toddler years, which was not present at birth. Vision Hearing

137 Direct Observation Assessment Checklist: Autism Spectrum Disorders Child’s

Name.....Date of Assessment.....

Interviewer/Observer.....Informant..... 1 2 3 4 5 Domains Behaviors
 Observed Reported Not Observed Don't know Social marked impairment in Competence moverbals/gestures Little joint attention/ sharing of interests Rarely initiates social interactions Rarely shows appropriate imitation Shows poor social reciprocity does not enjoy social games (e.g., peek-a-boo) Few appropriate peer relationships Little interest in other children Trouble establishing/ maintaining eve contact will not look to an object pointed at Communication Echolalia (repetitive/ nonfunctional speech) delayed /absent spoken language does not point to indicate interest or desire Little response to 1 anguagt /appears deaf Shows little communicative intent Inability to initiate or sustain conversation no varied make-believe/social imitative play oddities in volume/ cadence/ pitch

138 1 2 3 4 5 Domains Behaviors Observed Reported Not Observed Don't know Failure to generalize word meanings Pronoun reversal/ misuse rarely asks "wh" questions Behavior Interest in parts of objects (e.g., Patterns wheels) Inappropriate use of objects Rigid adherence to routine/ ritual/social rules negative reaction to change/ transition preoccupation with topics / details / patterns stereotypic movements unusual interest in sensory stimuli unusual avoidance of sensory stimuli Environment demands too high (Circle location overwhelming stimuli below) Home/ School/ no direct teaching of social Clinic interactions need for more positive teaching interactions need help identifying additional reinforcers Inconsistency across people/ settings

139 1 2 3 4 5 Domains Behaviors Observed Reported Not Observed Don't know weak collaboration Cognitive/ atypical developmental rates Development or sequence poor abstract thinking/ over selectivity delayed intellectual development Difficulty taking another's perspective Physical/ Motor Gross motor clumsiness Fine motor clumsiness toe walking Play/Leisure Poor imaginative/symbolic/ pretend play Inappropriate toy play Academic skills Poor application of facts Can't work independently Trouble following tasks in sequence Self-help Trouble dressing Trouble feeding Trouble toileting Unusual/ difficult sleep patterns Dangerous/ unsafe behaviors

140 1 2 3 4 5 Domains Behaviors Observed Reported Not Observed Don't know General/ Trouble following directions Vocational Trouble working independently Excessive tantrums Physical aggression Trouble following simple rules Self injurious behavior 3.2.3.11 Play Environment Available toys should be geared towards a range of developmental levels (i.e., sensory, functional, symbolic, etc.) due to the wide variability in functioning levels of these children. Materials should also be age and gender appropriate. Again, information provided before the evaluation can help guide in material selection so that children are neither overwhelmed nor under challenged. Gearing toys and materials as closely as possible to the child's functioning and interest levels will lead to a greater likelihood of observing representative behaviors and typical play for that child. 3.2.3.12 Degree of Structure Observations should include structured and unstructured observations of the child. Structured observations allow the clinician to press for specific behaviors common to children with ASD. They also allow for more standardized documentation of symptoms and behaviors to the extent that the observation measure provides psychometric data. This allows for documenting behavior in comparison to similar children as well as more easily tracking intervention response in the future. However, structured observations may inhibit more typical child behavior due to noncompliance, unfamiliarity with materials and difficulty with changes in activity and interactive partners. Unstructured observations of child behavior often provide the clinician with a more representative sample of the child's typical behaviors and use of play materials in the absence of specific adult demands or intrusions. For the purposes of establishing functioning levels, unstructured observations provide information regarding behavior that is typically displayed rather than that which is evidenced in response to specific environmental press.

141 3.2.3.13 Observation Domains A naturalistic setting should be arranged so that the child is able to engage with the environment and others as comfortable as possible. Specific behaviors to be observed include: Turn-taking Shared attention Social reciprocity Pretend play Sustained interaction Spontaneous giving/showing Imitation of novel acts Ability to have examiner direct attention Use of toys and objects 3.2.3.14-Cognitive Assessment Initial descriptions of children with ASD (Kanner, 1943) suggested that general intellectual functioning was not affected and that these children often possessed superior intelligence. This was often due to the presence of highly specific or "splinter" skills often demonstrated (e.g., counting, memorization). Since that time, it has been repeatedly established that children with ASD vary widely in their cognitive potential. Among children who demonstrate normal or superior nonverbal skills, a significant proportion demonstrates verbal and/or adaptive skills in the impaired range of functioning. It is now recognized that assessment of cognitive functioning is crucial to the differentiation of ASD from other disabilities. Cognitive ability also has an important role in prognosis and intervention planning. An estimation of potential is necessary for the following reasons: Functioning level, which includes cognitive and adaptive evaluation, is important for differential diagnosis and intervention planning. A diagnosis of ASD is appropriate when a child shows communicative, social or interest deficits that are inconsistent with overall cognitive functioning. For example, a child of 4 who is functioning at a 12-month developmental level would not receive a diagnosis of ASD if he or she displayed communicative and play behaviors similar to that of other 12-month-old children. It is

142 also extremely difficult to document significant social and communicative deficits below this age level. Treatment research generally has supported the notion that response to various treatment approaches has some relation to overall cognitive functioning. For example, certain intensive behavioral approaches have been shown to be less successful with children at lower cognitive levels who are unlikely to develop spoken language. Degree of cognitive functioning may indicate expected rates of progress. This, of course, is dependent upon the relative degree of certainty with which cognitive impairment can be established.

143 3.3 Instructional Approaches Structure 3.3.1 Principle 3.3.2 Instructional Approaches 3.3.2.1 Developmental Approach 3.3.2.2 Applied Behaviour Analysis (ABA) 3.3.2.3 Structured Teaching 3.3.2.4 Psychotherapies 3.3.2.5 Sensorimotor Therapies 3.3.2.6 Play 3.3 Instructional Approaches This chapter provides brief information of instructional approaches for young children with autistic spectrum disorders. In this chapter discuss the principle of instructional approaches and six representative comprehensive programs of instructional approaches. The principles are: 3.3.1 Principle Determine the most efficient and effective program for the child. And it's based on current research and effective practices. Is provided by appropriately trained and competent personnel including parents as appropriate. Make sure staff have specialized training and certification or licensure. Is reflective of the child's areas of strengths and needs that drive the curriculum. Allow the program to integrate techniques or strategies designed to address an array of the child's needs. Includes a variety of methodologies and approaches, which can be integrated. Use strategies that are most cost effective. Is based on comprehensive assessment results. Ensure that programming addresses aspects of ASD and have social validity.

144 Is determined by an IEP team that is multidisciplinary and includes the parent. Ensure that the program is efficient, consistent, and compatible among providers and settings. Program should be outcome-based and evaluation program must be the effectiveness of the child. Make sure the services allow for individualization, and can be validated for the specific child. Provide ongoing evaluation of programming and intervention outcomes via performance based assessment and observational data. Have standards for mastery of goals and objectives. 3.3.2 Instructional Approaches There are six representatives comprehensive programs of instructional approaches are: 1. Developmental Approach 2. Applied Behaviour Analysis (ABA) 3. Structured Teaching 4. Psychotherapies 5. Sensorimotor Therapy 6. Play 3.3.2.1 Developmental Approach A good way to begin thinking about children with ASD is to consider their developmental levels in much the same way you would for any typically developing child. Developmentally appropriate practices are the most important considerations in programming for younger children with ASD and functional skills become more of a focus for older students. Professionals and support personnel working with students with ASD should look for variations in developmental sequences across, and within, skill areas. It is important to recognize in abilities i.e. some skill areas more strongly developed than others and to examine the deficits in developmental skill areas i.e., mastering some age- or higher-level skills while not consistently performing lower level or more basic skills. Children with ASD have learning profiles should be require specific educational approaches to meet their individual needs.

145 Treatment methodology derived from the developmental approach provides a "blueprint" from which to select sequential skill objectives, according to the individual's unique profile of learning strengths and weaknesses. The Developmental Approach particularly lends itself to programming for social relationships and affective behaviours. Specific goals could involve establishing the developmental sequence of social and emotional skills. 3.3.2.2 Applied Behaviour Analysis (ABA) The ABA principles, with their emphasis on highly structured and sequenced teaching strategies, and systematic, data-based evaluation methods, are especially suited to the goal of effective instruction for students with ASD. Intervention programming that employs an ABA approach attempts to Understand skill and behaviour strengths and deficits. To structure the learning environment. Systematically teach discrete, observable steps that define a skill. Teach generalization and maintenance of newly learned skills. There are ten application system should be applicable in Applied Behaviour Analysis (ABA). These are: i. What does effective ABA include? ABA includes direct teaching within a formal systematic framework. It is based on principles of learning derived from laboratory work that is data based and includes differential reinforcement, task analysis, and continuous monitoring of performance. The purpose of the ABA approach is to increase or decrease a given behaviour, depending on the goal. These techniques are useful for addressing behavioural difficulties (e.g., decreasing hitting others and increasing the individual's ability to follow a predictable visual schedule), as well as skill deficits (e.g., increasing length of sustained eye contact). ii. What strategies are associated with ABA? Prompting Shaping Fading

146 Chaining Modeling iii. What are types of prompts used in ABA? Verbal/vocal Modeling/demonstration Visual Positional Physical Expectant waiting iv. What is shaping in ABA? Shaping begins with any approximation of the response and reinforces small increments or steps toward acquisition of the target behaviour. Increments are called "successive" approximation. Guidelines for shaping include clearly defined goals, observation in a natural setting to set the start point, clear steps that are either too large or too small, and fading prompts to set the stage for the next step. v. What is meant by chaining? Chaining may be backward by beginning with the final link and proceeding in reverse. It may also be forward by beginning, teaching the first link in the chain, and guiding the child through the rest of the steps. vi. How is modeling done? Modeling may be verbal or nonverbal individual actions or a sequence of actions, actual or pictorial or multi-person. vii. What is involved in Task Analysis? Decide what skill you wish to teach Break the skill into component parts Decide if components are sequential or simultaneous Map out how you will teach the skills viii. What kinds of feedback should be used? Positive reinforcement increases the likelihood of behaviour

147 Negative reinforcement increases the likelihood of behaviour Punishment decreases the likelihood of a behaviour ix. What reinforces work? Primary reinforcers include food and sensory or compulsive drive Secondary reinforcers include praise, social routines, intense interests, and need for closure x. What are the features of Discrete Trial Training? Discriminative stimuli Task analysis Every trial has a clear beginning and end Each trial is identical Instruction is repetitive Cue are exaggerated Each trial has 4 parts: presentation of instruction, child response, consequences and a short pause. It is important to realize that "Applied Behaviour Analysis (ABA)" is a broad approach for facilitating behaviour change and this specific training method is referred to as "Discrete Trial Training (DTT)" and can be effective when applied to a particular skills and behaviour.

3.3.2.3 Structured Teaching Structured teaching is a way to develop teaching strategies and to change the environment to make the world more meaningful for children with special needs. These structures can be utilized at all developmental levels and do not limit the curriculum. They are simply a component of the curriculum. Reasons for using structured teaching Use the child's visual strengths to help him focus on the relevant information in his environment Adapts the environment to make it more orderly and predictable Incorporates routines and makes things more familiar Emphasizes "finished" and teaches the concept of "finished"

148 Focuses on the development of independent skills Students with autism benefit from: Physical structures ? Clear physical and visual boundaries ? Minimal visual and auditory distractions ? Identified teaching areas including snack, play, transition and work areas Daily schedule ? Daily schedules visually tell the student in a way that he can understand what activities will occur and in what sequence. ? Each student should have a way to indicate when an activity is finished on the schedule. Individual work systems ? A systematic way for the student to receive and understand information ? A meaningful routine that answers these questions for the student What work? How much work? When is it finished? What happens next? Visual structures ? Teach the student to look for the visual instructions that give meaning to the task ? Shows student what to do with materials ? Includes both visual instructions and visual organizations

3.3.2.4 Psychotherapies Mental health providers can play a valuable role in a comprehensive program for a student with ASD. For example, mental health professionals within the schools, communities and medical facilities should provide support for families, particularly for families whose child has recently received a diagnosis of ASD. Mental health providers can also consult with teachers, facilitate social skills groups for students, and assist with in-service training for school faculty and community personnel. Although it has been well-documented in individualized psychotherapy (e.g., "talk therapy") is not particularly effective with children with ASD, therapeutic

149 strategies can certainly be geared toward behavioural change and skill-building. 3.3.2.5 Sensorimotor Therapies
Sensory integration theory has provided valuable information about how individuals with ASD process and respond to incoming sensory stimulation. There is now clear evidence that sensory integration difficulties can significantly influence an individual's behavioral functioning, and that activities which address sensory deficits or excesses can assist students with ASD in developing independent functioning. For example, inclusion of stimulatory and regulatory activities such as rhythmic rocking, sequential body pressure and joint compression input, swinging, jumping, moving to music, and swimming may be beneficial strategies for encouraging attention to task and calming children. 3.3.2.6-Play Play activities have long been included in interventions for children with various psychological and medical disorders. The literature on educational practices has documented the role of play activities as an effective tool for teaching children diagnosed with ASD. The TEACCH program, for example, has acknowledged that typical play behaviors are very difficult for many children with ASD to learn independently or vicariously. However, structured teaching of play activities fits with the adage "play is work, and work is play" for children with ASD. Play should be used to teach appropriate manipulation of a variety of play and leisure items. Play activities can gradually increase the child's tolerance for playing alongside and cooperatively with others. These play activities can be conducted in individualized instructional settings, and through small play groups. Play training can also be instrumental in facilitating social, language, and cognitive development in non-threatening and natural environments. Development of individual play goals, and even a play group, for children diagnosed with an ASD should involve consideration of each child's level of functioning, and unique needs. The group activities should be carefully planned with specific target goals and structured to provide each child with the opportunity to develop or enhance new skills. NOTE: Traditional, psychoanalytically oriented play therapy geared to help the child develop more effective coping strategies, is not an effective strategy for children with autism.

150 3.4 Teaching method in Autism 3.4.1 Teaching Tips for Children with Autism 3.4.2 Parenting a Child with a Disability 3.4.3 Quality Program Indicators 3.4.3.1 Comprehensive Team Approach Involving the Family 3.4.3.2 Comprehensive Assessment of Skills and Deficits 3.4.3.3 Defined Goals 3.4.3.4 Structure the Environment 3.4.3.6 Applying Functional Behaviour Assessment to Challenging Behaviour 3.4.3.7 Assessment of the Intervention 3.4.3.8 Transition 3.4.3.9 Opportunities with Peers 3.4 Teaching method in Autism There are various kinds of teaching methods for children with ASD. At first the T.T. assesses the problem area of his client and then he applied the necessary teaching method properly.

(a) ABA : The full name is Applied, Behaviour Analysis, based on Skinner's Operant Conditioning. According to this positive reinforcement helps to increase positive behaviour. It is applied either in school or home or in play ground also to increase the skills 'of eye contact, listening, imitating, reading, conversing, understanding other's mind. (i) Assessment and (ii) Intervention are the two steps of ABA. In Assessment the Behaviour analyst assesses his clients ability, inability, like-dislike from various domains. Then, which skill he wants to teach, at first divides the skill in some

151 small -parts and teaches every stpes easy to complex. After the implementation the teacher measures his Clint's development and starts re-assessment if necessary. There are some techniquesa to conduct ABA—Shaping, Modeling, Prompting, Enhancing, Time Out, Extraction.— 'Differential reinforcement' and 'Punishment' are two essential techniques for management problem behaviour. ___ (6) Curriculum based Assessment : Assessment of skills based an the curriculum. It is useful for the children with special needs in a regular class. (e) Montessory Method : In this method the children get most priorit than the teaching style and environment. Here the development of a child's sensation is more essential to teach his something. Didactic Apparatus like blocks, dolls, wooden steps, playing object at variable shapes and sizes, bells, picture are used as teaching material. To use these materials the students gradually can. learn reading, writing and counting. Teachers must be affection to the students. 3.4.1 Teaching Tips for Children

with Autism Use visuals Avoid long strings of verbal instruction Encourage development of child's special talents Use child's fixations to motivate school work Use concrete, visual methods to teach number concepts Let child use a typewriter instead of writing Protect child from sounds that hurt his/her ears Place child near a window and avoid using fluorescent lights Use weighted vests to calm nervous system Interact with child while he/she is swinging or rolled in a mat Don't ask child to look and listen at the same time Teach with tactile learning materials (e.g., sandpaper alphabet) Use printed words and pictures on

a
flashcard Generalize teaching

152 3.4.2 Parenting a Child with a Disability Seek the assistance of other parents Rely on positive resources in your life (

e.g., counselors, Special Educator, Speech therapist and occupational therapist.

Take it one day at a time Learn the terminology Seek information (e.g., internet, support groups, library) Do not be intimidated Maintain a positive outlook Find programs for your child Take care of yourself Decide how to deal with others Keep daily routines as normal as possible Know that you are not alone Most importantly, keep your sense of humor

3.4.3 Quality Program Indicators

The importance of teaching method programs for children with autism spectrum disorders and the importance of family involvement in that educational programs. Programs will differ from child to child because of the uniqueness of autism spectrum disorders and the range of potential symptoms involved. There is consensus among researchers, practitioners, and educators that appropriate intervention begins early, usually by thirty months. Furthermore, researchers and professionals have identified a number of strategies that are essential to implementing an effective program. The following are suggested components or indicators to be considered in developing and maintaining a quality educational program for children with ASD.

1. Comprehensive team approach involving the family
2. Comprehensive assessment of skills and deficits
3. Clearly defined goals addressing the characteristics of autism spectrum disorder

4. Structure the environment
5. Effective teaching strategies
6. Applying functional behaviour assessment to problem behaviour
7. Assessment of the intervention (data collection)
8. Transition planning
9. Opportunities with peers

3.4.3.1 Comprehensive Team Approach Involving the Family

Autism spectrum disorders are characterized by deficits in communication, behaviour, and social skills. Consequently, an effective program for students with ASD requires the expertise and input of family members and staff from multiple disciplines trained to understand the implications of autism spectrum disorders. A comprehensive team approach includes the child's parents and, as appropriate, related services personnel such as speech-language pathologists, psychologists, and/or occupational therapists to address the child's social, behaviour, language and motor skills as determined by the evaluation results. Furthermore, a comprehensive team includes special and general education teachers and/or para educators to ensure progress in meeting the individualized educational goals of each student. Working together, a comprehensive team assists in establishing and maintaining consistency of teaching and intervention techniques across individuals, lessons, and settings, increasing the potential for students with ASD to acquire, maintain, and generalize new skills and abilities. Comprehensive Team Approach are: Parents are active members of the educational team, contributing to decision-making, training issues, and follow-up provisions. All team members work together to assist in establishing and maintaining consistent interventions. Sufficient classroom support allows the student to demonstrate progress in meeting the individualized educational goals, objectives, and outcomes. Related services personnel, such as speech-language pathologists, psychologists, and occupational therapists address social, behaviour, language and motor skills as identified by evaluation results. Goals are consistently generalized throughout the educational program. Professional and parents discuss how often and in what format ongoing

communication can best take place. Problems are discussed as soon as they arise and before they get out of control. Teachers involve the parents in problem solving. Parents are not afraid to ask questions about any aspect of their child's program.

3.4.3.2 Comprehensive Assessment of Skills and Deficits

A comprehensive assessment of a student's skills and abilities. Assessments may differ because of each student's age and ability level. However, it is essential to consider the characteristics of autism spectrum disorders in completing each assessment. Thus, assessment may include are: Pre-academic and academic skills Pre-vocational and vocational skills Self-help and adaptive skills Communication Socialization Sensory regulation Motivation and reinforcement Behaviour Fine and gross motor Leisure activities Cognition

3.4.3.3 Clearly Defined Goals

The key to teaching new skills, or improving emerging skills, is creating clearly defined of IEP goals that are developmentally appropriate, functional, and based on the assessment results, student's strengths and interests, and individual characteristics of autism spectrum disorders. The IEP process and procedures for eligible special education student's vital role of parents in the development and implementation. So number of factors must be considered in developing individualized goals for students with ASD. Although individual goals will vary for each child based on their age, diagnostic characteristics and ability level, research has revealed that attention paid to the areas

155 below may increase the child's ability to benefit from the educational experience. Based on the results of the child's evaluation, goals may be written in one or more of the following areas: Attention (awareness of others, objects, or activities) - Attention goals may focus on sustained attention; joint attention; and shifting attention from event to event, object to object, object to person, and person to object. Imitation - Imitation is an essential prerequisite skill in learning from others. Imitation goals may include imitation with objects, motor actions, oral motor actions, vocalizations, verbalizations, gestures, academic tasks, and social skills. Communication - Communication goals may focus on expressive and/or receptive language and include verbal or augmented communication skills, social-communication skills, and the use of functional communication systems to provide alternatives to challenging behaviours. Social development - Social development is a core deficit area for individuals on the autism spectrum. Goals in this area may include body language, manners, conversation skills, friendship management, cooperative play skills, self-regulation, empathy, and conflict management, among others. Play - Developmentally appropriate and functional play skills can be targeted as an avenue to increase social skills with peers. Cognitive development - Cognitive goals may include a focus on conceptual development, problem-solving, academic performance, and executive functions (i.e. flexible, strategic plan of action to solve a problem or attain a future goal). Challenging behaviours - The function of challenging behaviours are identified and appropriate alternative behaviours are taught using positive behaviour supports. Sensory and motor development - Individual differences in motor and sensory functioning are identified and planned for, including tactile/touch, visual, smell, sound, and taste; environmental stressors are identified and modified. Adaptive behaviour - Essential life skills, including hygiene, self-help and safety are considered and planned for in order to enhance personal independence and create opportunities for greater community participation, including independent living, working and recreating.

156 Recreation/Leisure/Physical Education - Recreation skills are important goals as they enhance cognitive, social and motor skills enhance relationships between self and environment; shape appropriate use of unstructured time; increase opportunities to get physical exercise and stay healthy; and increase enjoyment of life. In writing clearly defined outcomes of IEP team should consider the following: Have meaningful IEP goals been identified for the child/student? Were family members involved in identifying goals to be addressed at home and school? Are the outcomes developmentally significant and appropriate for the child/student? Have the characteristics of the autism spectrum disorder been considered? Do the goals promote educational gain? Do the goals allow for the learned skills to be used in other settings (home, community) and with a variety of people? 3.4.3.4-: Structure the Environment Students with autism spectrum disorders are especially sensitive to changes in the environment or routine. Although the level of structure needed for each student will vary based on their age, diagnostic characteristics, and ability level, research has revealed that effective educational programs for students with autism spectrum disorders have structured environments which include: Physical Structure Routines Visual Supports Activity schedules Physical Structure Physical structure refers to the way each area in the classroom or school is set up and organized. To the student with ASD who may perceive the world differently or has unique sensory impairments, the school or classroom can be a confusing and overwhelming place. Therefore, the classroom should be set up and organized with clear physical and visual boundaries. Boundaries such as carpets, bookcases, dividers, or study carrels are frames that visually identify an area, helping the student to understand 157 where different activities take place and materials are stored. Two examples of work stations can be seen in Figures 1a and 1b. Consider providing a specific location for quiet activities and individual work activities. Once the various locations and boundaries are identified, signs, symbols, schedules, and choice boards can provide visual information on the rules and expectations of each area. Additionally, when planning the physical structure of the classroom, it is important to consider and decrease visual and auditory distractions, such as bright lights and noises, e.g., bells, children's loud voices, chairs scraping on the floor, and the humming of overhead projectors, lights, or computers. Example of Individual Work Stations Routines Students with ASD are more socially responsive and attentive to learning in the classroom, when information is presented in a highly predictable and routine manner. They can also become easily overwhelmed at even minor changes in their daily schedule or routine. To build independent work skills and to create a comfortable environment in which the student is ready to learn, develop and teach within routines. For example, a routine for independent seatwork may be as simple as "first we work", and "then we take a break". A routine for large group instruction might be, first, the teacher lectures; second, the students do group practice problems, followed by independent seatwork; and, third, take a break.

158 Routines are also effective in teaching functional, leisure, and vocational skills. Routines can become problematic if the student begins to demonstrate an obsession for sameness that results in negative behaviours when change occurs. To decrease the stress, plan and prepare the student for potential changes in the routine by utilizing transition strategies, role playing, and visual supports systems. Visual Supports Below the figure shows an example of a visual support for routines. Students with autism spectrum disorders have strong visual skills. Visual organization of instruction and materials allows the student to utilize these visual learning strengths. Examples of helpful visual supports may include the use of activity schedules and calendars, posted rules, choice boards, and other organizational methods as appropriate for individual students. Activity schedules are a set of pictures or words that cue a student to participate in an activity. Depending on the student's age and ability level, an activity schedule may be a three ring binder with only one activity on each page, it may be a partial or full day picture schedule, or it may be as complex as a day timer or personal digital assistant (PDA). Mini-schedules are a set of pictures or words that cue children to the individual steps involved in a complex task.

159 Activity schedules 3.4.3.5 Effective Teaching Strategies In addition to the use of structure, visual supports and routine, programs that result in educational progress for students with autism spectrum disorders also utilize motivational strategies and teach skills in a highly structured method either in a one-to-one or small group format, with minimal distraction, attention to specific details of the skill, and a focus on consistency, repetition, and predictability relative to the individual needs of the child. This section addresses such strategies and provides practical, low-tech suggestions for teaching students with ASD. When choosing an intervention or teaching

160 strategy remember that no single approach is likely to be right for every child; rather, teachers may need to utilize a wide variety of teaching strategies for their students with ASD. So varieties of teaching strategies for their students with ASD are:

- a. Motivation and Reinforcement Social activity Take a break Play a game Use the computer Spend time with a preferred person Tangible/Edible: Healthy snack or beverage Small toy Bubbles Baseball/trading cards, videogames Token System A token economy is a system in which an individual earns tokens for targeted behaviours. Once the student has collected a predetermined number of tokens he can trade them for an item or activity that he desires. Examples of tokens include: Points Play money Gold stars Stickers Tickets, coupons Poker chips Example Token System
- b. Teaching Strategies Discrete Trial is a structured teaching strategy, used to teach tasks or lessons that have been broken down into their simplest teachable components. It consists of four components: the instruction, the child's response, a consequence, and a brief pause. Pivotal Response Training utilizes the discrete trial paradigm in lessons that are child directed. It also encourages teachers to create lesson plans and to work within the student's preferred activities.
- 161 Shaping, which is the reinforcement of successive approximations of the target behaviour, is helpful when the student does not initially have the desired skill in her repertoire. Prompting provides students with extra help to achieve the desired response. Strategies may include verbal prompts, modelling, physical or gesture prompts, and the use of positional cues. Prompts can be used at the same time as instruction, during the student's response to help decrease errors, or after the student's incorrect response to demonstrate the correct answer. Although prompting strategies can be helpful in teaching new skills.
- c Academic Strategies Most students with autism spectrum disorders require some sort of academic modifications. Modifications are diverse and range from altering the way in which materials are presented to modifying how children indicate competence of academic concepts. Graphic organizers, handwriting modifications, priming and assignment and test taking modification are useful strategies to consider for students with autism spectrum disorders. Graphic organizers, such as semantic maps, Venn diagrams, outlines, and charts help children with autism spectrum disorders organize and visually represent important concepts. Handwriting modifications, for children with fine motor difficulties, may involve responding orally, keyboarding, answering questions in true/false format, transcribing into tape or digital format, or using a scribe. Priming refers to the process of preparing the student for an activity in advance of its completion. Previewing an upcoming activity helps to decrease the stress associated with change and the unknown. Some examples of priming may include reviewing an upcoming worksheet or activity; or going over an outline of what will be covered in the next section of a class, the next day, or in the next hour. Priming typically occurs close to the activity and can occur at home or in school. Assignment and test taking modifications should match each student's specific need. Some examples of modifications include: additional time, advanced practice/ priming, having the assignment /test read aloud, reduced number of items, a sample problem example, multiple choice versus essay format, keyboard versus handwritten.

162 d. Communication Strategies The communication abilities of students with autism spectrum disorders vary greatly, from students who are pre- or nonverbal to students with amazing expressive vocabularies, and from students who have very limited receptive abilities to those who can understand complex conversations and instructions. For preverbal and nonverbal students with autism spectrum disorders, a communication program may focus on teaching the student to communicate through gestures, speech and/or an augmentative or alternative communication system. Alternative and augmentative communication systems such as sign language, visual symbol systems, communication boards, and voice output devices can provide an effective format for allowing students to communicate their wants and needs in any setting. Augmentative and alternative communication are most effective when implemented early to ensure a method interaction and a system for teaching functional communication skills such as making requests, asking for help, protesting, and making choices. Early systems should be very functional and concrete. A typical progression for a visual-symbol communication system might be to move from a concrete to more abstract system. For example, starting with objects or actual photographs, moving next to colour photos and line drawings, and finally to printed words. Teaching ASD student to communicate through gestures, speech, or an augmentative or alternative communication system, new skills should generally be introduced in quiet, no distracting environments, with generalization occurring in more natural contexts where natural cues and reinforcements are available to make the skills meaningful and spontaneous. Utilize student interests to help motivate the child to initiate and use the communication system. For example, if a student has a favourite toy or book, the teacher may keep the material just out of reach but within visual sight of the student; thus, encouraging the student to request the wanted item using the communication system. All communicative attempts and initiations should be praised and encouraged. In contrast to the pre- or nonverbal student, many students with ASD are able to utilize complex language. However, these students, along with their nonverbal peers, often demonstrate a significant impairment in pragmatic (practical) language. For example, students with autism spectrum disorder often struggle with such

163 skills as having a social conversation; perceiving, understanding and using gestures, facial expressions, and body language; initiating, maintaining and closing conversations; as well as understanding and using social conventions and rituals. Pragmatic communication skills are an important component of the student's educational program effectively taught through direct instruction as well as through social skill instruction. In addition to difficulty with pragmatic language, students with ASD also have difficulty understanding and comprehending complex language. When working with any student with an ASD, a verbal or nonverbal student, it is important not to assume understanding. Teachers must closely monitor the student for receptive comprehension'. Talk slowly and carefully. Some students will require simplified one or two step directions, while others will require extra time to process spoken language. Clearly state instructions and directions indicating what the student is expected to do rather than telling the student what not to do. Additionally, use proximity, gestures, and visual supports to the spoken message. While the content of language and communication instruction is similar for all children, the problems and strategies may differ. Work with the speech language pathologist to develop a comprehensive communication program. e. Social Development Strategies Most students with autism spectrum disorders want to have friends, fit in, and be an active member of the social world. However, they have difficulty reading, understanding, and responding to social cues. Social skills, such as having a social conversation; perceiving, understanding and using gestures, facial expressions, and body language; initiating, maintaining and closing conversations; as well as understanding and using social conventions, and rituals, are difficult for students with ASD. Because of this deficit in social understanding, students with autism spectrum disorders may say or do things that irritate and offend other people. Helping students with autism spectrum disorders to develop social understanding requires both systematic instruction as well as opportunities to practice the skills within naturally occurring routines. Rules, social stories, role-playing and scripts, cue cards and checklists, coaching, modelling, and friendship groups are all effective strategies for systematically teaching social skills. Classroom teachers find it helpful to teach and post the classroom social rules to help students understand the expectations of the classroom or other social situation. In writing rules, be sure to provide concrete positively stated rules that are easy for the student to see and understand. For example, "we use an inside voice so that students can finish their work."

164 f. Behaviour Strategies Challenging behaviours, such as self-injurious behaviour, stereotypic behaviour, physical aggression, tantrums, defiance, and property destruction, are among the most difficult and stressful issues faced by parents and educators of children with ASD. g. Other Considerations Parents and education staff work together to identify appropriate intervention methods. Intervention methods are consistent across environments (i.e. home, school, community). Intervention methods, tools, and materials are supported by research and address the areas of strength and needs of the student. Intervention methods allow the child to demonstrate progress toward her IEP goals. New skills are taught are developmentally appropriate and meet the child's individual needs. Once new skills are acquired, these are practiced in all natural environments (home, school, community).

3.4.3.6 Applying Functional Behaviour Assessment to Challenging Behaviour As mentioned before behaviours, such as self-injurious behaviour, stereotypic behaviour, physical aggression, tantrums, and property destruction, are difficult and stressful for parents and educators of children with ASD. Research supports the use of functional behaviour assessments (FBA) or functional analysis and positive behaviour supports (PBS) in the treatment of challenging behaviours for children with ASD (Iwata & Worsdell, 2005). A formal approach to the FBA process typically involves at least three steps using an assessment process. The basic steps are: Identifying the challenging behaviour; Identifying antecedents (events before the behaviour occurred), consequences of the behaviour and setting events which maintain the problem behaviour. o Designing an intervention, based on the conclusions of the assessment, which may alter the identified antecedents, consequences or setting events.

165 3.4.3.7 Assessment of the Intervention Prior to intervention, baseline data on functioning level in the particular area of need is collected. IEP team determines how often and in what format data is recorded. A criterion is set for determining when a particular intervention is unsuccessful. Data are recorded to monitor progress in the program designed to improve the area of need. Data are recorded to identify problems or lack of progress. Ongoing assessment of the child's skill via the data collection system determines the next set of goals (if appropriate).

3.4.3.8 Transition Activity to activity Home to school School to home One grade/school to the next grade/school School to post-school environments

3.4.3.9 Opportunities with Peers Structured activities with one peer or in small groups are provided to practice newly learned social, academic, communication, coping and self-help skills. Opportunities are provided for interaction with peers who have different abilities and skills, which allows for generalization of mastered social, academic, communication, coping and self-help skills. Student is given support and opportunities to develop friendships with peers in order to initiate and practice social interaction. Peers are provided with a time and environment where they are comfortable to ask questions and receive age appropriate information about autism spectrum disorders. Parents are encouraged to meet the staff and share information about their child. Resources, such as videos, books and pamphlets on ASD are available for staff, students, and families. Support for the staff is provided as they learn to include the student into activities.

166 3.5 Vocational Training and career Opportunities Structure : 3.5.1 The Importance of Promoting Generalization of Vocational education of ADS 3.5.2 School-based employment training for persons with autism spectrum disorder. 3.5.2.1 Observe other Programs and Collaborate with District Teachers 3.5.2.2 Align your Program with Core Academic State Standards 3.5.2.3 Involve Your Students in the Planning Process in a Meaningful Way 3.5.2.4 Connect the Program to Real-World Experiences 3.5.2.5 Create Training Materials and Pre-vocational Tasks that Mimic Real-world Processes 3.5.2.6 Use Research-Based Training Methods 3.5.2.7 Integrate Your Program within the School Community 3.5.2.8 Use Authentic "Real-world" Reinforcement 3.5.2.9 Vocational Evaluation Checklist for an Individual with Autism 3.5 Vocational Training and career Opportunities IDEA ensures that in U.S.A. special education services are provided to youth with disabilities, including autism. Rather IEP help students to achieve goals according to their interest. They can also choose employment. However, research indicates that as few as 25% of individuals with ASD are employed recently. A recent study of 169 adults with H.F.A found that only about half of the participants were in paid employment (49%) and many (36%) were on social security benefits. Existing employment options for ASD described in literature include sheltered employment, supported employment and competitive employment. So, there is evidence that employment can positively impact the lives of individuals with ASD, as employment had positive outcomes relating to cognitive performance, reduced anxiety and depression,

167 and developed, relationship with peers. Moreover, employment must strengthen (heir will be self-confident. 3.5.1 The Importance of Promoting Generalization of Vocational education of ADS Foundational to implementing steps to effective employment training is a focus on generalization children youth with ASD cause experience difficulty generalizing newly learned skills to other settings, situations, people, and environments. Cause as such a critical component of any employment skills program is to develop a sound plan for transfer of skills across settings, persons, contexts and time. So The goal of any training program is behavioral change; that is, if the students are not impacted in a positive way across most aspects of life, the change cannot be considered very meaningful. Bellini et al. (2010) recommended the following techniques to facilitate generalization. Train with multiple persons and across multiple settings. Ensure the presence and delivery of natural reinforcers for the performance of social skills. Practice the skill in the natural environment. Fade prompts as quickly as is feasible. Provide multiple exemplars for social rules and concepts. Train skills techniques self-monitoring strategies. Children with autism too eventually need to make a living just like other children. Vocational training help the youngster with autism develop such a skill. Training that leads to employment offers the youngster a sense of self-esteem, confidence, dignity and a sense of accomplishment. More importantly the opportunity to be a productive worker and to contribute to the community promotes independence and enhances a positive self-awareness and self-identity. Adolescence is the prime time to start training in vocation ideally around age 14 even though it might seem that adulthood is far away. What kind of vocational training children should go for will depend on the functional level of the child, their strengths and their interests. Most kids with autism enjoy repetitive work they do well in jobs that require assembling as well as in the information technology industry and in the manufacturing industry. Several vocations should still be explored to find the right fit. Vocational training will -include working on independent life skills, vocational job training, and self-care. No matter how functionally affected a youngster with autism is, with the right training there are things that they can all do. While starting vocational training early is the key to success vocational preparation begins early in life. There are three stages of vocational training considered. These are: 1. Elementary school years: Preparation for prevocational training starts in

168 elementary school. Children with autism are strong at visual tasks hence they are quick to learn tasks that use this skill. Skills that are useful in developing career awareness and feeling of job satisfaction include: matching, sorting, correcting sorting errors, matching to jigs (instructions using pictures, drawings, words, or a combination), simple alphabetizing, collecting papers, cleaning tables, serving snacks, getting own snack, delivering messages, packaging and assembly and making simple purchases. 2. Intermediate school years: In the intermediate school years work habits such as attention to task, rule compliance, sustained work on already mastered tasks is important. Systematic typing office work such as collating and sophisticated alphabetizing, measurement, survival signs, money calculations, use of vending machines can be taught. These can be taught in both classrooms and community based settings. 3. High school years: Skills to learn include self preservation and safety skills, work without supervision and independent movement. The students should receive a combination of classroom instruction and training at varied worksites. It is important that social communication, social performance and interpersonal behaviours are: addressed at all stages. Focus areas include: Initiate and respond to interactions with familiar and unfamiliar people Understand prohibitions Understand and follow unwritten rules Participate in positive social experiences Maintain an acceptable level of hygiene and grooming Recognizing and managing anxiety and other responses to over stimulation. 3.5.2 School-based employment training for with autism spectrum disorder. There are nine steps are school-based employment training for with autism spectrum disorder. These are : Observe other Programs and Collaborate with other-agencies Align your Program with State Standards Involve Students in the Planning Process in a Meaningful Way Connect the Program to Real-world Experiences

169 Create Training Materials and Pre-vocational Tasks that Mimic Real-world Processes Use Research-based Training Methods Integrate Program within the School Community Use Authentic "Real-world" Reinforcement Vocational Evaluation Checklist for an Individual with Autism 3.5.2.1 Observe other Programs and Collaborate with other agencies as far as practicable. Collaboration is an essential element of developing effective employment training and overall quality transition programming for ADS. Ensuring that school personnel establish collaborative partnerships and network within and across other model school and community settings can greatly inform educators regarding best practices. Design of a vocational program is to locate and observe other classrooms in the area and take into account the methods and strategies they employ to promote vocational instruction and job skills among the students with ADS. Schools have a transition coordinator whose job it is to build interagency collaborations, provide technical assistance, conduct needs assessments and engage in communication to support student transition needs among stakeholders. Professional can also link teachers to other model school and community- based programs through the establishment of community of practice groups that can share best practices and support implementation of long term goals and policy recommendations related to effective transition. In a practical way, these collaborations can help teachers interface with others in their school districts and analyze the programs that have been successful in vocational training such as copy centres, mail delivery, and recycling. Such communities of practice can also enable participation in continuous training on transition needs and resources available in the community and state. 3.5.2.2 Align your Program with Core Academic State Standards The alignment of the program should be done in a rational manner so that available facilities and requirement may be taken into consideration. Some alternations and practices have been proposed in the coming pages, these may be followed depending upon the available facilities. For example, high school language arts common core standards

170 require students to be able to understand the meaning of words in this context includes technical text from a variety of sources in order to solve a problem. 3.5.2.3 Involve Your Students in the Planning Process in a Meaningful Way Career and vocational development begins with the student must be utilizing a student- directed approach requires consideration of student preferences and interests. Determining students' interests and providing them the autonomy and responsibility to decide on, design and evaluate their work empowers them to connect with the content and promotes self-determination. By giving students the opportunity to meaningfully participate in the curriculum, teachers can develop in their students the skills necessary to be pro-active and self-determined members of society. Incorporating meaningful participation in vocational programs by securing student input in job choices, services offered, and outcome-related rewards may increase student "buy-in." This buy-in will consequently increase student motivation and engagement, which are related to improved achievement. The preparation and planning for a classroom requires means decorations, finance decisions and a host of other responsibilities. Including the students in the process of creating the menus based on their favorite meals and snacks and determining prices not only connects to the common core standards but also contributes to increased student motivation. Giving the students artistic design in the creation of the restaurant space is another way to increase the sense of self-determination and emphasize choice in the development process of the vocational program. 3.5.2.4 Connect the Program to Real-World Experiences The overall goal of vocational program is to teach job skills in a realistic vocational setting that will transfer to a supported, integrated employment setting in the community. So step in any vocational training program is to give students with ASD opportunity to gain experience that will logically lead to jobs after high school in a variety of settings. Although the most directly translatable option would be community-based instruction, many barriers exist that can make it impossible for schools to implement such programs such as funding, transportation, personnel, and location in proximity to possible job placements. In a school community will produce in vocational program is an environment

171 that incorporates key vocational skills for long-term success. The skills consultation with local community businesses where students might someday work and/or become customers. Important skills such as money management, vocational communication (e.g., greeting customers, taking orders, accepting direction, and inter-staff communication), self-determination, and performance of routine job functions such as cleaning and uniform/hygiene maintenance were identified for instruction. Academic skills necessary to participate in the general education curriculum and community beyond the classroom. Academic skills included: writing (e.g., orders, receipts, and menus), reading (e.g., menu items, orders coming in/going out of the kitchen, and order forms for inventory), and mathematics (e.g., adding bill totals including tip, calculating change receipts after closing, and depositing money into store account). 3.5.2.5 Create Training Materials and Pre-vocational Tasks that Mimic Real- world Processes In order to achieve an authentic connection to community job settings, teachers and staff must treat the vocational training setting as the equivalent of a community job placement. Part of this process includes creating the training materials necessary for a vocational setting and ensuring that the process is as realistic as possible. It is important to develop training materials such as employee manuals that can be used when the

172 students begin their job placements within the school. These training materials should also be based on scientifically validated practices .For students with ASD and other developmental disabilities, visual supports have been found to be particularly helpful. Prior to participating in our restaurant vocational program, students were required to take and pass the state food safety exam, just as they would be required for this type of employment position in the community. The students, now considered restaurant staff, were assisted in their daily activities by laminated checklists that they used to track their progress and evaluate their task completion. By linking evidence-based strategies to real-world employment expectations in the creation of our materials, our student staff members were trained to become self-reliant and able to self-prompt their way through the day's work. 3.5.2.6 Use Research-Based Training Methods The school curriculum and instructional methods used within both the special and general education settings must be derived from scientifically based strategies, The goal is to ensure each student's academic success and applies equally to students with and without disabilities. For students with significant disabilities at the transition stage, it is critical that these research-based approaches be applied to the development of their vocational skills in a functionally relevant way. Teachers must investigate evidence- based and scientifically validated practices and apply these in their training programs. 3.5.2.7 Integrate Program within the School Community Integrate Your Program within the School Community should be to encourage meaningful interaction among students such that students and staff in self-contained classrooms are a vital part of the school community. Connecting students to the school community via a simulated community environment offers real world challenges similar to a typical employment context. Moreover, communicating with school personnel in a business setting has many potential benefits. The benefits are: First, students in self-contained settings often become accustomed to communicating only with other students and staff in their own classroom. By expanding the program to personnel outside of the self-contained setting, atypical school communication was encouraged and expansion of students' language use and abilities was facilitated.

173 Second, providing a service that is not only tangible but is also visible within the school setting provides natural reinforces that a contrived setting is simply unable to offer effectively. Third, school-wide recognition of the students' efforts creates a sense of responsibility and identification that increases the students' sense of self-worth and self-esteem. 3.5.2.8. Use Authentic "Real-world" Reinforcement People go to work for a variety of reasons. Those that stay at their jobs and perform to the best of their ability do so partly due to a level of pride and purpose they experience in their work. This level of satisfaction should be no different for students working in an inclusive vocational setting. Naturally occurring reinforcers such as social praise from a job well done can increase generalization of learned skills. The increase in self-determination can be established easily in a vocational setting and in self-determination have been correlated with enhanced "social capital" or connection with those in the surrounding community, greater choice and control, as well as enhanced health and economic success. So some following these steps from beginning to end with the students' participation and input creates these are: ? Sense of ownership that will drive them to continue and to further develop their skills. ? Establishing a vocational setting with natural maintaining contingencies such as payment and evaluation systems similar to those used in everyday work settings can reinforce appropriate work ethics and behaviour. ? Developing a "pay check" system to reward employees for their efforts aligned with a reward system such as a classroom store motivates students the same way we are all motivated to get up each day and go to work.

174 3.5.2.9. Vocational Evaluation Checklist for an Individual with Autism Vocational Evaluation Checklist for an Individual with Autism Student:..... Work Setting:..... Evaluator:.....

Date:..... What are this student's strengths/limitations? Can do Can do with help Comments
 COMMUNICATION : Understands verbal language Requests things desired/needed Expresses refusals Engages in social conversatioa Initiates communication Uses pictures/gestuies to communicate Recognizes words Comprehends sentences Can do Can do with help Comments SOCIAL SKILLS; Initiates social interaction Responds to social interaction Shares with peers Waits when necessary Takes turns with peers Models from peers Can do Can do with help Comments
 WORK BEHAVIORS: Works accurately Works at appropriate rate

175 Follows rules Stays oft task Keeps things in order Finishes a job Works neatly Can do repetitive tasks Can do multi-step tasks Can. solve easy problems Remembers steps in activities Can do 2-3 step loag sequences Can do Can do with help Comments MOTOR: Has strength to do job Has gross motor ability Has fine motor ability to do job Has visual motor ability to do job Can do Caa do Trith help Comments FUNCTIONAL ACADEMICS: Reads Tells time Counts Where/How does this student do the following: Where How Greets people Gives eye contact Negotiates Initiates Waits

176 Answer questions: Where How Who? What? When? Where? Why? Shares Materials Shares food Responds to compliments Initiates comments Cannes on 4-6 exchanges on a subject "What problem-solving skills does this student have? What does the student do when; Answer questions: Where How Something is missing: Something is too difficult: Routine changes: Someone she cales about is absent: Doesn't knowwhar to do Does something incorrectly: Something doesn't work right: Corrected:

177 During work breaks, does take student: Yes No sometimes Imitate what others do? Follow a set routine? Imitate appropriate things to do? Pace OT engage in sell-stimulatory activities? Socially interact with others? What does this student need to complete a job successfully? Yes No Comments Consistent /clear definition'of beginning and finish What is his or her motivation "Likes doing activities with someone. "Likes doing" something preferred "Likes doing" something of special interest "Likes doing" something utilizing strengths "Likes doing" something to get something later How well does the student do tlie following tasks? (Indicate approximate time to complete task) Good Fair Poor Assemble Move item Repetitive cleaning Sequence cleaning Cooking Collating Typing Filing Computer work Calculator

178 What prefereuce/aptitudes for jobs does this student demonstrate? As reported by: Family members: Past experiences: Observations: Other comments: Vocational assets: Vocational liabilities and suggestions for support; Specific recommendations: WORK BEHAVIOR CHECKLIST STUDENT:.....SCHOOL:..... EYALVATOR:.....DATE:..... Code each behavior

as MS- Mastered Skill; ES - Emerging Skill; ND-Not Demonstrated Commnunication: _____Communicates basic needs (i.e. asking for help, accessing information) _____Initiates contact with supervision _____Relays needed information _____Understands work routine and expectations Social Skills: _____Interacts with co-workers and supervisors _____Works along-side co-workers _____Cares for personal hygiene needs _____Responds appropriately to social contacts Manaaes free time during breaks Social Appropriate Behavior: _____ Works continuously without disruptions _____Works without displaying/engaging in major disruptive behaviors

179 _____Accepts correction/supervision without becoming upset _____Exhibits acceptable behavior during break time Rate and Production: _____Works continuously _____Leaves job site only at appropriate times _____Works with limited supervision _____ Works independently and increases production _____Works without disruptions in group settings _____Maiutams a reasonable production rate across the day and across time _____Transitions to new task in reasonable period of time with adequate productivity Accuracy and Quality: _____Completes, tasks with sequenced steps _____Demonstrates consistency over time _____Demonstrates ability to prepare work area _____Demonstrates ability to do a variety of tasks and maintain quality

3.6 Let us Sum Up Autism means a developmental disability. Now Autism is called a Neuro-biological disorder, significantly affecting verbal and non verbal communication and social interaction, generally evident before age 3. It adversely affects a child's educational performance. Other characteristics often associated with Autism are—engagement in repetitive activities, stereotyped motor movements, unusual responses to sensory experiences and resistance to environmental changes. In characteristics of Autism according to DSM IV, Autism in such a developmental disorder under P.D.D., that includes three qualitative deficits- Lack of Socialization, Lack of Communication and Lack of Flexibility. There three are together called 'Autistic Triad' The Assessment of ASD are Clinical Assessment, Behavioural Assessment, Observational Assessment Educational Assessment, Functional Assessment. After assessment of autism should

180 be provide in proper education that's why teaching methods of autism various kinds. These are ABA (Shaping, Modeling, Prompting, Enhancing, Time Out, and Extraction), Curriculum based Assessment and Montessori Method. After schooling the foundational to implementing steps to effective employment training is a focus on generalization children youth with ASD cause experience difficulty generalizing newly learned skills to other settings, situations, people, and environments. Cause as such a critical component of any employment skills program is to develop a sound plan for transfer of skills across settings, persons, contexts and time .So The goal of any training program is behavioral change; that is, if the students are not impacted in a positive way across most aspects of life, the change cannot be considered very meaningful. Adults with Autism need level supports and services analogues by their school age counterparts; particularly important are support employment services and behavioural supports. They rightfully expect to be able to live meaningfully, productive lives. 3.7 Check Your Progress 1. What is Autism? Ans: Autism means a developmental disability also is called Neuro-biological disorder and significantly affecting verbal and non verbal communication and social inter-action generally evident before age of 3 years. 2. Mention any two or three Signs and symptoms of autism? Ans: There are many signs and symptoms of autism. These are: Doesn't make eye contact (e.g. look at you when being fed). Doesn't smile when smiled at. Doesn't respond to his or her name or to the sound of a familiar voice. Doesn't follow objects visually, Doesn't point or wave goodbye or use other gestures to communicate. Doesn't follow the gesture when you point things out. Doesn't make noises to get your attention. Doesn't initiate or respond to cuddling. Doesn't imitate your movements and facial expressions

181 3. What is the cause of autism? Ans:

A specific cause is not known, but current research links autism to biological and neurological differences in the brain also

environmental influences play role as well also recent researchers have shown that autism does run in families, but not in a clear-cut way. 4.

What are the meaning of of 'Autistic Triad' Ans: Characteristics : According to DSM IV, Autism is such a developmental disorder under P.D.D., that includes three qualitative deficits. 1. Lack of Socialization 2. Lack of Communication 3. Lack of Flexibility. These three are together called 'Autistic Triad' 5. Write a full form of PPD-NOS? Ans. Pervasive Developmental Disorder Not Otherwise Specified. 6. What are the meaning of Interdisciplinary and Multidisciplinary assessment? Ans: Interdisciplinary assessment requires respect, integration and coordination among professionals with diverse backgrounds. The interdisciplinary team model is the preferred model in the evaluation and assessment of ASD. The interdisciplinary process involves professionals from various disciplines providing their unique contributions regarding aspects of the child's development and family functioning. The members/ professionals are psychologists, psychiatrists, neurologists, pediatricians, other physicians, speech pathologists, audiologists, occupational therapists, social workers and behavioral and educational specialists. Multidisciplinary process/assessment can take with the child and family participating in numerous sessions or it can take place over the course of several months. Professionals in a multidisciplinary process often operate without benefit of collaboration with other team members and often draw separate conclusions based upon their particular experience and it is a highly stressful process for children and families.

182 7. In asses the ASD children how many clinical assessment are there? Ans: There are five assessment are there. These are Clinical assessment Behavioral Assessment Observation Assessment, Educational Assessment Functional Assessment.

8. Write a full form of A.A.P. Ans: The American Academy of Pediatrics (AAP) 9. Mention any four or five Principles Instructional Approaches of Autism. Ans: There are many principles of instructional approaches of autism. These are: Determine the most efficient and effective program for the child. And it's based on current research and effective practices. Is provided by appropriately trained and competent personnel including parents as appropriate. Make sure staff have specialized training and certification or licensure. Is reflective of the child's areas of strengths and needs that drive the curriculum. Allow the program to integrate techniques or strategies designed to address an array of the child's needs. Includes a variety of methodologies and approaches, which can be integrated. Use strategies that are most cost effective. Is based on comprehensive assessment results. Ensure that programming addresses aspects of ASD and have social validity. Is determined by an IEP team that is multidisciplinary and includes the parent. Ensure that the program is efficient, consistent, and compatible among providers and settings. Program should be outcome-based and evaluation program must be the effectiveness of the child. Make sure the services allow for individualization, and can be validated for the specific child. Provide ongoing evaluation of programming and intervention outcomes via

183 performance based assessment and observational data. Have standards for mastery of goals and objectives. 10. Mention the various representative comprehensive programs of instructional approaches of ASD. Ans: There are six representative comprehensive programs of instructional approaches. These are: i. Developmental Approach ii. Applied Behaviour Analysis (ABA) iii. Structured Teaching iv. Psychotherapies v. Sensorimotor Therapy vi. Play II. Write a full form of AFBAC. What is the function of this approach and mentions the steps. Ans: The full form of AFBAC is an Applying Functional Behaviour Assessment to Challenging Behaviour. The function of this behaviour approach is it is functional behaviour assessments (FBA) or functional analysis and positive behaviour supports (PBS) in the treatment of challenging behaviours for children with ASD. The challenging behaviours such as self-injurious behaviour, stereotypic behaviour, physical aggression and tantrums. A formal approach of Applying Functional Behaviour Assessment to Challenging Behaviour basic steps are: a. Identifying the challenging behaviour; b. Identifying antecedents (events before the behaviour occurred), consequences of the behaviour and setting events which maintain the problem behaviour. c. Designing an intervention, based on the conclusions of the assessment, which may alter the identified antecedents, consequences or setting events. 12. Mention any three and four stages of The Importance of Promoting Generalization of Vocational education of ADS.

184 Ans: Train with multiple persons and across multiple settings. Ensure the presence and delivery of natural reinforcers for the performance of social skills. Practice the skill in the natural environment. Fade prompts as quickly as is feasible. Provide multiple exemplars for social rules and concepts. Train skills techniques self-monitoring strategies. 13. How many stages will be considered in early student with ASD for vocational training. Ans: There are three stages of vocational training considered. These are: Elementary school years: Preparation for pre-vocational training starts in elementary school. Children with autism are strong at visual tasks hence they are quick to learn tasks that use this skill. Skills that are useful in developing career awareness and feeling of job satisfaction include: matching, sorting, correcting sorting errors, matching to jigs (instructions using pictures, drawings, words, or a combination), simple alphabetizing, collecting papers, cleaning tables, serving snacks, getting own snack, delivering messages, packaging and assembly and making simple purchases. Intermediate school years: In the intermediate school years work habits such as attention to task, rule compliance, sustained work on already mastered tasks is important. Systematic typing office work such as collating and sophisticated alphabetizing, measurement, survival signs, money calculations, use of vending machines can be taught. These can be taught in both classrooms and community based settings. High school years: Skills to learn include self preservation and safety skills, work without supervision and independent movement. The students should receive a combination of classroom instruction and training at varied worksites. 14. How many steps are there school-based employment training for with autism spectrum disorder. Ans: There are nine steps are there school-based employment training for with autism spectrum disorder. These are:

185 Observe other Programs and Collaborate with other agencies. Align your Program with State Standards Involve Students in the Planning Process in a Meaningful Way Connect the Program to Real-world Experiences Create Training Materials and Pre-vocational Tasks that Mimic Real-world Processes Use Research-based Training Methods Integrate Program within the School Community Use Authentic "Real-world" Reinforcement Vocational Evaluation Checklist for an Individual with Autism 15. What is the meaning of Integrate Program within the School Community? What are the benefits of this Program? Ans: The meaning of integrate Your Program within the School Community is it should be to encourage meaningful interaction among students such that students and staff in self-contained classrooms are a vital part of the school community. Connecting students to the school community via a simulated community environment offers real world challenges similar to a typical employment context. Moreover, communicating with school personnel in a business setting has many potential benefits. The benefits are; First, students in self-contained settings often become accustomed to communicating only with other students and staff in their own classroom. By expanding the program to personnel outside of the self-contained setting, atypical school communication was encouraged and expansion of students' language use and abilities was facilitated. Second, providing a service that is not only tangible but is also visible within the school setting provides natural reinforcers that a contrived setting is simply unable to offer effectively. Third, school-wide recognition of the students' efforts creates a sense of responsibility and identification that increases the students' sense of self-worth and self-esteem.

186 3.8 Unit End Exercise: 1. What is Autism? Describe the details about the Signs, symptoms, characteristics associated with autism spectrum disorders and common characteristics in autism spectrum disorders. 2. What is Autism? Autism is Treatable? What are causes about the autism? Describe the details about the types of autism and differential diagnostic feature about the autism and related disorder. 3. What is a tool? Describe the briefly interdisciplinary and multidisciplinary assessment and Different Diagnostic tools for Autism Spectrum Disorder. 4. Describe the details about the assessment of Autism Spectrum Disorder. 5. Describe the details about the instructional approaches of Autism Spectrum Disorder. 6. Describe the details about the teaching methods of Autism Spectrum Disorder. 7. Describe the details about Quality Program Indicators Autism Spectrum Disorder. 8. Describe the details about school-based employment training for with autism spectrum disorder. 3.9

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188 Notes

188 Notes

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2 Chairman Prof. Subha Sankar Sarkar, Vice Chancellor, Netaji Subhas Open University, Kolkata Convener Prof. Atindranath Dey, Director, School of Education, Netaji Subhas Open University, Kolkata Course Writers Sub Unit - 1 Dr. Madhuchhanda Kundu Sub Unit - 2 Mr. Santosh Kumar Shetty Sub Unit - 3 Mrs. Alokanda Banerjee Editor Mr. Asok Chakroborty Processing General and Format Editing Ms. Swapna Deb & Mrs. Antara Choudhury In-house Processing In-charge Ms. Swapna Deb & Mr. Samir Chakrabarti The Self Instructional Material (SIM) is prepared in conformity with the B.Ed.Spl. Edu.(MR/ HI/VI) - ODL Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session. AREA - B CROSS DISABILITY AND INCLUSION COURSE CODE - B9 INTRODUCTION TO LOCOMOTOR AND MULTIPLE DISABILITIES ©

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without the written permission from the NSOU authorities. Dr. Ashit Baran Aich Registrar, (Acting) NSOU 3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. 1 must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

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Introduction to Locomotor and Multiple Disabilities UNIT - 1 : CELEBRAL PALSY (CP) 9-44 UNIT - 2 : AMPUTEES, POLIO; SPINAL CORD INJURIES SPINA- BIFIDA AND MUSCULAR DYSTROPHY 45-65 UNIT - 3 : MULTIPLE DISABILITIES AND OTHER DISABLING 66-87 CONDITIONS 8 9

Unit - 1 Cerebral Palsy (CP) Structure : 1.1 Introduction 1.2 Objectives 1.3 Nature, Types and its Associated Conditions 1.4

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EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Assessment of Functional Difficulties of CP Including Abnormalities of Joints and Movements (Gaits) 1.5

Provisions of Therapeutic Intervention 1.6

100% MATCHING BLOCK 5/149

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EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Implications of Functional Limitations of children with CP in Education and Creating Prosthetic Environment in School and Home : Seating arrangements, Positioning and Handling Techniques at home and school 1.7

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EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Facilitating Teaching-Learning of children with CP in school, IEP, Developing TLM, Assistive technology to facilitate learning and functional activities. 1.8

Let Us Sum Up 1.9 "Check Your Progress" 1.10 References 1.1 Introduction (i) The term cerebral palsy is a description; not a specific diagnosis, resulting from a non-progressive encephalopathy whose etiology may be prenatal, perinatal or postnatal. (ii)

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Cerebral Palsy is a persistent but not unchanging disorder of movement and posture due to a defect or lesion of a developing brain.

Development of the brain starts in early pregnancy and continues until about age three. This damage interferes with messages from the brain to the body, and from the body to the brain. Cerebral = "of the brain", Palsy = "Lack of muscle control". It occurs in about 2 in 1000 live births. It may be the most common paediatric problem referred to Physiotherapists and at the same time represent the least understood paediatric neurological problem. (iii) Many children with cerebral palsy may have associated problems because the brain that control posture and movement can be damaged, so too other parts of the brain can be damaged. Therefore their intellectual abilities, hearing, sight, perceptual capacities may be affected. About half the children with cerebral palsy have epilepsy. (iv) In developed countries, most children with cerebral palsy need to see a physiotherapist, an occupational therapist and a speech therapist. The physiotherapist will work with the child to help to develop good posture and movement, the occupational therapist will help the child's function, visual perception and fine motor control, and the speech therapist will help with eating, drinking and communication. (v) Depending on the physical ability, some children with cerebral palsy may need extra support. For many children, a table placed in front of them may provide adequate support. The children who cannot control their head or are unable to keep their body straight, a special seat may be required when they are placed in a sitting position. In the following discussion some ideas of the special furniture are given which may be suitable for the children. 1.2

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Objective After going through this unit you will be able to know

about :— (i) According to English Surgeon William Little in 1862, “cerebral” refers to the brain and the word ‘Palsy’ describes a lack of muscle control. (ii) Cerebral Palsy (CP) is an umbrella like term used to describe a group of chronic disorders impairing control of movement that appear in the first few year of life and generally do not worsen over time. (iii) Cerebral Palsy (CP) is characterized by sensorimotor dysfunction. (iv) The expression of the disorder can appear worse as the child grows, develops etc.

1.3 Nature, Types and its Associated Conditions

1. Cerebral Palsy is an umbrella like term used to describe a group of chronic disorders impairing control of movement that appear in the first few year of 11 life and generally do not worsen over time. The term Cerebral refers to the brains two halves or hemispheres and Palsy describe any disorder that impairs central of body movement. These disorders are not caused by problems in thy muscles or nerves. Instead faulty development or damage to motor areas in the brain disrupts the brain’s ability to adequately control movement and posture.

2. Cerebral Palsy is characterized by sensorimotor dysfunction, which has its expression in abnormal muscle tone and abnormal posture and movement. While Cerebral Palsy is caused by static encephalopathy, the symptoms often appear to be progressive because it affects a changing organism in which a developing, although abnormal, central nervous system (CMS) attempts to direct and control other maturing systems, including musculoskeletal structures.

3. The expression of the disorder can appear worse as the child grows, develops and attempts to compensate for abnormality while confronting the force of gravity in every effort to move.

4. Cerebral Palsy, a developmental disorder affects the total development of the child either directly, relating to sensorimotor function, or indirectly through associated problems. As a developmental disorder, Cerebral Palsy has varying effects on children at different stages of development as well as different chronologic ages. Although the hallmark of cerebral palsy is motor dysfunction, and various other problems frequently coexist.

Aetiology Information about the cause of the disability is helpful for families and essential for generic counseling. Investigations such as urinary metabolic screening and chromosome analysis may elucidate rare causes of cerebral palsy. Radiological procedures such as magnetic resonance imaging (MRI) can be useful if preliminary investigations have been negative.

Cerebral Palsy is associated with a number of variables, which have been grouped into birth weight and gestational age, other biological factors occurring during prenatal and perinatal and postnatal time periods and selected social factors. The most commonly reported relationship is with birth weight. There is a strong association with low birth weight and prematurity. There is remarkable agreement across countries in the marked increase in cerebral palsy as birth weight decreases below 2,500 grams (5.5 pounds). Birth weight is obviously less as gestational age decreases.

12 Birth factors are viewed by some as the major cause of cerebral palsy, While others believe that the damages occurs in utero and leads to perinatal problems. Part of the problem in resolving these different views is that intrauterine insults are more difficult to identify and measure, whereas many perinatal factors are easier to monitor. There are many different causes of cerebral palsy. In a considerable proportion of cases the cause remains unknown or elusive. Note : It is important to establish the cause if possible.

Prenatal Events. Prenatal events are thought to be responsible 75 percent of all causes of cerebral palsy. Known causes include :- Congenital intrauterine infection, e.g. Rubella. Developmental brain anomalies Placental insufficiency (sometimes).

Perinatal Events Birth asphyxia may be caused by antepartum haemorrhage or other placental cord problems. Perinatal asphyxia accounts for about 8 to 10 percent of all cases of cerebral palsy. If hypoxia is severe enough to cause neurological damage it usually results in death or hypoxic encephalopathy with cerebral oedema and associated seizures, irritability and feeding difficulties. The motor centres are the area of the brain most vulnerable to perinatal hypoxicischaemic damage, and if there are long term sequelae they will include cerebral palsy.

Postnatal Events Postnatal events account for about 10% of all cases. Known causes include:- Accidental injury, e.g. hypoxic events such as near - drowning accidents, head trauma from motor vehicle accidents.

13 Non-accidental injury or child abuse Severe brain infections, e.g. meningitis. Classification of Cerebral Palsy 1. Muscle tone refers to a constant state of partial contraction or tension in moving or resting muscles of the body. To maintain a posture or moving in and out of the posture requires us to have postural tone. Children with CP usually have problems with postural tone. Total qualities seen in CP are :- Hypertonia – Too much muscle tone leading to stiffness. Hypotonia – Too little muscle tone leading to floppiness. Dystonia – The muscle tone fluctuates between stiffness to floppiness. Rigidity – Sustained stiffness of limb. Spasm – Involuntary and possibly painful contraction of muscle. Tic-tacs – Repeated rhythmic uncontrolled movements of parts of the body. 2. Classification of Cerebral Palsy by number of Limbs involved. I. Quadriplegia - All four limbs are involved. II. Diplegia - All four limbs are involved - Both legs are more severely affected than the arm. III. Hemiplegia - One side of the body is affected the arms are usually more involved than the leg. IV. Triplegia - Three limbs are involved usually both arms and a leg. V. Monoplegia - Usually one limb is affected. Usually an arm. Quadriplegia Diplegia Hemiplegia Paraplegia Monoplegia Problems associated with CP Mental Retardation - Mental Retardation is a disability characterized by significant limitations both in Intellectual Function and adaptive behaviour as expressed in conceptual, social and

14 practical adaptive skills. This disability originates in childhood Intellectual function should be evaluated by an appropriately trained professional with standardized psychometric tests appropriate to the child's mother tongue & culture. An often quoted incidence is that about 50% of the population has an I.Q below 70. The unsuitability of formal tests of intelligence often used in the past have caused such figures to be questioned. Current procedure is much more likely to use a variety of methods to gather information, such as checklists, administration of appropriate subtests of a number of standardized tests, observation of the child's (or adult's) performance in a variety of situations, and a synthesis made of all the results based on the examiner's experience. Emphasis on early intervention and the increasing use of augmentative communication systems are making it possible to assess the degree, if any, mental retardation in an individual. It is increasingly recognized that sensory deprivation are often important contributing factors to mental retardation. Hearing Impairment Impairment in hearing capacity is defined in terms of degree of hearing loss. Total inability to hear is deafness but those whose sense of hearing is defective but who manage with or without hearing aids are called hard of hearing. It might be congenital or acquired. Congenital - Hearing loss at the time of birth. Acquired - Hearing loss acquired any time in one's life. Eligibility of services under the categories of deafness & HI is based on degree of hearing loss. Degree of Hearing loss - 0-25-Normal 26-40-Mild 41 - 55 - Moderate 56 - 70 - Moderately Severe 71-90-Severe 91+ - Profound. Reports on incidence vary from 8% to round 30% of the population. All children and adults with cerebral palsy need hearing assessment every 2 to 5 years. Hearing

15 problems occur frequently and may remain undetected. It has been noted that a person with the athetoid type of cerebral palsy has a greater likelihood of being hearing impaired. The child with cerebral palsy who is also hearing impaired is handicapped not only in his ability to receive language through speech, but also because, physically, he may not be able to explore his environment, get objects he wants or direct the attention of others. His deafness may not be diagnosed until late, his lack of response being thought to be due to his cerebral palsy or mental retardation. Many schools for the deaf are equipped to provide services to the physically handicapped child. If he does attend a school for the deaf, the severely handicapped child with cerebral palsy may gain a receptive language. Opportunity to learn to use an aided technique, such as a communication board, will be very useful. Visual Impairment Vision Visual Impairment is defined in terms of visual acuity, field or vision & visual efficiency. Vision is the most actively used sense by man. Cognition depends upon his visual experiences. Their ability to get along is also limited because of restricted mobility. They are unable to control their own environment and themselves in relation to it. These are significant defects. Visual ability of the eye to see the distant objects clearly is assessed using the Snellen Chart. An individual may be considered as blind if the visual field is severely limited even if visual acuity is better than 20/200. If the visual field is no greater than 20 degree in width, the individual can still be classified as being blind though visual acuity is not within typical range of blindness. Visual efficacy means how well one can use one's vision. This means how this visual information is processed analyzed and interpreted in the brain. Individuals with cerebral palsy have special eye care needs that should be examined and monitored by an ophthalmologist. All children and adults require visual assessment every 2 to 5 years. Vision disorders particularly strabismus are common. Visual acuity may be impaired and can remain undetected. Reports indicate that as many as 25% to 50% of children with cerebral palsy have visual impairments that could significantly affect academic work (Cruickshank, 1976). The most prevalent of the visual impairments in the population, strabismus and nystagmus, can be related to muscle imbalance and muscle control respectively. Assessment of impairments may be more difficult than usual in the presence of reduced or uncontrolled head movements. Assessment of vision is often difficult, especially with nonspeaking children who are severely physically involved.

16 Disorders of Bodily Sensations Noted in the literature on the cerebral palsied population are such problems as disorders in tactile sensation, two-point discrimination, body image and position sense, pain and temperature, any of which will affect to a lesser or greater extent, a person's relationship with his environment and the people in it. For example, a visually impaired person who has difficulty in recognizing objects by their shape is extremely handicapped. Seizure Disorders Epilepsy Epilepsy could be defined as a sudden uncontrolled episode of excessive electrical activity which could lead to a change in behaviour consciousness or movement. Epilepsy is not a disease it is a sign/symptom of a structural or a chemical disorder it can range from severe to minimal and are exhibited in a number of ways. Epilepsy is the most common neurological disease. Due to seizure there is a sudden change in intellectual sensory motor, autonomic or emotional activity limited in length and presumably associated with neural over activity. Treatment to control fits is important. Cerebral Palsy and epilepsy often occur together. Epilepsy occurs in up to 50% of children and approximately 20% of adults with cerebral palsy. It is most common in those with severe motor problems and requires careful management. Adults may have been on antiepileptic medication for many years and are also at increased risk of osteoporosis and therefore fractures. Regular review of antiepileptic medication is important. Reports as to the degree of incidence vary widely, but there is less incidence in the athetoid than in the spastic type of cerebral palsy. Cruickshank(1976) suggests that 35% - 60% of all children with cerebral palsy are likely to develop seizures at some time in their lives. Seizure problems, such as frequent petit mal seizures, may have significant effect on the attention. Drugs to control seizures may, but not necessarily, affect the individual's alertness.

17 Visual-Motor Deficits Visual motor deficits are reported more frequently than in the general population. This may affect writing, ability quite apart from the presence or otherwise of a motor handicap. Physiological - Sociological Problems An individual with cerebral palsy is an individual first with his own strength and personality traits. His particular circumstances and experiences combine to help him react to a situation in a particular way. Some individuals triumph over exceeding odds to become examples and sources of strength to us all. However, given the variety of frustrations which an individual with cerebral palsy may have to face daily, it is not surprising to find reports of emotional problems, such as emotional immaturity and instability, introversion and depression (Mysak, 1980) occurring with more than average frequency in this population. Motivation is an element of personality which has much bearing on a person's ability to achieve communicative competence. In recent years it is becoming increasingly recognized that it is the attitude of others - parents, friends, professionals, and society at large- whether overprotecting or rejecting, which forms a person's biggest handicap. A negative self concept is more often a result of these attitudes than the frustration arising in adolescence. The public awareness and acceptance of the person with cerebral palsy are paramount. These will contribute to the formation of a positive self concept by the individual". After Physiological- Sociological Problem Eating, Drinking & Speaking problems- Eating & Speaking are skills that come from the coordinated, controlled movement of lips, tongue, throat etc. Taking is good, chewing and swallowing gets difficult on there is no muscle control. Learning to speak also gets affected. Drooling - Unintentional loss of saliva from mouth occurs on there is poor coordination of swallowing mechanism. Specific learning difficulties - Essential cause mostly due to logical and cognitive defects in children with CP. They may have problems in memory, attention, physical co-ordination activities like hand writing & self-help.

18 1.4.

100%	MATCHING BLOCK 8/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
Assessment of Functional Difficulties of CP Including Abnormalities of Joints and Movements (Gaits)			

Possible Physical Problems Unable to lift head when lying or held in sitting position Unable to move to change position Unable to use hands for support or movement or for function Unable to function, protect or reach out with arms while sitting independently Unable to get in and out of sitting position Unable to lean forwards or backwards while sitting independently Unable to do active forward and backward weight shift of the trunk in different positions, e.g., long sitting, supported crawling position, supported standing position Poor balance reactions in standing (unable to protect effectively when falling) Unable to transfer weight forward, backward or sideways in the standing position Unable to get into or get out of standing position Can step but cannot stop To get into, maintain and get out of standing position Balance reactions and weight transference in standing Types of Motor Disorder Spasticity It is characterized by an increase in muscle tone causing difficulty in movement. Movements are slow and laborious or, in severe cases virtually non-existent. Spastic muscles are tight and stiff hypertonic - and have an increased resistance to being stretched (clasp knife).

100%	MATCHING BLOCK 9/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
Normal muscles work in pairs; when one group contracts, the other group relaxes			

to allow free movement in the desired direction. Spastic muscles become active together and block effective movement. This muscular " tug-of-war" is called co-contraction. Sensory loss occasionally occurs in spastic hemiplegic hand and visual field. Growth of hemiplegic limbs is less on affected side.

19 Epilepsy is more common in this type of CP. Excitement, fear or anxiety increase hypertonus; sudden rather than slow movements increase hypertonus. Athetosis Almost always affects the whole body and all four limbs and generally results from damage to the basal ganglia. It is characterised by variable muscle tone, dysarthria, loss of control of body posture and constant involuntary movements. Hearing loss of specific high frequency types is associated with athetoids, caused by kernicterus. Ataxia Refers to a disorder of balance associated with damage to the cerebellum. They have poor muscle tone (hypotonic) staggering walk. Tremor may be present. Disturbance of balance. Poor fixation of head, trunk, shoulder and pelvic girdle. Poor fine hand movements occur. Nystagmus may be present. Mixed A mixture of more than one type of cerebral palsy is common, particularly the combination of spasticity and athetosis. Presentation and Diagnosis Childhood:- Follow-up of at risk infants. Delayed motor milestones. Development of asymmetric movement patterns. Abnormalities of muscle tone. Management problems, e.g. severe feeding difficulties, abnormalities of behaviour such as irritability.

20 It is important to remember that many young infants may have normal tone during the first few months of life. The onset of spasticity may be gradual; Similarity, athetoids movements may not appear until between 9 and 18 months of age. It is also important to exclude progressive neurodevelopmental and spinal lesions that may initially present in a similar manner to cerebral palsy. Presentation and Diagnosis Adulthood Adults with an established diagnosis of cerebral palsy may also present for management of other acute or chronic health issues. A decrease in overall functioning may be related to the interaction between lifelong motor impairment, associated conditions, ageing and age - related disease.

1.5 Provisions of Therapeutic Intervention Possible Physical Needs for Developing Head Control Weight bearing on arms in different positions: prone, sitting, crawling. Developing righting reactions in lying (maintain balance by moving head or body. Promoting active extension of trunk which will make it easier for child to lift and hold head up (reaching up and out with alternate arms in prone or supported sitting). Encouraging segmental rotation of trunk through rolling. Bringing hands together in front of the body (holding objects such as toys). Encouraging reaching out with arms - in lying, side lying and supported sitting position. Recommended Positions for Mealtimes Feeding or Eating to be done in sitting position using Floor seat with a floor table or cut-out table in front.

21 Sitting on a Chair or wheelchair with a cut-out tray in front (Please note you may need to support the head with your hand) Play Sitting on floor seat. Sitting on chair with cut-out tray. Standing with support (wearing gaiters) Toileting. The child/ student must be well secured on plastic or wooden potty chair. Possible Physical Needs for Developing Sitting To get in and out of sitting position To improve balance reactions in long sitting (to sit without support and be able to do an activity with the hands) Active forward and backward weight shift of the trunk in different positions, e.g., long sitting, supported standing position Recommended Positions for Mealtimes Feeding or Eating to be done in sitting position using Floor seat with a floor table or cut-out table in front Sitting on floor against a wall with floor table or cut-out table in front Sitting on a Chair or wheelchair with a cut-out tray in front Toileting Western toilet with grab rail attached to wall at side Potty chair-wooden or plastic Methods of Mobility Moving on board with castors Chair with castors Wheelchair Possible Physical Needs for Developing Standing Getting into, maintaining and getting out of kneeling, half-kneeling and standing positions Balance reactions and ability to transferring weight actively in long sitting, kneeling, hal kneeling and bear standing positions Standing against wall or holding grab rail.

22 Recommended Positions for Mealtimes Normal seating arrangement which is available in child's environment for eating, play and work Toileting Normal Indian / Western style toilet with a grab rail or some support for holding. Cut-out stool over Indian style toilet to enable child to be self-sufficient while washing Methods of Mobility Crawling Bottom shuffling Walking with Kaye Walker Walking with crutches Possible Physical Problems for Developing Walking Poor balance reactions in standing (unable to protect effectively when falling) Unable to transfer weight forward, backward or sideways in the standing position Unable to get into or get out of standing position Can step but cannot stop Possible Physical Needs for Developing Walking To get into, maintain and get out of standing position Balance reactions and weight transference in standing Recommended positions for Functional Needs Independence in all functional skills using normal facilities available as far as possible. Methods of Mobility Independent walking Lifting, Carrying and Transfer Lifting and / or carrying a person with a physical disability should always be kept to minimum. Wherever possible a wheelchair should be used to move a person. When lifting or carrying is required ensure : Dignity of the person being lifted / carried

23 Safety of person being lifted / carried That the person who is lifting / carrying should care his / her back Techniques for Lifting and Carrying Always explain to the person you are going to lift: What you are going to do How you are going to do it What you would like them to do Stand as close as possible to the person you are going to lift When lifting a person, bend your knees, not your back, so you are at the same level as the person Move as close to the person as possible, bend your knees, place one arm under the thighs and place the other hand across the back and under the armpit When two people are required, Bend your knees and link hands firmly with each other under the thighs and across the back Decide beforehand the direction in which you will move Work in unison (e.g., 'on count of three lift') Ask the person being lifted to lean forward as much as possible Techniques of Transfer When transferring a person to or from a wheelchair to bed / toilet / car / floor or to another chair the wheelchair should always be placed as close possible to the place where the person is being transferred to. 1.6

100%	MATCHING BLOCK 15/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
Implications of Functional Limitations of children with CP in Education and Creating Prosthetic Environment in School and Home: Seating arrangements, Positioning and Handling Techniques at home and school			

Education Reading Difficulty in Early Literacy Children may have difficulty in the following areas Concepts about print 24 Visual matching Whole-word recognition Phonological awareness Comprehension Creative comprehension Difficulty in Formal Reading, Writing, Handwriting Children may have difficulty in - Naming the letters Spelling words Accuracy of Reading (Aloud) - words, text, poetry b) Types of errors Mispronunciations Omissions Substitutions Reversals Additions. Loses place c) Rate of reading may be Too fast Fast, jerky, unclear Variable - in bursts, sometimes fast, sometimes slow Slow, jerky, unclear Too slow, loses flow of text d) Children may have difficulty in Comprehension of text Creative writing Handwriting

25 Seating Arrangement: Special Furniture Some children with cerebral palsy have difficulty sitting on their own. A special seat may be required when they are placed in a sitting position. Some ideas of the special furniture are discussed that may be suitable for the children with cerebral palsy. Advantages of Special Furniture If a child with cerebral palsy

76%	MATCHING BLOCK 10/149	W	
has difficulty controlling his head or sitting upright, a special seat may help him in many ways: It will give extra support He will be more comfortable He will feel more secure			

He will be able to maintain a better posture Disadvantages of Special Furniture:

89%	MATCHING BLOCK 11/149	W	
Special furniture keeps the child in one position and may hence limit his activities.			

Children's size and sometimes their posture changes in time but special furniture is static and usually cannot be adjusted.

87%	MATCHING BLOCK 12/149	W	
A prolonged period of sitting can be very tiring for a child. If he is stiff, he is also at risk of becoming stiffer or getting contractures (permanent tightness) especially in his hips and knees.			

Making Special Furniture To make any special furniture for the child, give exact measurement to the carpenter. Make sure that the carpenter uses adhesive along with nails or screws on all wood joints, as this will make the furniture sturdier. It will also prevent urine or spilt liquid seeping through the joints of the wood.

26 Always make sure that the wood surface is smoothed well with sandpaper before it is painted. Ensure that all sharp edges and corners are removed to prevent the child from hurting himself. Laminated sheets can be used on the surface of tables or trays if preferred. This makes cleaning easier. Painting the furniture makes it much more attractive. Use the child's favorite colour for painting.

92% MATCHING BLOCK 13/149

W

How to measure a child for a special seat Seat the child on a low stool (the height of the stool should be such that he / she can place his/ her feet flat on the floor) If the child cannot sit by himself, hold him in the sitting position on the stool. Try to keep the child as straight as possible. 27 28 Seat Length Measure from the child's back to where his knee bends (A to B).

82% MATCHING BLOCK 14/149

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Seat-width Measure the width of the child's back and add an extra 2 inches (C to D). Arm rests (sides of the seat) Measure from the stool to 2

inches above the child's waist (A to G).

100% MATCHING BLOCK 16/149

W

Height of the back of the seat Measure from the stool to the top of the shoulders (A to E). If the child cannot hold his head straight and does not have head control; measure from the stool to the top of the child's head (A to F). 29

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Height of seat from the floor Make sure that his knees are at right angles and his feet flat on the floor. Measure from the back of the knee to the floor (B to H). Following are some examples of special furniture and the type of child who may benefit from using the furniture. Floor Seat A floor seat is a simple seat that is suitable for children and families who sit on the floor at home or for

many of their activities,

100% MATCHING BLOCK 18/149

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such as eating and playing. It is most suitable for small or young children. The floor seat gives support at the back and sides. If the head is not steady, it can be made higher at the back to give the child support at the back of his head. If the child is tight between the legs or tends to slip forward in the seat, a pommel can be fixed to the seat. The measurement for the pommel is given

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The measurements for the floor seat are as explained earlier

on page 3. The only difference is that

80% MATCHING BLOCK 20/149**W**

the measurement of height of seat from the floor is not required as the seat is on the floor. 30 If you want to move the child around in the box seat, castors can be attached to the bottom of the seat so that it moves easily. If castors are attached, a foot rest will have to be added to the seat. To measure for the height of the foot rest, measure the child from the back of the ankle to the back of the knee (B to A).

100% MATCHING BLOCK 21/149**W**

Box Seat The same type of seat as the floor seat can be made at a higher level for the child who does not sit on the floor. The measurements for the height of the seat from the floor should then be included. 31

100% MATCHING BLOCK 22/149**W**

The height of the rod will be from the seat to just below the armpits. It should be at a distance of 2 inches in front of the child's chest. There will be a hole cut in the seat of the chair through which the child passes stool or urine. A bucket or container is placed under the hole. Remember the hole in the potty seat should be pear-shaped for boys.

98% MATCHING BLOCK 23/149**W**

Potty Chair If the child cannot sit, or has unsteady sitting balance, it is often very difficult for him to use the toilet, whether it is western or Indian style. A potty seat should give the child enough support for him to sit without being held by anyone, so he has some privacy. It can be placed in a convenient discrete place in the home. It is also useful for children who are not yet toilet trained and need to be taken to the toilet very regularly. The measurements are the same as for the box seat. However the sides of the potty seat should be straight up to the shoulder. Two circular holes are made in the sides of the seat through which a rod can be inserted to ensure that the child does not fall out of the potty chair. 32

100% MATCHING BLOCK 24/149**W**

Ramped Seat Children who tend to slip forward on the seat often benefit if a ramp is fitted to the seat to prevent slipping. It is more comfortable than a pommel and often adequate to keep the child in place. If the child still slips forward even with the ramp, then a pommel may be required.

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Pommel Some children who have tightness between their legs may require a pommel which separates the legs. It also helps to stop children slipping forward in the chair. This is a cylindrical block of wood 6 inches high and 2 inches in diameter. It is secured to the seat at a distance of 1 inch in front of the child's groin. For extra comfort, pad the pommel with 1 inch thick foam and cover it with rexine. 33

100% MATCHING BLOCK 26/149**W**

The ramp is usually two inches high at the front. It slopes gradually to cover 1/3 of the chair and becomes level with the rest of the seat. It can be made from ply wood, but should always be well padded with 1 inch thick foam which covers both the ramp and the rest of the seat. Pelvic Strap A pelvic strap gives added support and stability for children, who tend to slip forward in the seat. It is also a safety factor, as the child cannot fall out of the seat if left alone. The pelvic strap is always fixed at the back and below the level of the seat, so that it comes upwards and round the waist. This ensures that the child cannot slip under it. The strap should be made of thick cotton strapping 2 inches wide, which can be knotted in front.

99% MATCHING BLOCK 27/149**W**

Padding for Seating Children often spend a great deal of their day sitting so it is very important that the seat is comfortable and well padded. The padding usually consists of 1 inch foam. If the child is not toilet trained or if he tends to spill food when eating, it is best to cover the seat with rexine, which can be easily wiped clean and dry. If the child sweats a lot, it is advisable to place a towel over the rexine when the child is sitting in the seat. For children who do not have toilet accidents and are not likely to spill food or water, it is more comfortable to cover the seat with cloth. When padding a seat, the back, sides and seat of the chair should all be padded. Padding is not advisable for toilet seats. 34 Floor Table This type of table is very useful for children who sit on the floor. It is simple to make and does not take up too much space. If children have difficulty sitting, it gives a support in front on which they can lean. They will be able to use their hands more effectively. Children who have a tendency to keep their knees bent and sit with their legs crossed or between their knees can be encouraged to sit with their legs straight if they have a floor table to lean on. The floor table can also be used with the floor seat. There should always be raised beading round the three sides of the table not in contact with the child to prevent objects or toys from rolling off the table. The measurement for a floor table is usually 18" X 18". However for a younger child who uses a smaller chair, the floor table can be 15" X 15". Cut-out Tray This type of tray can be fitted to a chair or wheelchair. It gives extra support for the child who tends to fall forwards or sideways when placed in a seat. The tray gives support round the trunk, and enables the child to be more upright and if possible, use his hands more effectively. 35

93% MATCHING BLOCK 28/149**W**

The tray needs to be anchored to the chair with hooks at both sides. It could also be made into a table, by fitting it with legs, so it can be used with a floor seat. Measurement for the cut out tray will be the same as for a cut out table. The height of the table should be just above the child's waist. The cut-out portion should be measured to fit the child. The diameter of the semi-circle should be the width of the child's waist, plus two inches (A-B). It should fit comfortably around the child. As with the floor table, beading should be placed round the three sides of the tray. A child will be most comfortable in a chair for which he has been measured carefully.

These are just few ideas that may be suitable for the children.

90% MATCHING BLOCK 29/149**W**

However, when possible, it is always better to seek expert advice before making a seat.

92% MATCHING BLOCK 30/149**W**

As the child grows and develops we may need to change the size and the design of the seat. 36 1.7.

100%

MATCHING BLOCK 31/149

W

Facilitating Teaching-Learning of children with CP in school, IEP, Developing TLM, Assistive technology to facilitate learning and functional activities.

Many children with CP will also have some type of learning disability. Assessment by a psychologist and the support of special educators can reduce the handicapping effects of the learning disability. Children with CP will often start their education early to help improve their mobility and communication skills before starting school. Most children with CP will receive an integrated education enabling them to mix with their peers in their neighborhood school. A child with mild CP may simply require minor programme adjustments. For example, he may need a little more time to write an exam if his hand control is poor. A child with more severe disabilities may require considerable support from resource staff and teaching assistants. Children should have an Individualized Education Plan (IEP) which assesses the child's performance, sets goals and specifics which supports are required. The amount of support offered and the commitment to successful integration varies widely between school boards and individual schools. A good partnership between parents and educators will help children to achieve their goals. The ultimate long term goal is realistic independence, to get there we have to have some short term goals, those being a working communication system, education is his potential, computer skills and above all friends. IEP To facilitate learning, all children with cerebral palsy need to be assessed to determine what kind of help they need. An assessment involves gathering information about the children and his development. It generally includes what kind of help a child needs. Information comes from a variety of sources, for e.g., parents, the multidisciplinary assessment team, the child's doctor and medical history, reports and results from developmental tests and or checklists. A multidisciplinary assessment team of professionals includes a special educator, an occupational therapist, a physiotherapist, a speech and language specialist, medical specialist, and a psychologist. These professionals observe and test the child, and determine the child's strengths and needs. Based on their reports the Individual Educational Programme / plan (IEP) is

37 prepared. The written plan describes the child's needs, as well as the services that are to be prepared for the child. In the school at an IEP meeting the people who have assessed the child explain their findings, what tests/ checklist they used, and they also report the strengths of the child. On the basis of this meeting the IEP is developed. The plan lays out what the school intends to do during the school year. After that, during the whole academic year in a regular interval the school must schedule a meeting with the team to review the child's progress and if needed the IEP may be modified. The IEP - IEP is a well formed written document which serves as a management tool for intervention. Components of IEP - this is written in two parts. Part A 1. Demographic data - It includes, Child's name, age, sex, education, mother tongue, address, parent's name, occupation, income, date of filling IEP, registration number, class and roll no. etc. specific heads can which information is required. 2. Significant information about the person with CP. Sensory preference, learning time preference, attention span, rate of learning etc. 3. Goals - Goals selected on annual basis which the teachers expect the students to achieve over a period of one year as per curricular content is documented. 4. Associated condition - Many person with CP have an additional disability or more. Curricular strategies and planning may differ in cases with additional impairments. 5. Staff responsible - The person responsible for implementation of the IEP is documented for administrative and clinical reasons. Part-B 1. Specific statements of what skill/activity to be taught is documented in the specific term. E.g. writing names of month of year. 2. Baseline or current level - The current level of the student is reference to the task/activity for teaching is documented. Eg. Can write names, 3 - better words. 3. Specific objectives - This is the statement that specifies what the student will learn (content) what the student will do with the content (behavior), performance level of the student in the content (criteria) and how much is the time period required for achieving the target (duration).

38 4. Materials and learning aids - learning aids make learning meaningful and carrier. Depending upon what is to be thought and child's specific interest level and needs learning aids may differ for same activity. 5. Procedure - How to motivate the child to learn the activity and how the task will be taught is described in a stepwise procedure. This all include different strategy to be used to make learning effective. 6. Evaluation - The student's performance in the particular task chosen against the set criteria as per the specific objective is noted. Teaching Learning Materials (TLM) for Children with Cerebral Palsy TLM are a necessary and important part of any classroom or learning situation. Learning materials to be imparted or conveyed through a medium which the learner easily accepts and comprehend. The TLM to be used depends on the subject to be taught and the age of the learner. Bruner talks about three modes of Learning. They are: ENACTIVE MODE (Activity -based learning) ICONIC MODE (Learning by use of images and diagrams) SYMBOLIC MODE (Learning by use of symbols / languages) We must always remember that each subject of study requires a different kind of TLM because ? It depends on the nature of the material to be learnt ? The methods of teaching being employed ? The needs and the nature of the learner at each stage of development There are various criteria of selection of learning materials. Wood (1963) has suggested six criteria for selection of TLM. All TLM should make a definite contribution in achieving the goal on the part of the learner. There are individual differences in a group of students - variety of learning materials should be used. To increase the objectivity of analysis TLM should be authentic. TLM should be adapted to the maturity level of the pupils who are to use them.

39 TLM should be selected on the basis of efficiency- the materials that result in the greatest amount of learning in the least amount of time. If there is a choice between two types of materials of equal learning value, the less expensive one should be chosen. Using TLM Junior-Most (Infancy) Classes (approx 2- 6 years) - we use play-way method. Children are instinctively curious and have innate desire to play, explore and learns through play. Use - concrete objects made of different materials, shapes, colours etc. Early Childhood (approx 6-10 years) - imagination and make believe play are important. Role playing, hand work, project work are incorporated into the TLM. Late Childhood (10-13 years) - the peer group becomes more important than parents and family. Students like to participate in group activities requiring participation of each learner like project work, competition, exhibition, etc. Adolescent (13+ years) the learner requires intellectual stimulation, emotional security, physical exercise, opportunity to make personal or individual decisions and contributions. So demonstrations and guidance are employed Group activities Workshops Projects, etc become part of the learning process Assignments completed by the learners become important as TLM. The Requirement of Visual Aids To attract attention to what is being taught To keep thoughts focused To highlight the key points of a lesson

40 To introduce new, unfamiliar concepts To outline or summarize the points of discussion To advance the learning situation To add interest and involvement To make learning more permanent To help to overcome language barrier To develop greater understanding. Audio-Visual Aids help to learn 35% faster and retain 55% longer. Language and Reading Aids Look and say card Feely bag Mystery picture What's happening cards Half-moon cards Alphabet booklet Beginning-ending Read, write and draw Action words Action dice Flannel board & cut-outs(for story telling) Number Aids Colour box and pegs The sorting tray Sandpaper numbers on cards Number jigsaws Fishing games Number dice The abacus, etc

41 Assistive Technology to Facilitate Learning Technology Refers to Any tool that has the potential to remove the tedium and repetition and will allowus to perform that which is most human Application of knowledge to meet the goals, goods and services desired by people The way to use, to develop a 'tool', any 'tool' to solve a specific problem minimizing the effort to do it. Information Communication Technology (ICT) Deals with information Facilitates communication The concepts covered by the word ICT are - Computer technology Networking Data collection- analysis Gathering information and managing it efficiently Interactive Innovative Entertaining Assistive Technology (AT) is

95%

MATCHING BLOCK 32/149

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any item, piece of equipment, or product system whether acquired commercially off the shelf, modified or customized that is used to increase, maintain or improve the functional capabilities of individuals with disabilities.

Different types of Assistive Technology (AT) : * Furniture, Work Surfaces and Work Stations * Mobility devices * Low tech devices or assistive devices for the activities of daily living * Computer Access: Hardware and Software * Aids for people with low vision and visual impairment

42 * Hearing impairment * Augmentative and Alternative communication devices and software * Electronic Aids to Daily Living (EADLs) or Environmental Control Units (ECUs) * Mounting Devices and other Performance Enablers * Single switches and controllers - for access to many types of AT devices Inclusive Technology Is the application of scientific advances to benefit humanity Supports the Rights of All Citizens Provides support for learning, communication and living Empowers All people Therefore Inclusive Technology needs to be Pragmatic Affordable Flexible Culturally relevant 1.8 Let us Sum Up "Cerebral Palsy" (CP) or "Cerebral Paralysis, was first indentified by English Surgeon William Little in 1862, and therefore the condition is known as "Little Disease". The term CP was given by Phelps (1946). According to him, "Cerebral" refers to the brain and the word 'Palsy'describes a lack muscle control. cerebral Palsy describes a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to the nonprogressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, perception, cognition, communication, and behaviour, by epilepsy, and by secondary musculoskeletal problems. Cerebral Palsy (CP) does not always cause profound disabilities. While one child

43 with severe cerebral palsy might be unable to walk and need extensive, lifelong care, another with mild cerebral palsy (CP) might be only slightly awkward and require no special assistance. Supportive treatments, medications, and surgery can help many individuals improve their motor skills and ability to communicate with the world. 1.9 "Check your Progress" 1. Define cerebral Palsy.

..... 2. Give a brief descriptions of associated conditions of C.P.

..... 3. Classify Cerebral Palsy?

..... 4. What are the possible physical problems of CP?

..... 44 5. What are the areas children may have face due to CP?

..... 6. Describe the criteria of selection of learning materials for CP Children.

..... 1.10 References 1. Anonymus (2007). Definition and classification of CP, Developmental medicine and child neurology 49 (8) : 8. 2. Blencowe, S.M. (1969), Cerebral Palsy and the young children, E & S Publishing, Livingstone. 3. Boone, D. R. (1972) Cerebral Palsy. Bobbsmerrill, Indianapolis, New York. 4. Denhaff. E. & Robinault, I.P. (1960). Cerebral Palsy and related disorders, Mc Graw Hill, New York. 5. Hardy J C (1983), Cerebral Palsy, Prentice Hall, New Jersey. 6. Shyamala K. C (1991). Speech and Language behaviour of the cerebral Palsied, CILL, Mysore. 7. Shyamala. K. Chengappa, (2001). Verbal Communication with CP children, online Jaursal www. languageinindia.com, Vol-I 8. Tebbett. K (2006). Management of cerebral Palsy, Sage Publications, New Delhi. 9. Shyamala K. Chengappa, children with cerebral palsy. In, Bishnupada Nand; ed. "Challenged children : Problems and Management." Ankush Prakashans, Kolkata-9.

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Unit-2

90%	MATCHING BLOCK 33/149	W
Amputees, Polio, Spinal Cord injuries, Spina-Bifida and Muscular Dystrophy Structure : 2.1 Introduction 2.2 Objectives 2.3 Amputations 2.3.1 Definition 2.3.2		

Therpeutic Management of Amputee 2.3.3 Prevention of Contractures 2.3.4 Assessment of Functional Difficulties 2.4 Polio 2.4.1 Definition 2.4.2 Causes 2.4.3 Types 2.4.4 Deformities Commonly Seen in Polio 2.4.5 Therapeutic Management for Polio 2.5 Spinal Cord Injuries 2.5.1 Definition 2.5.2 Level of Injury 2.5.3 Therapeutic Management of Spinal Cord injury 2.6 Spina-Bifida 2.6.1 What is Spina-Bifida 2.6.2 Types 2.6.3 Associated Problems 2.6.4 Therpeutic Management 2.7 Muscular Dystrophy 46 2.7.1 What is Muscular Dystrophy 2.7.2 Causes 2.7.3 Types 2.7.4 Associated Problems 2.7.5 Therapeutic Management 2.8 Implications of Functional Limitations for.....School and Home. 2.9 Facilitating Teaching-Learning 2.10 Let Us Sum Up 2.11 "Check Your Progress" 2.12 References 2.1 Introduction : The aim of the unit is to develop awariness regarding amputation, polio, spinal cord iujury, spinobi-fida and muscular dystrophy and also the therpeutic measres including assessment points. So that you can idntify the children with above disabilities and plan an effective programme education. You can also refer for effective therapeutic programme and medical intervention. 2.2 Objectives : After completing the unit you will be able to understand :- Idntefiy the person with amputee. Spinal cord injury, polio, muscular dystropy Plan an effective programme for creating awareness. You can refer properly Handling will be easy during teaching time You can reudce the future complication and strain to the parents You will be able to understand the educational implications and medical management. You will know the causes, classification and symptoms of the conditions. 47 2.3

82%	MATCHING BLOCK 34/149	W
Amputations : 2.3.1 Defination : An amputation is the loss of same part of the body. Rarely children are born		

with out

81%	MATCHING BLOCK 35/149	W
one or both hands or feet. More after, children lose one arm or leg because of		

injuries in accidents. Accidents with agricultural implements are a major cause of amputations. Machines like fodder cutters are often used with out proper safety devices. Adults working on these machines and large portation of fingers and arms. Therefore, accidents often result in severe injuries of the forearn and evenarn, resulting in amputations. Some time lack of proper case of the wound can lead to the amputation of a limb, for example ofter tourniquents or tight bandages around the lime are applied as a first aid for shaked and for control of bleeding. In the urben areas road accidents are significant cause of amputations. Sometimes

100%	MATCHING BLOCK 36/149	W
limbs must be cut off because of advanced bone infections		

of dangerous tumors (cancers) burns, leprosy, surveys around the country have shown that most children and adult amputees. 2.3.2 Therapeutic Management of Amputee :

91% MATCHING BLOCK 37/149

W

Care of the Amputated Limb : The goals in caring for the stump are to maintain a good shape and good position for fitting an artificial limb. This means taking active step to : 1. Avoid swelling 2. Keep the full range of motion (Prevent Contractures) 3. Maintain strength Wrapping the Stump : To prevent swelling and keep a good shape for fitting an artificial limb. It is important to wrap the newly amputated limb for a long time after it has been cut off. The leg should be wrapped in a way that squeezes the liquied in the leg upward (rather

the trapping it at the end). 2.3.3

100% MATCHING BLOCK 38/149

W

Prevention of Contractures : A child with an amputated leg does not use his leg normally. He usually keeps it bent and he tends to develop contractures of the hip or knee (or both) 48 Therefore special positioning and exercises are needed to prevent contractures and maintain full range of motion.

Position :

90% MATCHING BLOCK 39/149

W

Encourage positions that keep the joints stretched, and avoid those that keep the joint bent.

Stretching Exercises : Stretching exercise for the fight muscles to avoid contracture and to avoid contracture and deformity. Surgical intarvention if necessary 2.3.4 Assessment of Functional Difficulties : Muscle tone of both upper limbs and lower limbs. Tightness/deformity/contracture -- of muscles joint range of motion of both upper limbs and lower limbs. Muscles strength of upper limbs and lower limbs. Hand function (Reach, grasp pinch, release, grip, pinch) Functional skill achieved -- Spine to sit, sit to stand, squat, bed mobility etc. Balane -- Static, Dynamic. Co-ordination-- Upper and Lower Limbs. Sensory Evaluation : pain, temp, pressure--present or absent sensibility--tactile, vestibular, auditory visual presnet or absent. Skill Achieved : Gross motor skill--skill achieve/ Not achieved Fine motor skill--skill achieved/Not achieved Adl skill--feeding, toileting, dressing, bathing, grooming, mobility. Shoret term goal-- Long term goal-- 2.4. Polio : Polio is the single most common cause of physical disability amongst children. 2.4.1 Defination : Poliomyelitis is a virus infection of the Anterior Horn Cells (AHC) in the prain stem and spinal cord resulting into temporary or permanent paralys's or weakness of muscles associated with those A.H.Cs.

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What causes it? A virus (infection). The infection attacks parts of the spinal cord, where it damages only the nerve cells that control movement. In areas with poor hygiene and lack of Sanitary Latrines, the polio infection spreads stool of a sick child

to the mouth of a healthy child i.e facco--oral route. The virus can contaminate drinking water or food through flies or dirty hands and attack another

90% MATCHING BLOCK 41/149

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child. Where sanitation is better, polio spreads possibly through coughing and sneezing. Do all children who become infected with the polio virus become paralyzed? No, only a small percentage become paralyzed. Most only get what looks like a bad cold, with fever. However, if a child a 'cold' caused by the polio virus is given an injection of any medication, the irritation caused by the injection can bring on paralysis. (1)

Pre-paralytic stage (About 2 days) : In this stage there are symptoms of fever, nausea and pain, spasm and fatigue (tiredness) in muscles of vertebral column / limbs / respiration. (2) Acute paralytic stage (About 2 weeks) : In this stage muscles become tender and are completely or partially paralysed. If the muscles of respiration are involved breathing becomes difficult. (3) Convalescent stage (Upto 2 years) : In this stage the infection subsides. The muscles recover in their action depending on the recovery of the A.H.C which supplies them. Those A.H.Cs which recover fully, the muscles supplied by them recover fully. Those A.H.Cs recover partially the muscles supplied by them recover partially and they remain weak in power. Those A.H.Cs die out, the muscles supplied by them do not recover and they remain paralysed forever. (4) Residual stage (After 2 years) : In this stage the patient relearns to compensate his motor deficits. The patient may learn to adapt and adjust the actions of paralysed muscles with the help of the actions of affected weak muscles or non affected strong muscles.

95% MATCHING BLOCK 42/149

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How does the paralysis begin : It begins after signs of a cold and fever, sometimes with diarrhoea or vomiting. After a few days the neck becomes stiff and painful and parts of the body become limp. Parents may notice the weakness right away, or only after the child recovers from the acute illness. Once a child is paralyzed, what changes or improvement can be expected ? Once the

child is paralyzed the paralysis will not go away, nor, will it get worse.

50 In the initial acute stage of the disease, the child may not be able to move his limbs because of the pain and paralysis. He may seem more paralyzed than he actually is. Once the pain goes and as the partially damaged muscles recover there will be improvement in function. Symptoms : 1. Paralysis in young children, which is accompanied by illness such as

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bad cold with fever and sometimes diarrhea. 2. Paralysis may affect

the

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muscles of the body but is most common in the legs.

It is usually a symmetrical. 3. Paralysis causes the limb to be flaccid (not stiff but very loose) 4.

90% MATCHING BLOCK 45/149

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The muscles and bones of the affected limb become thinner than the other limb. 5. The

feeling is not affected (sensation) 6. There may be many deformities or contractures due to paralysis of the position in which the limb is held and disuse of the limb.

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Other Common Deformities : Weight bearing (supporting the body's weight) on weak joints can cause deformities.

What

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Can be Done : During the Original Illness when the child first become paralyzed. No medicines help, either during the first illness or later. Rest is important

Good food during recovery helps

100% MATCHING BLOCK 48/149

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Position the child to be comfortable and to avoid contractures. At first the muscles will be painful, and the child will not want to straighten his joints. Slowly and gently try to straighten his arms and legs so that the child lies in as good a position as possible.

100% MATCHING BLOCK 49/149

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Following the Original Illness : Continue with good food and good positions. As soon as the fever drops, start exercises to prevent contractures and return strength. Range of motion

exercise.

51 2.4.2 Causes : The cause of poliomyelitis is a neurotropic virus. They enter the body by the way of interlineal tract, pass through the blood stream and finally infect the ANCs. The origin of infection can be established through a previous attack of chicken pox, mumps, measles or upper respiratory tract infection. It is caused by three strains of the polio virus namely-- 1. Brunhilde; 2. Lansing; 3. Leon. Lansing is the most virulent. It spread through the stool of another child who has sub-clinical polio. 2.4.3 Types : There are three main types of polio myelitis. (1) Encephalitic type : involving the brain. (2) Bulbar type : involving the brain stem. (3) Spinal type : involving the spinal cord. The most common is the spinal type. The diseases progress through the following stages-- 2.4.4 Deformities Commonly Seen in Polio : 1. Scoliosis : It is when the spine curves laterally. It decreases the space in the thoracic cavity thus decreasing space for the heart and lungs. 2. Over-extended knee joints : It is also called genu recurvatum. It is caused due to weight bearing on a weak leg causing the knee to bend backwards. 3. Knee flexion contracture : If the knee is in a bent position then it gets fixed in that position. 4. High arched foot (pes cavus) : It is caused due to bending down of the bones of the mid foot. Since the middle of the foot bends it appears as if the foot arches are very high.

87% MATCHING BLOCK 50/149

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Contractures of Joints : A contracture is a shortening of muscles and tendons (cords) so that the full range of limb movements is prevented. 52 2.4.5

Therapeutic Management for Polio : When ever possible, make exercise fun. Active games, swimming.

93% MATCHING BLOCK 51/149

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Crutches, leg braces (calipers) and other aids may help the child to move better and may prevent contractures or deformities. In special cases surgery may be needed to correct contractures or to change the place where strong muscles attach. So that they help

to

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the work of weak ones. When a foot is very floppy or bends to one side, surgery.

95% MATCHING BLOCK 53/149

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Encourage the child to use his body and mind as much as possible, to play actively with other children to take care of his daily needs, to help with work.

100% MATCHING BLOCK 54/149

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Rehabilitation of the child with paralysis : All children paralyzed by polio can be helped by certain basic rehabilitation measures – such as exercise to keep a full range of motion in the affected limbs. However, each child will

be

100% MATCHING BLOCK 55/149

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have a different combination and severity of paralyzed muscles and therefore will have his own special needs. (

i)

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Exercise : To keep as strong as possible and prevent, contractures, probably the best therapy, at least at first, is to stay active, to walk, run, and play. While range of motion and stretching exercises may help, it is even better to involve the child in games, work and other activities that keep his joints flexible. Even though he is slow and awkward, encourage him to take part. Feeling sorry for him and just letting him sit is the worst thing you can do. (

ii)

91% MATCHING BLOCK 57/149

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Braces. Long-leg braces should not be used until absolutely necessary, as they will let the child's legs grow weaker faster. Sometimes lightweight plastic ankle splints, worn day and night, will help delay ankle contractures and keep him walking better. (iii) If contractures of the knees and hips begin to develop, try resting or sleeping with 'sand bags' to press down the legs and help straighten them. 2.5

Spinal Cord Injuries : 2.5.1 Definition :

93% MATCHING BLOCK 58/149

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Spinal cord injury usually results from an accident that breaks or severely damages the central nerve cord in the neck or back : falls

of old people in a soapy bathrooms, onunlit staircases, due to crush injuries during beilding construction, falls 53 fom frees on muclees or into unprotected wells, automobile, mining and

82% MATCHING BLOCK 59/149

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diving accidents, bullet wounds and other injuries spinal cord injury is more common in young adults and in general it is twice as common in men as in women. The spinal cord is the line collection of nerves that comes out of the brain and runs down the back bone from the cord, nerves go out to the whole body.

Sensation of pain temperature, pressure

88% MATCHING BLOCK 60/149

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and movement are controlled by messages that travel back and forth through the spinal cord. When the cord is damaged, sensations and movement in the body below the level of the injury are lost or reduced. 2.5.2 Level of the Injury : How much of the body is affected depends on the level of the injury along the backbone. The higher the point of injury is the greater the area of the body that is affected. Complete and incomplete injuries : When the spinal cord is damaged so completely that no nerve messages get through the injury is said to be complete feeling and completely and permanently lost. If the injury

are cormplete or partial

91% MATCHING BLOCK 61/149

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some feeling and movement may remain or felling and controlled movement may return (partly or entirely) little by little during several months. In incomplete injuries, one side may have less felling and movement than the other.

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Early Question That a Spinal Cord Injured Child and Family May Ask : "Will my child always remain paralyzed?" This will depend on now much the spinal cord has been damaged. If

paraoyosis example, if the child has some felling and control of some invpovement.

89% MATCHING BLOCK 63/149

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Helping The Child and Family Adjust : Spinal cord injury expecially in the child brings many of the same problems as does are similar. Suggest you read spina bifida to get additional ideas for the rehabilitation of young children with spinal cord injuries. Perhaps the biggest difference from spina bifida is that spinal cord injury beging later. One day the child is physically active and able the rest he is suddenly prarlyzed and (at first) unable to do much for himself. He has lost all feeling and control inpart of his body. It is like a dead weight. This is very hard for the child and family to accept. Both have

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fear and uncertainty about the future the child may become deeply depressed or angry and

unco-operative. He may refuse even to sit in a wheel chair because this means acceptance not being able to walk.

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The child in the hospital to make sure the child is kept clean and turned regularly. So that

the

54 bad, sores and pneumonia are avoided. (Busy hospital staff with less experience treat on spinal cord injuries, sometimes severe bed sores develop.) 2.5.3 Therapeutic Management of Spinal Cord Injury : Rehabilitation goals in a child with spinal cord injury : (1) Education of the child and the family in spinal cord function and spinal cord injury. (2) Training in appropriate movement. (3) Training in self care and activities of daily living. (4) Prevention of deformities and pressure sores. (5) Bladder and bowel training and pressure sores. (6) Control of somatic dysfunction (postural hypotension and autonomic dysreflexia). (7) Maintenance of nutrition without letting the child come fat. (8) Control of pain. (9) Sex education. (10) Emotional and special adjustment. (11) Introduction of appropriate recreation and sports. (12) Return to home and school. (13) Information on financial and other assistance available from the government and other agencies (for parents). (14) Regular life long follow up.

87% MATCHING BLOCK 66/149

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Preventing Pressure Sores (bed sores) : When feeling has been lost pressure sores

and

84% MATCHING BLOCK 67/149

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sores can easily form on the over body areas-especially on the hips and buttock. The biggest risk of sores is in the first weeks after the injury. This is because. The child,

due to paralysis,

86% MATCHING BLOCK 68/149

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must stay very still and has not yet learned to move or turn over his body. Prevention of pressure sores is extremely. Importance and needs understanding and continuous care, both the child and house caring for him.

83% MATCHING BLOCK 69/149

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Avoiding Contractures : In the first weeks following a spinal cord injury, when the child is lying position, joint contractures (muscles shortening) can easily develop, especially in the feet and elbows, pillows and pads should be placed to keep the feet supported the elbows straight, and the hands in a good position, gentle range of motion exercises of the feet, hands and arms should begin as early as possible taking care not to move the back until the injury is healed.

Further discussion on the prevention of contractures in the spinal cord injured is on P. 215.

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Physical Therapy Following Spinal Cord Injury : Assisted Breathing and Coughing : Persons with spinal cord injury in the neck or upper back after have past of their breathing muscles paralyzed. Slowly the remaining muscles become stronger and breathing improve. But breathing often stays weak.

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Movement and Exercise : Do range of motion exercises for about 10 minutes for each arm and leg in the first week do this twice a day. Later once a day may be enough.

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Range of motion exercises should begin with great care the day after the spine is injured, the exercises will help to improve the flow of blood to prevent contractures, and to build the strength of the muscles that still work. 2.6

Spina Bifida 2.6.1 What is Spina Bifida : Spina bifida is a defect in the early development of the body when it is in the womb.

89% MATCHING BLOCK 73/149

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It happens when some of the back bones (vertebral) do not close over the

large central nerve, i.e. incomplete closure of the vertebral canal. (the spinal cord). As a result there remains a soft unprotected area of the spinal cord which bulges out in the centre of the back. This bulged out area (sac) may contain the covering (meningeal membrane) of the spinal cord with fluid (cerebro-spinal-fluid) and sometimes either nerve fibres or even a part of the spinal cord. It may be covered by very thin skin or normal skin. The cause of spina bifida is not known. All spina bifida are not alike. All of them do not contain nerve fibres or the spinal cord in the sac. In some the sac may be very small but the spinal cord lies exposed on the surface.

56 2.6.2 Types of Spina Bifida : Spina bifida can be divided into two broad groups, as (a) Spina Bifida Occulta (b) Spina Bifida Cystica. (i) Spina Bifida Occulta : In this condition there is no bulge (sac) on the surface but there is non closure of the vertebral canal around the spinal cord. In a large number of these children the condition is indicated by the presence of skin vesicles at the site of the spina bifida occulta. Characteristics : (a) The posterior arches of the vertebra are not formed. (b) The meninges do not come out of the opening. (c) The spinal cord does not come out of the opening. (d) The defect is fully covered (hidden) by skin. Hence the term 'occulta' which means 'hidden'. (ii) Spina Bifida Cystica : In this condition there is a bulge (sac) on the surface of the back because of the non closure of the non-closure of vertebral canal. The problems that these children will face at birth or later will depend on the contents and nature of the sac. There are 3 types of spina bifida cystica. (i) Meningocele : The sac on the back is covered by normal skin. It contains only fluid and covering of spinal cord. It does not contain any nerve fibres. (ii) Meningomyelocele : This is a common and difficult condition. The bulge is in the centre of the back. It contains fluid the coverings of the spinal cord. Characteristic of Myelomeningocele : (a) The posterior arches of the vertebra are not formed. (b) The meninges come out of the opening. (c) The spinal cord comes out of the opening. (d) The defect is covered by a thin transparent membrane and the cerebro-spinal fluid (C.S.F) ooze through it. (iii) Myelocele : In this condition the spinal cord lies exposed on the surface. Like a red ribbon like structure in the centre of the back. Problems Associated With Spina Bifida Birth : High risk

57 Muscle weakness Big head Brain damage

79% MATCHING BLOCK 74/149

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Hips one or both hips may be dislocated The feet may turn down and in. If the defect is relatively highly up the back

Poor urine and bowel control 2.6.3 Problems Associated : What to look for when a baby is born with spina Bifida : First of all examine the baby to see if there is any other birth defect which may be serious. For example a heart defect Try to make out the type of spina bifida and where exactly it is located on the back. What is the size of the bulge and what is the condition of the skin covering it? Try to see if there is any movement or sensation in the legs. Does the child urinate or is there dribbling of urine. Are there any problems in the feet. Joints or in the back bone. What are the problems when the child is older : Urinary infections : Because of poor control on the passing of urine the bladder is never completely emptied out. Curve of the spine : The spine may be curved at birth and this may become more marked later. Pressure sores : If the child cannot feel, pressure sores may form over the body areas, due to pressure. Posture : Due to muscle weakness or paralysis fo the legs, the child may not be able to sit or stand with out support.

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Foot injuries : Children who can walk but have no feeling in their feet may easily develop sores or injuries. 58

Contractures : In correct postures may result in contractures. Social problems : Because of a lack of urine and bowel control, sometime children with spina bifida get socially isolated.

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Bladder and Bowel Management : A child with spina bifida usually does not develop the some control of urinating (bladder control) and

passing stool (

87% MATCHING BLOCK 77/149

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bowel control) as other children do. The child may always dribble urine or as she gets older she may continue to empty her baldder or bowels with out warning perhaps without even knowing or feeling it. 2.6.4

Therapeutic Management :

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Prevention and correction of contractures : Some children with spina bifida tend to develop contractures either because of muscle imblance or, less often, because of spasticity (abnormal muscle tightness). Contractures most often develop in the feet heps, and knees range of motion and stretching exercises can help prevent and correct early

contracutres.

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Helping the child develop : Many children with spina bifida are paralyzed from the waist down. In spite of their disability,it is important for them to develop their bodis, their minds, and their social abilities as much as possibles. Certain adaptive aids can be used to help paralyzed children go through the same stages of development.

Whent adapting aids for children with spina bifida, some children manage to walk with out

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braces perhaps with the aid of parallel bars like these, and later crutches, others will need above knee or below knee braces.

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Prevention of pressure sores and injuries : As a child who has no feeling in parts of his body grows older and heavier there is increasing danger that pressure sores (bed sores) will form over bony areas that support his weight (mostly his

bottom of

81% MATCHING BLOCK 82/149

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his feet) to prevent this : Have the child sleep and sit on a mattress or cushion that is soft (such foam rubber) clean and move on turn over often. Examine the child's lower body daily for early signs of irritation on sores everyday check especially the hips knees and feet

clean the child's body every day.

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When he is a little older the child can learn to check his own body each day for sores. 59 2.7

Muscular Dystrophy Muscular Dystrophy is a muscular skeletal condition. In this condition the muscle fibres are replaced by fat cells and the muscle gradually waste (atrophy). This causes "a progressive" loss of muscle power. Definition : Muscular dystrophy is a progressive diffuse weakness of all muscles groups characterized by degeneration of muscle cells and their replacement by fat and fibrous tissue. 2.7.1 What is Muscular Dystrophy :

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Muscular dystrophy is a condition in which muscles, month by month and year by year, get weaker and weaker. Because the disability gradually gets worse, we say it is progressive. 1. How to Recognize if Muscle Weakness is Caused by Muscular Dystrophy : (i) Mostly affects

body (rarely girls) (ii) Often brothers or male relatives have some

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problem. (iii) First signs appear around ages 3 to 5 the child may seem awkward or clumsy or

the

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begins to walk 'tiptoe' because he cannot put his feet flat. Runs strangely. Falls often. (iv) Problem gets steadily worse over the next several years. (v) Muscle weakness first affects feet, fronts of thighs, hips, belly shoulders and elbows later it affects hands, face and neck muscles. (vi) Most children become unable to walk by age 10. (

vii) May develop a severe curve of the spine. (viii)

85% MATCHING BLOCK 87/149

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Heart and breathing muscles also get weak. Child usually dies before age 20 from heart failure or Pheumonia. 2. Early Common Sign of Muscular Dystrophy : (i) To get up from the ground, the child 'walks up' his things with his hands. (

climbing his own body)--Gower's sign.

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This is maily because of weak thigh muscles. 3. Questions about Muscular Dystrophy : (

i)

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What causes it? Nobody knows, but in 2 out of 3 families with muscular dystrophy, there is a history of it among male relatives of the mother. Though 60 the parents are usually normal the mother carries the 'gene' that produces dystrophy in her sons. Her daughters will develop normaly, but they may have sons with muscular dystrophy. 2.7.2

Cause : The exact cause of the disease is not fully known. It is observed to be inherited genetically from mother by mostly the male child. There are even cases where no positive history is tracted in the family. 2.7.3 Types : There are several types. The most common and severe type is the Duchenne type or Duchenne Muscular Dystrophy. Hence only this type of muscular dystrophy has been described here. Duchenne Muscular Dystrophy : Characteristics of Duchenne Muscular Dystrophy are : (1) Progressive weakness of muscle which starts at the age of 3 years. (2) Weakness progresses from muscles of ankle joint to the muscle of hand, face and neck. (3) Muscles around pelvic girdle and shoulder girdle are affected more leading to a typical manner of getting up the floor (Gower's sign). (4) The muscles show false enlargement (pseduo-hypertrophy) owing to deposit of fatty material in place of degenerated muscle tissur. The common site of pseudohypertrophy is the calf muscle. (5) Postures and gait become atypical. [waddling gait] (6) Respiratory and cardiac muscle are eventually affected in the later stage leading to death. 2.7.4 Associated Problems : (1) Locomotor Retardation : Locomotor retardation starts appearing in the form of frequent falls and slowness in walking at an early age. Subsequently climbing, running and finally walking becomes impossible. The person needs to move around only in a wheelchair in the last stages.

61 (2) Skeletal Deformities : Weakness of muscles leads to their shortening i.e. contractures. This leas to deformities. (a) Trunk-Scoliosis (b) Neck-flexion deformity (c) Lower limbx -- (i) ankle - downward an downward bending [planter flexion] (ii) knee and hip - flexion deformity (3) Obesity : Because of restricted activity and probable compensatory overating, these children tend to become obese. (4) Slowness in Learning : Slowness in learning, not mental retardation, is present in about 70 percent of the cases, The intelligent Quotient is normally above 80 but generally below 90.

Educational Implication : Progression of the disease does not allow the child to attend school regularly. This leads to poor performance in school work and eventual scholastic backwardness. Owing to their slower speed in learning a special teacher doing a remeidal educational programme at home is most effective. But even such special educational approach goes on becoming difficult as the age progresses because the child becomes increasingly tired. Motivation to study becomes less. 2.7.5 Therapeutic Management : (1)

Helping the Child to keep Walking for as lang as Possible : (ii)

96% MATCHING BLOCK 90/149

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Other aids. The child will reach a point where he needs to use cratchess, later (often by age 10) he will not be able to walk. Do not force him when it becomes too hard. Instead, try to obtain or make a wheelchair. (

iii)

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Breathing deeply is important, especially when the muscles that move the lungs begin to weaken. Encourage the child to sing loudly to shout to blow whistles and to blow up		

bolloons. Other Problem : (i) Getting fat is a common problem in children with dystrophy. (ii) Constipation (hard, difficult stools) may become problem.

62 (iii) Spinal curve can become severe. (iv)

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Arm weakness in time may become a problem for self care and eating. 2.8		

Implication

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of Functional Limitations for Education and creating Prosthetic Environment in School and Home : Seating Arrangements, Positioning and Handling Techniques at Home and School.			

Widen aisles to make room for wheelchairs. Also, add walkers and Handrails where needed/ramp should be there. Hang paper and other art supplies in reach of the children. Allow for adaptations in the classroom. Seat the child closer to the front if she has visual or hearing impairments. If the child has hard time writing, allow him to record lectures with a tape recorder. Change your style to teaching you may have to make text larger on the overhead machine or the chalk board. Remember to write lower on the board so it at eye if it is only by nodding. Encourage social relationships by having the children form small group to discuss ideas of recent chapters covers in the class. Stay involved with the other education and therapists involved in the child's individualized education programme (I.E.P) Generally, a student with cerebral palsy will have impaired motor abilities. He/ She might not be able to write with a pen/pencil without it taking a long time or possible at all. He/she might be able to speak, but is probably hard to understand. Though he/she is wheelchair bound, he/she has normal achieving cognitive abilities. The ideas below are some possible adaptations that might help these students to succeed in your classroom. These adaptations are fairly simple and can be applied in your classroom. Without much disruption to your normal routine. If possible, let him/her use a lap computer at the desk so that he/she can type the work instead of writing it by hand. A computer with adaptive devices would work best, if available. This would be a lot easier on him/her and it would help the student

63 to keep up with the rest of the class of course, it would depend on if a lap computer were available to the student. Adaptation of pen/pencil if required. Positioning of chair, bench/table etc. Should be proper to avoid contracture. Design activities to develop fine motor skill. Proper anatomical position : Chair, table for study. Foot rest if needed should be those Assist the child with adaptive and assistive devices. 2.9 Facilitating Teaching - Learning : IEP Developing TLM; Assistive Technology : Activities : Tug-of-war, Backpack hiking, Jumping over obstacles, crab walking relay races, crawling under a Parachute. Crawling (can crawl through tunnel, over beanbags or pillows), Running, Climbing, Marching, Wall push-ups, Weighted garments, Pressure, Heavy work, Scooter board, Therapy ball. Jumping on a trampoline, activities for auditory sense, soft music, soft voice, white noise, quiet room up beat music, loud voice, Instruments/noise makers, Classical music, Activities for visual sense : Sense of colours, soft colors, solid backgrounds, Dim lights, Desk lamp, Flash light tag, Visual schedules, Bright colours bright lights. Name identification through puzzle Material – 1 colour paper, marker, scissors. 2. Ice Cream sticks, colour Pencils, scissors group activity Action Dice Material – unused box, marker, picture....

64 TLM for developing pre-writing skill Line Tracing. Material – match stick, glue, cardboard play Dough letters. Material – clay, straw Letter Tray Material – tray/dish, sand/ flour, shavin foam cdor, salt tray games. Salt, old box, flash cord, market Sensory Tracing Materials – colour material paper, white paper, pencil, glue TLM for developing pre-math skills. Big-Small Sorting Materials – Egg crate, square colour paper. Number writing and counting Materials – Flash cards with dots, salt, old box. Balloon counting–1–10 Materials–balloons, market Shapes Materials – ice cream sticks, market, glue number object relationship 2.10 Let us Sum up : To define as a process through which child born with certain impairment are helped to channelise their capacity and explore to their maximum development so that he/she could live as normal life as possible. To help a child born with an impairment. Development of abilities that never existed. Need to develop basic skills of day to day life. Usually as long time process. Sensory motor development begins from birth. The rapeutic approaches help the child to restore his functions and facilitate his functional skill and minimize secondary complication.

65 2.11 “Check Your Progress” : (1) What do you mean by Amputation ? Describe the causes of amputation. (2) What are the therapeutic management of amputation? (3) List The Complications after polio ? (4) Plan a Rehabilitation management of a child with paralysis after polio ? (5) What is muscular dystrophy ? What are the features of child with muscular dystrophy ? (6) Describe, in brief, management of muscular dystrophy child ? (7) What are the difference between complete spinal cord injury and imcomplete spinal cord injury. (8) Describe therapeutic management of spinal cord injury. (9) What is spina-bifida ? Classify it ? (10) What are the problems associating with spina-bifida ? (11) Plan a classroom adaptation for a child with cerebral palsy ? (12) Suggest a list of TLM for writing practice. 2.12 References : David warner (Disabled village children) Frame of reference for peditric occupational therapy (Paul kramer, Jimhinojosa) Clinical reasoning in physical disabilities (Rebecca Button) Occupational therapy for children, smith. Occupational theerapy for children. smith or Brien Early intervention NIMH manual
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66 Unit - 3

95%	MATCHING BLOCK 93/149	W
Multiple Disabilities and Other Disabling Conditions Structure 3.1 Introduction 3.2 Objectives 3.3 Multiple Disabilities:		

Meaning and Classifications 3.3.1 Meaning according to Individuals with Disabilities Education Act's (IDEA) 3.3.2 Meaning according to Persons with Disabilities Act 3.3.3 Classification

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of Multiple Disabilities 3.4 Various Combinations of Multiple Disabilities and Associated Conditions Such as Epilepsy, Motor and Sensory Conditions 3.4.1		

69%	MATCHING BLOCK 95/149	W
Various combinations of Multiple Disabilities 3.4.2 Associated Conditions with Multiple Disabilities 3.5 Other Disabling Conditions such as Leprosy Cured Students, Tuberos Sclerosis and Multiple Sclerosis 3.5.1		

Leprosy Cured 3.5.2 Tuberos Sclerosis 3.5.3 Multiple Sclerosis 3.6

92%	MATCHING BLOCK 98/149	SA	SED-16 19.1.21.docx (D94093924)
Implications of Functional Limitations for Education and Creating Prosthetic Environment in School and Home: Seating Arrangements, Positioning and Handling Techniques at Home and School 3.6.1 Functional Limitations for Education. 3.6.2			

85% MATCHING BLOCK 97/149

W

Creating prosthetic environment in school and home 3.7 Facilitating Teaching-Learning: IEP, Developing TLM; Assistive technology 3.7.1 IEP 3.7.2 Teaching Learning Material 3.7.3 Assistive Technology 67 3.8 Let us Sum Up 3.9 "Check your Progress" 3.10

Unit End

Exercise 3.11 References 3.1 Introduction Children with severe and multiple disabilities pose unique challenges to educators. Such children need more individual support and care than a normal child. The services for such children are gaining focus and importance in the country with the recognition of this disability under the National Trust Act (1999).

100% MATCHING BLOCK 99/149

SA

EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Children who have a combination of severe disabilities are called "Multiply Disabled". Caring

for multiply

100% MATCHING BLOCK 100/149

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EDU 294Introduction To Locomotor And Multiple ... (D165064983)

and severely disabled children is never easy and they need an enormous

amount of time, patience and love.

Realising the need for promotion of services for children with multiple disabilities, an autonomous organization of the Ministry of Social Justice and Empowerment, Government of India, was set up under the "National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities" Act (Act 44 of 1999).The National Trust was set up to find an answer to the worries of parents of such children. National Institute for empowerment of persons with Multiple Disabilities (NIEPMD) was established in the year 2005 at chennai, Tamilnadu under Ministry of social Justice & Empowerment, Govt. of India to serve as a national resource centre for empowerment of persons with Multiple Disabilities such as those with two or more disabilities in a person. Multiple Disabilities

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EDU 294Introduction To Locomotor And Multiple ... (D165064983)

refers to: a combination of two or more disabling conditions that have a combined effect on the child's communication, mobility and performance of day-to-day tasks.

94% MATCHING BLOCK 103/149

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EDU 294Introduction To Locomotor And Multiple ... (D165064983)

We can say that just as every child is different, similarly every child with MD is different. However there are some things that this group of children has in common. ? It affects the all-round development of the child ? Communication with the world around is most severely affected ? Opportunities to interact with the environment becomes very limited ? Ability to move around in the environment is restricted 68 ? Need regular help in simple day-to-day activities such as wearing a shirt, opening a door, finding a chair to sit down

and so on. ? A highly structured educational / rehabilitation programme helps in their training. 3.2

45% MATCHING BLOCK 102/149

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Objectives After going through this unit you will be able to ? About Multiple Disabilities and different definitions ? Characteristics of children with Multiple disabilities ?

Different combinations and associated conditions of multiple disabilities ? Educational Limitations and Interventions ? TLM and Assistive Devices 3.3 Multiple Disabilities: Meaning and Classifications 3.3.1 Meaning according to Individuals with Disabilities Education Act's (IDEA) According to the Individuals with Disabilities Education Act's (IDEA),

94%	MATCHING BLOCK 104/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
multiple disabilities refers to "concomitant [simultaneous] impairments (such as intellectual disability-blindness, intellectual disability-orthopedic impairment, etc.), the combination of which causes such severe educational needs that they cannot be accommodated in a special education program solely for one of the impairments. The term			

does not include deaf-blindness."

In other words, a student whose special needs are categorized under multiple disabilities requires coinciding adaptations for more than one disability. The exception is the combination deafness and blindness, as this pair of impairments has its own classification under IDEA. This disability category includes those students with the most severe physical, cognitive, and communicative impairments. It should be noted however, that these students can also have average or even above-average intelligence. The common connection between students in this category is not just that they have two or more coexisting impairments, but that they generally need extensive support across any number of skill areas.

69 A key part of the definition is that the combination of disabilities causes the student to have severe educational needs. In fact, those educational needs must be severe enough that they cannot be addressed by providing special education services for only one of the impairments. The federal definition of multiple disabilities gives two examples of possible combinations of disabilities: ? intellectual disability and blindness; and ? intellectual disability and orthopedic impairment. But these are just examples. A child may have another combination of disabilities that causes severe educational needs- cerebral palsy and autism, for example, or blindness and an emotional disturbance. Whatever the combination is, a child served under IDEA's category of "multiple disabilities" will have a special education program that is designed to address the educational needs that arise from all of the child's disabilities, not just one. 3.3.2 Meaning according to Persons with Disabilities

87%	MATCHING BLOCK 105/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
Act Multiple disabilities means a combination of two or more disabilities as defined in clause (i) of Section (2) of the Persons with Disabilities. (Equal Opportunities,			

Protection of Rights and Full Participation) Act, 1995, namely - I. Locomotor disability including leprosy cured II. Blindness/low vision III. Speech and hearing impairment IV. Mental retardation V. Mental illness.

100%	MATCHING BLOCK 106/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
Children who have a combination of severe disabilities are called "Multiply Disabled". Caring			

for multiply

100%	MATCHING BLOCK 107/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
and severely disabled children is never easy and they need an enormous			

amount of time, patience and love.

Realising the need for promotion of services for children with multiple disabilities, an autonomous organization of the Ministry of Social Justice and Empowerment, Government of India, was set up under the "National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities" Act (Act 44 of 1999). The National Trust was set up to find an answer to the worries of parents of such children.

100% MATCHING BLOCK 108/149 SA EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Disabilities under the National Trust Act are in fact Developmental Disabilities 70 caused due to insult to the brain and damage to the central nervous system. These disabilities are Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities. These are neither diseases nor contagious nor progressive. They cannot be cured by drugs or surgery. But early detection and training improve outcome. This is done using the services of Physio-Occupational

and

100% MATCHING BLOCK 109/149 SA EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Speech Therapists, Community Based Rehabilitation Workers and Special Educators. The combination of disabilities and degree of severity is different in each child. The time at which the disability occurs in the child, what is known as the 'age of onset', may also range from birth to a few days after birth, from early childhood till late teens. Sometimes children are born with one disability but acquire the second or third disabling conditions during childhood. The characteristics and the needs of the children depend on the nature of combination of the disabilities, the age of onset and the opportunities that have been available to a child in his environment. Multiple Disability refers to: a combination of two or more disabling conditions that have a combined effect on the child's communication, mobility and performance of day-to-day tasks.

96% MATCHING BLOCK 110/149 SA EDU 294Introduction To Locomotor And Multiple ... (D165064983)

We can say that just as every child is different, similarly every child with MD is different. However there are some things that this group of children have in common. ? It affects the all-round development of the child ? Communication with the world around is most severely affected ? Opportunities to interact with the environment becomes very limited ? Ability to move around in the environment is restricted ? Need regular help in simple day-to-day activities such as wearing a shirt, opening a door, finding a chair to sit down

and so on. ?

71% MATCHING BLOCK 113/149 SA EDU 294Introduction To Locomotor And Multiple ... (D165064983)

A highly structured educational / rehabilitation programme helps in their training. 3.3.3 Classification of Multiple Disabilities

This disability category includes those students with the most severe physical, cognitive, and communicative impairments. It should be noted however, that these students can also have average or even above-average intelligence. The common connection between students in this category is not just that they have two or more coexisting impairments, but that they generally need extensive support across any number of skill areas.

71 The 14 IDEA Classifications That Can Combine To Produce Multiple Disabilities Autism

56% MATCHING BLOCK 111/149 W

Deaf-Blindness Deafness Developmental Delay (ages 3-5) Emotional Disturbance Hearing Impairment Intellectual Disability (formally referred to as Mental Retardation) Multiple Disabilities Orthopedic Impairment Other Health Impairment Specific Learning Disability Speech or Language Impairment Traumatic Brain Injury Visual Impairment (including blindness)

If two of the above disabilities are present and require separate programming, then a student should receive the label

100% MATCHING BLOCK 112/149

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of Multiple Disabilities. 3.4 Various Combinations of Multiple Disabilities and Associated Conditions Such as Epilepsy, Motor and Sensory Conditions

100% MATCHING BLOCK 117/149

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EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Children with multiple disabilities will have a combination of various disabilities that may include: speech, physical mobility, learning, mental retardation, visual, hearing, brain injury and possibly others. Along with multiple disabilities, they can also exhibit sensory losses and behaviour and or social problems. 3.4.1

Various Combinations of Multiple disabilities Cerebral Palsy (CP) "

88% MATCHING BLOCK 114/149

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Cerebral" means brain. "Palsy" means a disorder of movement. CP refers to a group of non progressive

neuromuscular problems of varying severity.

72 Cerebral Palsy is damage to the brain, primarily to the part of the brain that controls motor functions. However other parts of the brain may also be affected. In such cases the person affected has more than one disability. The extent of the damage varies from person to person. Mild disability might mean fine motor skills, like using scissors or writing, are difficult. Severe disability can mean poor movement of all four limbs, the trunk and neck. The child may even have difficulty in swallowing. Autism All children with ASD demonstrate deficits in 1) social interaction, 2) verbal and nonverbal communication, and 3) repetitive behaviours or interests. In addition, they will often have unusual responses to sensory experiences, such as certain sounds or the way objects look. Each of these symptoms runs the gamut from mild to severe. They will present differently in each individual child. For instance, a child may have little trouble learning to read but exhibit extremely poor social interaction. Each child will display communication, social and behavioural patterns that are individual but fit into the overall diagnosis of ASD. Intellectual Disability Intellectual disability is characterized both by a significantly below-average score on a test of mental ability or intelligence and by limitations in the ability to function in areas of daily life, such as communication, self-care and getting along in social situations and school activities. Intellectual disability is sometimes referred to as a cognitive disability or mental retardation. Children with intellectual disability can and do learn new skills, but they develop more slowly than children with average intelligence and adaptive skills. There are different degrees of Intellectual disability, ranging from mild to profound. A person's level of Intellectual disability can be defined by their intelligence quotient (IQ), or by the types and amount of support they need. Locomotor Disability "Locomotor disability" means disability of the bones, joints or muscles leading to substantial restriction of the movement of the limbs or any form of cerebral palsy. ? Spinal cord injuries: usually the result of a traumatic blow to the spine. Some spinal cord injuries can completely heal; others will cause paralysis. ? Cerebral palsy: a group of non-progressive conditions involving muscle control, posture, and movement caused by brain damage.

73 ? Polio: a highly contagious infectious disease caused by polioviruses. It is destructive to the nervous system and can cause paralysis. ? Muscular Dystrophy: an inherited group of diseases that affect the muscles, causing them to weaken and break down over time. ? Contractures: permanent tightening of muscles and joints ? Club Foot (talipes equinovarus) : There are 3 components of deformity - equinus, hindfoot varus and forefoot adductus. Club foot is more common in boys. Hearing Impairment "Hearing impairment" means loss of sixty decibels or more in the better ear in the conversational range of frequencies. Deafness A hearing loss greater than 90 dB. Individuals who are deaf have vision as their primary input and cannot understand speech through the ear. Deafness means a hearing impairment so severe that the child is impaired in processing linguistic information through hearing, which adversely affects educational performance. (IDEA). Different types of Hearing loss Sensor neural Hearing Loss: Permanent hearing loss that is a result of damage to the cochlea or auditory nerve. The treatment for sensorineural hearing loss is often the use of hearing aids or cochlear implants. Conductive Hearing Loss: Conductive hearing loss results from defects in the outer or middle ear. The sound is not conducted efficiently to the inner ear. All sounds heard thus become weak and/or muffled. Usually such individuals speak softly irrespective of the surrounding environmental noise. It can generally be offset by amplification or medical intervention. Sometime surgery can restore hearing in a conductive hearing loss. Mixed Hearing Loss: A hearing loss resulting from a combination of a conductive hearing loss and a sensorineural hearing loss. Central Auditory Disorder: Central hearing loss is due to a damage, malformation or infections of the neural pathways and the hearing centers in the brain. The child may

74 hear but has difficulty in understanding what he hears. Some of the children classified as learning disabled or slow learners may have this type of hearing loss. Visual Impairment Blindness: refers to a condition where a person suffers from any of the following conditions, namely: Total absence of sight or Visual acuity not exceeding 6/60 or 20/ 200 (Snellen) in the better eye even with correction lenses; or limitation of the field of vision subtending an angle of 20 degree or worse. For deciding about blindness, the visual acuity as well as field of vision has been considered. Low Vision: The Persons with Disabilities Act, 1995 also recognizes low vision as a category of disability and defines it as follows: "Person with low vision" means a person with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device". The loss of vision caused by these conditions can range from a mild impairment to complete blindness. The children with visual impairment and brain damage may seem to use their vision differently at different times of the day. In addition these children have trouble with perceptual responses, such as perceiving depth, remembering visual information, searching for objects they see and identifying important visual information. (Punani and Rawal) Mental Illness Studies indicate that approximately 2% of children and adolescents receive intervention for mental illness and psychosocial problems (Cohen, Cohen, & Brook, 1993). Psychological Disturbances The most common types of psychological disturbances seen in children are Anxiety Disorders: Children with anxiety disorders respond to certain things or situations with fear and dread, as well as with physical signs of anxiety (nervousness), such as a rapid heartbeat and sweating. Separation anxiety disorder, overanxious disorder and posttraumatic stress disorder are the common types of anxiety disorder seen in children. Disruptive Behaviour disorder: Children with these disorders tend to defy rules and often are disruptive in structured environments, such as school. Common types seen in children are conduct disorder, oppositional defiant disorder and attention deficit hyperactivity disorder (ADHD).

75 Eating Disorder: Eating disorders involve intense emotions and attitudes, as well as unusual behaviors, associated with weight and/or food. Anorexia nervosa and bulimia nervosa are the two types of eating disorders seen in children. Affective disorders: These disorders involve persistent feelings of sadness and/or rapidly changing moods. Most common types seen in children is major depressive disorder Pervasive Developmental Disorders or Autistic Spectrum Disorders: These children have difficulties and abnormalities in their abilities to form reciprocal social interaction and to verbally and nonverbally communicate. 3.4.2 Associated Conditions with Multiple disabilities Epilepsy It affects 40 to 50% of children with multiple disabilities, and in one case out of 4 or 5 these seizures are difficult to control. There may be absence seizures, brief tonic seizures, and sometimes falls caused by epilepsy with unpredictable seizures, which lead to repetitive traumatic injuries and deformities becoming real secondary impairments. Behavior disorders may also be following repeated seizures (drowsiness alternating with hyperactivity episodes, and sometimes aggressiveness or self-destructive behaviors). At the functional level, these highly disabling but fortunately rare forms are a sign of poor prognosis, especially at the level of life expectancy. In contrast, episodic seizures are more easily treatable with the treatments currently available, and affect the daily life of these individuals to a lesser extent. Severe hypotonia Severe tone abnormality in posture and limbs is observed in some forms of brain deformities. Diagnosing peripheral or muscle lesions are not always easy, and moreover, central, peripheral and muscular lesions coexist in some forms of progressive diseases affecting the nervous system. In addition, rare forms of myopathies are combined with mental retardation, which produce a clinical picture close to multiple disabilities. Motor control disorders These are very specific motor defects mainly observed in children with early epileptic encephalopathy.. There is no actual paralysis present, but severe central hypotonia is at least observed 76 in young children. As a result, a slow recovery of motor activity takes place that may lead children to resume gait, which remains risky. There are unawareness of the body's position in space, balance disorders, robot-like gait, neglecting obstacles. Falls are also commonly observed. Severe motor regression sometimes follows a convulsive state or repetitive absence seizures (form of epileptic seizure during which the subject seems awake, but is 'absent' and does not react or communicate. This regression is usually temporary, but causes motor function to be impaired in a very random fashion. Slightly different motor control disorders may also affect subjects with encephalopathy due to malformation or some chromosomal aberrations. For instance in Angelman syndrome, individuals can hardly use their lower limbs. Congenital joint and peri-articular lesions may also be associated. Secondary motor impairments They are resulting from the impact of spasticity, abnormal postures or motor stereotypes on joints. Hip dislocations, progressive scoliosis in adolescence, as well as limb deformities cause limitations in motor performance and capacity of mobility, and are a source of pain. All the efforts put in early motor training and orthopedic equipment focus on the prevention of these secondary impairments and must be undertaken at a very young age. Sensory impairments They are very often part o the disabling problems experienced by the individual with multiple disabilities. Audiological assessment is not easy to perform, as it requires that the individual can understand what the tester asks of him in order to be properly assessed. Deafness is relatively rare and involves adjustment and tolerance problems to hearing aids. However, middle-ear deafness due to infection or malformation is also observed. Vision impairments are very common and accout for 40% of persons with multiple disabilities. Ametropia (myopia, astigmatism), congenital or acquired cataracts, eye deformities or retinal lesions validated bu ophthalmologic examinations. Emphasis has recently been placed on the frequency of visual processing disorders (cortical blindness or central visula disorders). These disorders cannot be measured with traditional examination methods as vision becomes tedious and random, with difficult perception of depth, background contrast versus object, ans sensitivity to visual clutter. These indiduals perceive moving objects better because the image is formed 77 on the peripheral retina, as opposed to macular or central vision; hence the use of very peculiar visual stimulation methods involving the ovedrall structures of the head and neck. Combined visual and auditory sensory disorders are currently scarce ever since the prevention of congenital rubella syndrome. 3.5

100%

MATCHING BLOCK 115/149

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Other Disabling Conditions such as Leprosy Cured Students, Tuberos Sclerosis and Multiple Sclerosis 3.5.1

Leprosy Cured "

97%

MATCHING BLOCK 116/149

W

Leprosy cured person" means any person who has been cured of leprosy but is suffering from: (i) loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity; (ii) manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity; (iii) extreme physical deformity as well as advanced age which prevents him from undertaking any gainful occupation, and the expression "leprosy cured" shall be construed accordingly; 3.5.2

Tuberous Sclerosis Tuberous sclerosis causes non-cancerous (benign) tumours to develop in many areas of the body. The condition can lead to a range of different problems, depending on where the tumours grow. The areas most commonly affected are the: ? brain ? skin ? kidneys ? heart ? eyes ? lungs Problems caused by these tumours can develop at any age, but most often start early in

78 childhood. The severity of these problems can vary significantly and some tumours cause no noticeable problems. Tuberous sclerosis has an incidence of 1:6000-12,000, with most being sporadic. Tuberous sclerosis was classically described as presenting in childhood with a triad of: 1. seizures: absent in one-quarter of individuals 2. mental retardation: up to half have normal intelligence 3. adenoma sebaceum: only present in about three-quarters of patients The full triad is only seen in a minority of patients. Nearly half of all children with tuberous sclerosis will have learning problems, which can range from mild to severe. Possible problems include: ? poor memory ? poor attention span ? difficulty making plans or organising activities ? learning much more slowly than other people ? in severe cases, being unable to communicate or look after themselves 3.5.3 Multiple Sclerosis Multiple Sclerosis is a neurological condition of the brain and spinal cord, affecting muscle control, vision, balance and causing fatigue, loss of sensation or numbness. Multiple sclerosis (MS) affects nerves in the brain and spinal cord, causing a wide range of symptoms including problems with muscle movement, balance and vision. Each nerve fiber in the brain and spinal cord is surrounded by a layer of protein called myelin, which protects the nerve and helps electrical signals from the brain travel to the rest of the body. In Multiple Sclerosis, the myelin becomes damaged. This disrupts the transfer of these nerve signals, causing a wide range of potential symptoms, such as: ? loss of vision - usually only in one eye ? spasticity - muscle stiffness that can lead to uncontrolled muscle movements ? ataxia - difficulties with balance and co-ordination ? fatigue - feeling very tired during the day

79 3.6

93%

MATCHING BLOCK 118/149

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Implications of Functional Limitations for Education and Creating Prosthetic Environment in School and Home: Seating Arrangements, Positioning and Handling Techniques at Home and School 3.6.1 Functional Limitations for Education. Children with Multiple Disabilities

show the following functional limitations for Education :

89%

MATCHING BLOCK 119/149

SA

EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Vision Problems: As children grow, some of them appear to always squeeze their eyes

together to

100%

MATCHING BLOCK 120/149

SA

EDU 294Introduction To Locomotor And Multiple ... (D165064983)

look at something closely, or keep looking at their moving fingers/paper, bump into things while walking, complain of too much light all the time. Their eyes may also look different from 'normal' eyes. Hearing

Problems:

100%	MATCHING BLOCK 121/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
A child with a hearing problem may respond to only particular sounds.			

They may

100%	MATCHING BLOCK 122/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
take a long time and repeated training to develop speech. And mostly they may only			

repeat what

100%	MATCHING BLOCK 123/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
they hear. They may also learn to adapt to their routine environment by 'guessing'			

the conversations

100%	MATCHING BLOCK 124/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
going around, but may actually face a lot of difficulty in a new place with			

unknown people.

84%	MATCHING BLOCK 125/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
Sometimes deaf children also show difficulty in balancing their body or walking in a straight line. Learning Problems: Due to two or more disabilities, the rate and speed of			

learning

89%	MATCHING BLOCK 126/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
of the children is very slow. Learning often becomes repetitive and meaningless, unless special care is taken to make the child feel safe about exploring the world around him. Multi handicapped children also have very limited ideas to play with toys or things around them. Communication: Communication is probably the one area that is most significantly affected			

in children

95%	MATCHING BLOCK 127/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
with multiple disabilities. The children are unable to see or hear or follow the different ways in which their brother and sister play with each other, elders are greeted, standing in a line to get a ticket or passing a bottle of water around a dining table. Posture and Mobility: Our sight, hearing and body movements help us to move around,			

without bumping

100%	MATCHING BLOCK 128/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
into things, remember the way to reach places or even to use our own hands to hold			

and look

89%	MATCHING BLOCK 129/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
at things. Presence of Cerebral Palsy, locomotor disabilities and balance difficulties makes it hard for the child to manage his own body movements 80 sometimes and so it becomes very			

difficult to

100%	MATCHING BLOCK 130/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
use his body to move from one place to another.			

100%	MATCHING BLOCK 131/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
Odd Behaviours: Most children with multiple disabilities show strange behaviours that are called 'self-stimulating' behaviours. Some of these are moving one's body repeatedly, shaking head side to side, moving fingers in front of eyes, hitting or slapping the ears,			

swinging in one place and so on.

91%	MATCHING BLOCK 132/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
Sometimes it is important for them to continue doing it from time to time as it helps them get some information about the world around them in their own special way. Sometimes these children also show disturbed sleep patters. Medical Conditions: Most multi-handicapped children also suffer from other medical			

conditions such

100%	MATCHING BLOCK 133/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
as epilepsy, frequent eye and ear infections, respiratory disorders, muscular degeneration frequent surgeries and so on. Such medical conditions lead to frequent hospitalizations and			

the child

100%	MATCHING BLOCK 134/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
again misses out on a lot of exposure and learning from the environment. 3.6.2			

Creating prosthetic environment in school and home

97%

MATCHING BLOCK 136/149

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Seating Arrangement ? Corner sitting: lap boards to be provided, so that the child can engage in activities ? Corner stools: Can be used when the child has some amount of head control. It provides trunk support to the child. Lap boards to be provided. ? Make sure that, the hips, knees and ankle are at 90. ? The feet should always rest on the floor. If not,

we should

94%

MATCHING BLOCK 135/149

W

provide a small foot rest. ? The hips should always be kept apart. This can be done by keeping a roll between the legs. ? If a child

slips off from the chair, modification is needed. ? If the child cannot keep her back straight, modification is needed. ?

100%

MATCHING BLOCK 137/149

SA

EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Height of the back should depend on the child's trunk control. ? If the child does not have head control, provide support for that also. ? A lap board should be provided, so that the child can do activities on it. ? If the child bends his trunk to one side while sitting, it will lead to deformities. 81 ? Trunk blocks can be added to prevent this. ? If the child is not mobile, wheels can be attached to the chair, so that it will be easier for the parents to move the child around the house.

90%

MATCHING BLOCK 138/149

SA

EDU 294Introduction To Locomotor And Multiple ... (D165064983)

Positioning and Handling Positioning refers to the use of appropriate body positions. Due to abnormal pull of muscles, children with cerebral palsy and MD spend a lot of time in abnormal positions. These abnormal positions can lead to increased tightness and other contractures and deformities and should be avoided whenever possible. Proper positioning should be used in all routines throughout the child's day. Try to encourage proper positing appropriate to the child's motor development. Handling refers to the techniques and methods that are used to move a child or assist a child

to move

92%

MATCHING BLOCK 139/149

SA

EDU 294Introduction To Locomotor And Multiple ... (D165064983)

as independently as possible from one position to the next. It relates to how the child is picked up, put down, carried, held etc through movement transitions (e.g.: laying to sitting). Actually, handling is not done only with therapist's hands, but with his/her entire body. Specific handling, lifting and carrying techniques will vary according to the child's individual needs. Support can be gradually decreased as the child learns to support himself.

94%

MATCHING BLOCK 140/149

SA

EDU 294Introduction To Locomotor And Multiple ...
(D165064983)

Positioning a Child with Multiple Disabilities When the child does not have adequate head control or trunk control ? In prone ? Position the child on a wedge ? Head and neck should be off the wedge ? Child can weight bear on flexed or extended elbows 82 ? Place a roll between the legs ? A small roll can be placed under the chest as well Positioning a child in prone will help the child to develop head control and some amount of trunk control. ? Side lying ? Place a small roll under the head such that the neck is slightly laterally flexed ? Long roll in front extending from chest to legs ? One leg to be kept on the top of the roll ? Position the child on both sides Carrying Techniques While carrying the child or shifting the child from one position

to another

the following techniques can be used ?

Carry across the teacher's hips with the child's hips and knees bent

100%

MATCHING BLOCK 141/149

SA

EDU 294Introduction To Locomotor And Multiple ...
(D165064983)

and knees separate and not over the shoulders ? Carrying the child with the child facing forwards, with bent hips and knees and knees separate ? Using a wheel chair. 3.7

Facilitating Teaching-Learning: IEP, Developing TLM; Assistive technology 3.7.1 Individualized Education Programme (IEP) Individualised, because the education/training programme is specifically designed to meet the learning needs of the individual child rather than a general syllabus for a group or class full of such children. To put it simply, IEP includes, a brief background of the child (medical and educational), statement of present level of functioning, annual goals, including short-term objectives, teaching strategies, specific educational services to be provided, the child's ability to be able to participate, the projected dates for initiation and anticipated duration of such service, appropriate objective criteria and evaluation procedures and schedules for determining, on at least an annual basis, whether instructional objectives are being achieved.

83 IDEA requires that schools create an Individualized Education Program (IEP) for each student who is found to be eligible under both the federal and state eligibility/ disability standards. In addition to the child's parents, the IEP team must include at least one of the child's regular education teachers (if applicable), a special education teacher, someone who can interpret the educational implications of the child's evaluation, such as a school psychologist, any related professional concerned with the child. Effective teaching leads a child to function as independently as possible in the world around him. A curriculum for a child with Multiple Disabilities needs to reach the goal of enabling the child towards personal adequacy, social competency and economic independence. More significantly make his life easier and healthier. Points to be noted for effective educational program Independence is the goal: No matter how small or big the task is the child should learn to use it to make life easy and simpler for him. Teaching skills that are functional and meaningful with the limited opportunities available to the child, it is wise to teach him things that are directly related to his environment and those that he has high chances of doing through out the day. Teaching skills in natural settings: The child is able to remember things that he learns while going through his/her day to day routines. This helps him to learn better and remember. Providing assistance as needed: Encourage the child in every attempt. Taking advantage of the teachable moment: Sometimes teacher may not plan to teach an activity, but the child shows curiosity to explore a particular object. Teacher should use this time to teach him more about that object. Providing repeated opportunities to practice: This will help the child to get opportunities to try out the activity again and again. Using real/ concrete objects: When experience to know about the world is so limited it is better to use objects that he sees and uses everyday rather than expensive and unusual things. Developing routines/ activity schedule: We should have fixed timetable for the day with the child. This helps him to have more control over his life and to anticipate what is going to happen with him next. This also helps to encourage communication attempts by the child immensely.

84 Multi-sensory approach: It is best to make use of all remaining sensory abilities of the child- like seeing, hearing, touching, smelling and movements. All should form a part of the teaching moments for the child. Planning inclusive activities: With highly individualized activities being planned for the child, there is always a risk that either the parent or one caregiver is constantly trying to teach the child. It is important that the child should know what others enjoy doing and for him to be part of that too. Making use of resource persons from the community: It is important that the best advantage is taken from the resource persons from the community as teachers. 3.7.2 Teaching Learning Materials Children with Multiple Disabilities represent a heterogeneous group in the terms of cognitive and functional capacities. The unique support needs of these students include specialized communication and mobility instruction, the ongoing adaptation of sensory information and the provision of experimental learning opportunities in the context of safe, but responsive, environments. What area will

85%	MATCHING BLOCK 142/149	SA	EDU 294Introduction To Locomotor And Multiple ... (D165064983)
TLM help develop? ? Language & Communication ? Sensory development ? Orientation & Mobility training ? Cognitive & Social skills ? ADL			

Teaching Learning Material (TLM) is a tool available to the teachers/ parents/ CBR workers to achieve learning outcome. It is not just a set of teacher-made or purchased material, but a well designed tool for the child's needs. The teacher decides at what level the child is and what activities within the level he/ she wants to give. Once the decision is made, the teacher looks for appropriate teaching learning materials so that the teaching becomes effective and goal-oriented. 3.7.3 Assistive Technology A variety of AT devices are used to help children with severe and

96%	MATCHING BLOCK 143/149	W	
multiple disabilities in the classroom. Communication boards, computers, head sticks and adaptive switches allow disabled children to communicate effectively with others. Teenage Switch 85 Progressions allow students to press a switch to activate activity-based instruction on the computer. Other types of AT			

technology include

100%	MATCHING BLOCK 144/149	W	
wheelchairs, walkers, speech synthesizers, alternative keyboards, pointing systems, talking clocks and calculators, voice recognition software, picture boards, Braille machines, reading machines, magnification software, phonic ear devices, telecommunication devices and sound magnification systems.			

90%	MATCHING BLOCK 145/149	W	
Adapted Furniture Adapted chair, CP chair, corner stools, lap boards and standing frame: mentioned in positioning a child with CP. Mobility Aids			

97%	MATCHING BLOCK 146/149	W	
Mobility aids are appliances used to help people who have difficulty in walking. They enable some of the body weight to be supported by the upper limbs. Selection of a specific type of a mobility device depends on several factors: ? The purpose of using the mobility device ? The indoor and outdoor environments in which it will be used ? The effort required by the individual to use the device ? Positioning needs ?			

100% MATCHING BLOCK 147/149

W

Optimal use in functional activities such as eating, transfers, augmentative communication, personal hygiene, and school activities

Example: Scooters, wheelchairs, crutches, parallel bars

100% MATCHING BLOCK 148/149

SA

EDU 294Introduction To Locomotor And Multiple ...
(D165064983)

Commode Chair or Toilet Stool Commode chair or toilet stool is needed for a child who cannot squat and use Indian toilets. It can be made by cutting a hole over the seat of a plastic chair for children. Other options are to place a tyre over the toilet on which the child can sit comfortably. Other modifications in the toilet – Side bars near the toilet will help a child with poor sitting balance to maintain his balance. – Hose pipe for a child who cannot hold a mug with water and clean himself. 86 3.8

Let us Sum Up 1.

100% MATCHING BLOCK 149/149

SA

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(D165064983)

Disabilities under the National Trust Act are in fact Developmental Disabilities caused due to insult to the brain and damage to the central nervous system. These disabilities are Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities. These are neither diseases nor contagious nor progressive. 2. They cannot be cured by drugs or surgery. But early detection and training improve outcome. This is done using the services of Physio-Occupational

and Speech Therapists, Community Based Rehabilitation Workers and Special Educators. 3. Students with severe and multiple disabilities are identified at birth or in the early stages of life, or after a traumatic accident or illness. These children are identified by medical professionals. Assessments performed on these students are to primarily help teachers understand the student's needs and how they can motivate and provide the best possible services to the student. 4. Functional assessment for a child with Multiple Disabilities involves two basic steps. The first is to gather information about the child by talking to the people who know the child well, by examining medical reports and by actually observing the child engaged in typical activities. 5. Support services like physical access, resource rooms at cluster level, special equipment, reading material, special educational techniques, remedial teaching, curricular adaptation or adapted teaching strategies should be provided. 3.9 "Check Your Progress" 1. What are the possible combinations of multiple disabilities?

..... 2. What are the educational opportunities for children with multiple disabilities?

.....
.....

87 3. Discuss about the different adaptive devices available for children with multiple disabilities.

.....
.....
..... 3.10 Unit End Exercise Discuss about the classroom management for children with multiple disabilities. Prepare and IEP for a child with multiple disability, from your practical work. 3.11 References Bennett A E, Garrad J & Halil T (1970) British Medical Journal iii, 762-764 Beukelman, D., & Mirenda, P. (1992). Augmentative and alternative communication: Management of severe communication disorders in children and youth. Baltimore, MD: Paul H. Brookes. (Available from Paul H. Brookes Publishing, P.O. Box 10624, Baltimore, MD 21285-0624. Telephone: 1-800-638-3775.) Booth, T., and Ainscow, M. (2004) Index fir Inclusions Bundy, C. A., Lane, S. J., and Murray, E. A. (2002) Sensory Integration Theory and Practice (2nd ed) Callahan, C. (1990). Since Owen: A parent to parent guide for care of the disabled child. Baltimore, MD: Johns Hopkins University Press. (Available from John Hopkins University Press, Hampden Station, Baltimore, MD 21211. Telephone: 1-800-537- 5487.) Case- Smith, J., Allen, A.S., & Pratt, P. N. (1996) Occupational Therapy for children (3rd ed) Diagnostic and Statistical Manual of Mental Disorders (2000) American Psychiatric Association. 4th ed. Falvey, M.A. (1989). Community-based curriculum: Instructional strategies for students with severe handicaps (2nd ed.). Baltimore, MD: Paul H. Brookes. Nisbet, J. (Ed.). (1992). Natural supports in school, at work, and in the community for people with

88 Notes

Hit and source - focused comparison, Side by Side

Submitted text As student entered the text in the submitted document.
Matching text As the text appears in the source.

1/149	SUBMITTED TEXT	15 WORDS	89% MATCHING TEXT	15 WORDS
	All rights reserved. No part of this work can be reproduced in any form		All Rights reserved. No part of this work may be reproduced in any form,	
W	https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...			
2/149	SUBMITTED TEXT	37 WORDS	67% MATCHING TEXT	37 WORDS
	Introduction to Locomotor and Multiple Disabilities UNIT - 1 : CELEBRAL PALSY (CP) 9-44 UNIT - 2 : AMPUTEES, POLIO; SPINAL CORD INJURIES SPINA- BIFIDA AND MUSCULAR DYSTROPHY 45-65 UNIT - 3 : MULTIPLE DISABILITIES AND OTHER DISABILING 66-87 CONDITIONS 8 9		INTRODUCTION TO LOCOMOTOR AND MULTIPLE DISABILITIES BLOCK 1 Cerebral Palsy Amputees, Polio, Spinal Cord injuries Spina-bifida and Muscular Dystrophy BLOCK 3 Multiple Disabilities and other Disabling Conditions	
W	https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...			
3/149	SUBMITTED TEXT	13 WORDS	100% MATCHING TEXT	13 WORDS
	Assessment of Functional Difficulties of CP Including Abnormalities of Joints and Movements (Gaits) 1.5			
SA	EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)			

4/149	SUBMITTED TEXT	23 WORDS	100% MATCHING TEXT	23 WORDS
<p>Cerebral Palsy is a persistent but not unchanging disorder of movement and posture due to a defect or lesion of a developing brain.</p> <p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>		<p>Cerebral palsy is a persistent but not unchanging disorder of movement and posture due to a defect or lesion of a developing brain.</p>		
5/149	SUBMITTED TEXT	28 WORDS	100% MATCHING TEXT	28 WORDS
<p>Implications of Functional Limitations of children with CP in Education and Creating Prosthetic Environment in School and Home : Seating arrangements, Positioning and Handling Techniques at home and school 1.7</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
6/149	SUBMITTED TEXT	18 WORDS	100% MATCHING TEXT	18 WORDS
<p>Facilitating Teaching-Learning of children with CP in school, IEP, Developing TLM, Assistive technology to facilitate learning and functional activities. 1.8</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
7/149	SUBMITTED TEXT	12 WORDS	87% MATCHING TEXT	12 WORDS
<p>Objective After going through this unit you will be able to know</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
8/149	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>Assessment of Functional Difficulties of CP Including Abnormalities of Joints and Movements (Gaits)</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
9/149	SUBMITTED TEXT	13 WORDS	100% MATCHING TEXT	13 WORDS
<p>Normal muscles work in pairs; when one group contracts, the other group relaxes</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

10/149	SUBMITTED TEXT	28 WORDS	76% MATCHING TEXT	28 WORDS
<p>has difficulty controlling his head or sitting upright, a special seat may help him in many ways: It will give extra support He will be more comfortable He will feel more secure</p>		<p>has difficulty controlling her head or sitting, a special seat may help in many ways: It will give extra support She will be more comfortable She will feel more secure,</p>		
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				
11/149	SUBMITTED TEXT	17 WORDS	89% MATCHING TEXT	17 WORDS
<p>Special furniture keeps the child in one position and may hence limit his activities.</p>		<p>Special furniture keeps the child in one position and may hence limit her activities.</p>		
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				
12/149	SUBMITTED TEXT	46 WORDS	87% MATCHING TEXT	46 WORDS
<p>A prolonged period of sitting can be very tiring for a child. If he is stiff, he is also at risk of becoming stiffer or getting contractures (permanent tightness) especially in his hips and knees.</p>		<p>A prolonged period of sitting can be very tiring for a child. If she is stiff, she is also at risk of becoming stiffer or getting contractures (permanent tightness), especially in the hips and knees.</p>		
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				
13/149	SUBMITTED TEXT	71 WORDS	92% MATCHING TEXT	71 WORDS
<p>How to measure a child for a special seat Seat the child on a low stool (the height of the stool should be such that he / she can place his/ her feet flat on the floor) If the child cannot sit by himself, hold him in the sitting position on the stool. Try to keep the child as straight as possible. 27 28 Seat Length Measure from the child's back to where his knee bends (A to B).</p>		<p>how to measure your child for his special seat: Seat the child on a low stool (the height of the stool should be such that he can place his feet flat on the floor). If the child cannot sit by himself, hold him in the sitting position on the stool. Try to keep the child as straight as possible. Seat Length Measure from the child's back to where his knee bends (A to B). 24</p>		
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				
14/149	SUBMITTED TEXT	25 WORDS	82% MATCHING TEXT	25 WORDS
<p>Seat-width Measure the width of the child's back and add an extra 2 inches (C to D). Arm rests (sides of the seat) Measure from the stool to 2</p>		<p>Seat-width Measure the width of the child's back and add an extra 2 inches (C to D). Height of the Back of the Seat Measure from the stool to</p>		
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				

15/149	SUBMITTED TEXT	25 WORDS	100% MATCHING TEXT	25 WORDS
<p>Implications of Functional Limitations of children with CP in Education and Creating Prosthetic Environment in School and Home: Seating arrangements, Positioning and Handling Techniques at home and school</p>				
<p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

16/149	SUBMITTED TEXT	42 WORDS	100% MATCHING TEXT	42 WORDS
<p>Height of the back of the seat Measure from the stool to the top of the shoulders (A to E). If the child cannot hold his head straight and does not have head control; measure from the stool to the top of the child's head (A to F). 29</p>				
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				

17/149	SUBMITTED TEXT	70 WORDS	100% MATCHING TEXT	70 WORDS
<p>Height of seat from the floor Make sure that his knees are at right angles and his feet flat on the floor. Measure from the back of the knee to the floor (B to H). Following are some examples of special furniture and the type of child who may benefit from using the furniture. Floor Seat A floor seat is a simple seat that is suitable for children and families who sit on the floor at home or for</p>				
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				

18/149	SUBMITTED TEXT	71 WORDS	100% MATCHING TEXT	71 WORDS
<p>such as eating and playing. It is most suitable for small or young children. The floor seat gives support at the back and sides. If the head is not steady, it can be made higher at the back to give the child support at the back of his head. If the child is tight between the legs or tends to slip forward in the seat, a pommel can be fixed to the seat. The measurement for the pommel is given</p>				
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				

19/149	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>The measurements for the floor seat are as explained earlier</p> <p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>		<p>The measurements for the floor seat are as explained earlier.</p>		
20/149	SUBMITTED TEXT	78 WORDS	80% MATCHING TEXT	78 WORDS
<p>the measurement of height of seat from the floor is not required as the seat is on the floor. 30 If you want to move the child around in the box seat, castors can be attached to the bottom of the seat so that it moves easily. If castors are attached, a foot rest will have to be added to the seat. To measure for the height of the foot rest, measure the child from the back of the ankle to the back of the knee (B to A).</p> <p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>		<p>The measurements for the height of the seat from the floor should then be included. If you want to move the child around in the box seat, castors can be attached to the bottom of the seat so that it moves easily. If castors are attached, a foot rest will have to be added to the seat. To measure for the height of the foot rest, measure the child from the back of the ankle to the back of the knee (B to A). 27</p>		
21/149	SUBMITTED TEXT	38 WORDS	100% MATCHING TEXT	38 WORDS
<p>Box Seat The same type of seat as the floor seat can be made at a higher level for the child who does not sit on the floor. The measurements for the height of the seat from the floor should then be included. 31</p> <p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>		<p>Box Seat The same type of seat as the floor seat can be made at a higher level for the child who does not sit on the floor. The measurements for the height of the seat from the floor should then be included.</p>		
22/149	SUBMITTED TEXT	60 WORDS	100% MATCHING TEXT	60 WORDS
<p>The height of the rod will be from the seat to just below the armpits. It should be at a distance of 2 inches in front of the child's chest. There will be a hole cut in the seat of the chair through which the child passes stool or urine. A bucket or container is placed under the hole. Remember the hole in the potty seat should be pear-shaped for boys.</p> <p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>		<p>The height of the rod will be from the seat to just below the armpits. It should be at a distance of 2 inches in front of the child's chest. There will be a hole cut in the seat of the chair through which the child passes stool or urine. A bucket or container is placed under the hole. Remember the hole in the potty seat should be pear-shaped for boys.</p>		

23/149	SUBMITTED TEXT	126 WORDS	98% MATCHING TEXT	126 WORDS
<p>Potty Chair If the child cannot sit, or has unsteady sitting balance, it is often very difficult for him to use the toilet, whether it is western or Indian style. A potty seat should give the child enough support for him to sit without being held by anyone, so he has some privacy. It can be placed in a convenient discrete place in the home. It is also useful for children who are not yet toilet trained and need to be taken to the toilet very regularly. The measurements are the same as for the box seat. However the sides of the potty seat should be straight up to the shoulder. Two circular holes are made in the sides of the seat through which a rod can be inserted to ensure that the child does not fall out of the potty chair. 32</p>	<p>Potty Chair If the child cannot sit, or has unsteady sitting balance, it is often very difficult for him to use the toilet, whether it is western or Indian style. A potty seat should give the child enough support for him to sit without being held by anyone, so he has some privacy. It can be placed in a convenient discrete place in the home. It is also useful for children who are not toilet trained and need to be taken to the toilet very regularly. The measurements are the same as for the box seat. However the sides of the potty seat should be straight up to the shoulder. Two circular holes are made in the sides of the seat through which a rod can be inserted to ensure that the child does not fall out of the potty chair.</p>			
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				
24/149	SUBMITTED TEXT	48 WORDS	100% MATCHING TEXT	48 WORDS
<p>Ramped Seat Children who tend to slip forward on the seat often benefit if a ramp is fitted to the seat to prevent slipping. It is more comfortable than a pommel and often adequate to keep the child in place. If the child still slips forward even with the ramp, then a pommel may be required.</p>	<p>Ramped Seat Children who tend to slip forward on the seat often benefit if a ramp is fitted to the seat to prevent slipping. It is more comfortable than a pommel and often adequate to keep the child in place. If the child still slips forward even with the ramp, then a pommel may be required.</p>			
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				
25/149	SUBMITTED TEXT	66 WORDS	100% MATCHING TEXT	66 WORDS
<p>Pommel Some children who have tightness between their legs may require a pommel which separates the legs. It also helps to stop children slipping forward in the chair. This is a cylindrical block of wood 6 inches high and 2 inches in diameter. It is secured to the seat at a distance of 1 inch in front of the child's groin. For extra comfort, pad the pommel with 1 inch thick foam and cover it with rexine. 33</p>	<p>Pommel Some children who have tightness between their legs may require a pommel which separates the legs. It also helps to stop children slipping forward in the chair. This is a cylindrical block of wood 6 inches high and 2 inches in diameter. It is secured to the seat at a distance of 1 inch in front of the child's groin. For extra comfort, pad the pommel with 1 inch thick foam and cover it with rexine. 28</p>			
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				

26/149

SUBMITTED TEXT

129 WORDS

100% MATCHING TEXT

129 WORDS

The ramp is usually two inches high at the front. It slopes gradually to cover 1/3 of the chair and becomes level with the rest of the seat. It can be made from ply wood, but should always be well padded with 1 inch thick foam which covers both the ramp and the rest of the seat. Pelvic Strap A pelvic strap gives added support and stability for children, who tend to slip forward in the seat. It is also a safety factor, as the child cannot fall out of the seat if left alone. The pelvic strap is always fixed at the back and below the level of the seat, so that it comes upwards and round the waist. This ensures that the child cannot slip under it. The strap should be made of thick cotton strapping 2 inches wide, which can be knotted in front.

The ramp is usually two inches high at the front. It slopes gradually to cover 1/3 of the chair and becomes level with the rest of the seat. It can be made from ply wood, but should always be well padded with 1 inch thick foam which covers both the ramp and the rest of the seat. Pelvic Strap A pelvic strap gives added support and stability for children who tend to slip forward in the seat. It is also a safety factor, as the child cannot fall out of the seat if left alone. The pelvic strap is always fixed at the back and below the level of the seat, so that it comes upwards and round the waist. This ensures that the child cannot slip under it. The strap should be made of thick cotton strapping 2 inches wide, which can be knotted in front. 29

W <https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf>

27/149

SUBMITTED TEXT

321 WORDS

99% MATCHING TEXT

321 WORDS

Padding for Seating Children often spend a great deal of their day sitting so it is very important that the seat is comfortable and well padded. The padding usually consists of 1 inch foam. If the child is not toilet trained or if he tends to spill food when eating, it is best to cover the seat with rexine, which can be easily wiped clean and dry. If the child sweats a lot, it is advisable to place/towel over the rexine when the child is sitting in the seat. For children who do not have toilet accidents and are not likely to spill food or water, it is more comfortable to cover the seat with cloth. When padding a seat, the back, sides and seat of the chair should all be padded. Padding is not advisable for toilet seats. 34 Floor Table This type of table is very useful for children who sit on the floor. It is simple to make and does not take up too much space. If children have difficulty sitting, it gives a support in front on which they can lean. They will be able to use their hands more effectively. Children who have a tendency to keep their knees bent and sit with their legs crossed or between their knees can be encouraged to sit with their legs straight if they have a floor table to lean on. The floor table can also be used with the floor seat. There should always be raised beading round the three sides of the table not in contact with the child to prevent objects or toys from rolling off the table. The measurement for a floor table is usually 18" X 18". However for a younger child who uses a smaller chair, the floor table can be 15" X 15". Cut-out Tray This type of tray can be fitted to a chair or wheelchair. It gives extra support for the child who tends to fall forwards or sideways when placed in a seat. The tray gives support round the trunk, and enables the child to be more upright and if possible, use his hands more effectively. 35

Padding for Seating Children often spend a great deal of their day sitting so it is very important that the seat is comfortable and well padded. The padding usually consists of 1 inch foam. If the child is not toilet trained or if he tends to spill food when eating, it is best to cover the seat with rexine, which can be easily wiped clean and dry. If the child sweats a lot, it is advisable to place a towel over the rexine when the child is sitting in the seat. For children who do not have toilet accidents and are not likely to spill food or water, it is more comfortable to cover the seat with cloth. When padding a seat, the back, sides and seat of the chair should all be padded. Padding is not advisable for toilet seats. Floor Table This type of table is very useful for children who sit on the floor. It is simple to make and does not take up too much space. If children have difficulty in sitting, it gives a support in front on which they can lean. They will be able to use their hands more effectively. Children who have a tendency to keep their knees bent and sit with their legs crossed or between their knees can be encouraged to sit with their legs straight if they have a floor table to lean on. The floor table can also be used with the floor seat. There should always be raised beading round the three sides of the table not in contact with the child to prevent objects or toys from rolling off the table. The measurement for a floor table is usually 18" X 18". However for a younger child who uses a smaller chair, the floor table can be 15" X 15". Cut-out Tray This type of tray can be fitted to a chair or wheelchair. It gives extra support for the child who tends to fall forwards or sideways when placed in a seat. The tray gives support round the trunk and enables the child to be more upright and if possible, use his hands more effectively. 30

W <https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf>

28/149	SUBMITTED TEXT	106 WORDS	93% MATCHING TEXT	106 WORDS
<p>The tray needs to be anchored to the chair with hooks at both sides. It could also be made into a table, by fitting it with legs, so it can be used with a floor seat. Measurement for the cut out tray will be the same as a for a cut out table. The height of the table should be just above the child's waist. The cut-out portion should be measured to fit the child. The diameter of the semi-circle should be the width of the child's waist, plus two inches (A-B). It should fit comfortably around the child. As with the floor table, beading should be placed round the three sides of the tray. A child will be most comfortable in a chair for which he has been measured carefully.</p>		<p>The tray needs to be anchored to the chair with hooks at both sides. It could also be made into a table, by fitting it with legs, so it can be used with a floor seat. Measurement for the cut-out tray will be the same as a for a cut out table. The height of the table should be just above the child's waist. The cut-out portion should be measured to fit the child. The diameter of the semi-circle should be the width of the child's waist, plus two inches (A-B). It should fit comfortably around the child. As with the floor table, beading should be placed round the three sides of the tray. Remember that a child will be most comfortable in a chair for which he has been measured carefully.</p>		
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				
29/149	SUBMITTED TEXT	15 WORDS	90% MATCHING TEXT	15 WORDS
<p>However, when possible, it is always better to seek expert advice before making a seat.</p>		<p>However, when possible, it is always better to seek expert advice before you embark on making a seat.</p>		
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				
30/149	SUBMITTED TEXT	20 WORDS	92% MATCHING TEXT	20 WORDS
<p>As the child grows and develops we may need to change the size and the design of the seat. 36 1.7.</p>		<p>as the child grows and develops you may need to change the size and the design of the seat. 31</p>		
<p>W https://dsel.education.gov.in/sites/default/files/publication/modulea5.pdf</p>				
31/149	SUBMITTED TEXT	17 WORDS	100% MATCHING TEXT	17 WORDS
<p>Facilitating Teaching-Learning of children with CP in school, IEP, Developing TLM, Assistive technology to facilitate learning and functional activities.</p>		<p>facilitating teaching-learning of children with CP in school, IEP, developing TLM, assistive technology to facilitate learning and functional activities.</p>		
<p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>				

32/149	SUBMITTED TEXT	30 WORDS	95% MATCHING TEXT	30 WORDS
<p>any item, piece of equipment, or product system whether acquired commercially off the shelf, modified or customized that is used to increase, maintain or improve the functional capabilities of individuals with disabilities.</p>		<p>any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities.</p>		
<p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>				
33/149	SUBMITTED TEXT	14 WORDS	90% MATCHING TEXT	14 WORDS
<p>Amputees, Polio, Spinal Cord injuries, Spina-Bifida and Muscular Dystrophy Structure : 2.1 Introduction 2.2 Objectives 2.3 Amputations 2.3.1 Definition 2.3.2</p>		<p>AMPUTEES, POLIO, SPINAL CORD INJURIES SPINA-BIFIDA AND MUSCULAR DYSTROPHY Structure Introduction Objectives Unit 6 Definition,</p>		
<p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>				
34/149	SUBMITTED TEXT	19 WORDS	82% MATCHING TEXT	19 WORDS
<p>Amputations : 2.3.1 Defination : An amputation is the loss of same part of the body. Rarely children are born</p>		<p>Amputations An amputation is the loss of some part of the body. Rarely, children are born</p>		
<p>W http://www.nzdl.org/gsdImod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
35/149	SUBMITTED TEXT	16 WORDS	81% MATCHING TEXT	16 WORDS
<p>one or both hands or feet. More after, children lose one arm or leg because of</p>		<p>one or both hands or feet. More often, children lose an arm or leg because of</p>		
<p>W http://www.nzdl.org/gsdImod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
36/149	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>limbs must be cut off because of advanced bone infections</p>		<p>limbs must be cut off because of advanced bone infections</p>		
<p>W http://www.nzdl.org/gsdImod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

37/149	SUBMITTED TEXT	93 WORDS	91% MATCHING TEXT	93 WORDS
<p>Care of the Amputated Limb : The goals in caring for the stump are to maintain a good shape and good position for fitting an artificial limb. This means taking active steps to : 1. Avoid swelling 2. Keep the full range of motion (Prevent Contractures) 3. Maintain strength Wrapping the Stump : To prevent swelling and keep a good shape for fitting an artificial limb. It is important to wrap the newly amputated limb for a long time after it has been cut off. The leg should be wrapped in a way that squeezes the liquid in the leg upward (rather</p>		<p>CARE OF THE AMPUTATED LIMB The goals in caring for the stump are to maintain a good shape and good position for fitting an artificial limb. This means taking active steps to: 1. avoid swelling, 2. keep the full range of motion (prevent contractures), and 3. maintain strength. WRAPPING THE STUMP To prevent swelling and keep a good shape for fitting an artificial limb, it is important to wrap the newly amputated limb for a long time after it has been cut off. The leg should be wrapped in a way that squeezes the liquid in the leg upward (rather</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
38/149	SUBMITTED TEXT	47 WORDS	100% MATCHING TEXT	47 WORDS
<p>Prevention of Contractures : A child with an amputated leg does not use his leg normally. He usually keeps it bent and he tends to develop contractures of the hip or knee (or both) 48 Therefore special positioning and exercises are needed to prevent contractures and maintain full range of motion.</p>		<p>PREVENTION of contractures A child with an amputated leg does not use his leg normally. He usually keeps it bent, and he tends to develop contractures of the hip or knee (or both). Therefore, special positioning and exercises are needed to prevent contractures and maintain full range of motion.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
39/149	SUBMITTED TEXT	14 WORDS	90% MATCHING TEXT	14 WORDS
<p>Encourage positions that keep the joints stretched, and avoid those that keep the joint bent.</p>		<p>Encourage positions that keep the joints stretched, and avoid those that keep the joint bent.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
40/149	SUBMITTED TEXT	41 WORDS	69% MATCHING TEXT	41 WORDS
<p>What causes it? A virus (infection). The infection attacks parts of the spinal cord, where it damages only the nerve cells that control movement. In areas with poor hygiene and lack of Sanitary Latrines, the polio infection spreads stool of a sick child</p>		<p>What causes it? A virus (infection). The infection attacks parts of the spinal cord, where it damages only the nerves that control movement. In areas with poor hygiene and lack of latrines, the polio infection spreads when the stool (shit) of a sick child</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

41/149	SUBMITTED TEXT	65 WORDS	90% MATCHING TEXT	65 WORDS
	<p>child. Where sanitation is better, polio spreads possibly through coughing and sneezing. Do all children who become infected with the polio virus become paralyzed? No, only a small percentage become paralyzed. Most only get what looks like a bad cold, with fever. However, if a child a 'cold' causes by the polio virus is given an injection of any medication, the irritation caused by the injection can bring on paralysis. (1)</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>child. Where sanitation is better, polio spreads mostly through coughing and sneezing. Paralysis in one leg Do all children who become infected with the polio virus become paralyzed? No, only a small percentage become paralyzed. Most only get what looks like a bad cold, with fever. However, if a child with a cold caused by the polio virus is given an injection of any medication, the irritation caused by the injection can bring on paralysis.</p>	
42/149	SUBMITTED TEXT	65 WORDS	95% MATCHING TEXT	65 WORDS
	<p>How does the paralysis begin : It begins after signs of a cold and fever, sometimes with diarrhoea or vomiting. After a few days the neck becomes stiff and painful and parts of the body become limp. Parents may notice the weakness right away, or only after the child recovers from the acute illness. Once a child is paralyzed, what changes or improvement can be expected ? Once the</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>How does the paralysis begin? It begins after signs of a cold and fever, sometimes with diarrhea or vomiting. After a few days the neck becomes stiff and painful and parts of the body become limp. Parents may notice the weakness right away, or only after the child recovers from the acute illness. Once a child is paralyzed, what changes or improvements can be expected? Often the</p>	
43/149	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
	<p>bad cold with fever and sometimes diarrhea. 2. Paralysis may affect</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>bad cold with fever and sometimes diarrhea. · Paralysis may affect</p>	
44/149	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
	<p>muscles of the body but is most common in the legs.</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>muscles of the body, but is most common in the legs.</p>	
45/149	SUBMITTED TEXT	15 WORDS	90% MATCHING TEXT	15 WORDS
	<p>The muscles and bones of the affected limb becomes thinner than the other limb. 5. The</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>The muscles and bones of the affected limb become thinner than the other limb. The</p>	

46/149	SUBMITTED TEXT	15 WORDS	90% MATCHING TEXT	15 WORDS
<p>Other Common Deformities : Weight bearing (supporting the body's weight) on weak joints can cause deformities.</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>OTHER COMMON DEFORMITIES Weight bearing (supporting the body's weight) on weak joints can cause deformities,</p>		
47/149	SUBMITTED TEXT	24 WORDS	94% MATCHING TEXT	24 WORDS
<p>Can be Done : During the Original Illness when the child first become paralyzed. No medicines help, either during the first illness or later. Rest is important</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>CAN BE DONE? DURING THE ORIGINAL ILLNESS, when the child first becomes paralyzed: · No medicines help, either during the first illness, or later. · Rest is important.</p>		
48/149	SUBMITTED TEXT	46 WORDS	100% MATCHING TEXT	46 WORDS
<p>Position the child to be comfortable and to avoid contractures. At first the muscles will be painful, and the child will not want to straighten his joints. Slowly and gently try to straighten his arms and legs so that the child lies in as good a position as possible.</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>Position the child to be comfortable and to avoid contractures. At first the muscles will be painful, and the child will not want to straighten his joints. Slowly and gently try to straighten his arms and legs so that the child lies in as good a position as possible. (</p>		
49/149	SUBMITTED TEXT	28 WORDS	100% MATCHING TEXT	28 WORDS
<p>Following the Original Illness : Continue with good food and good positions. As soon as the fever drops, start exercises to prevent contractures and return strength. Range of motion</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>FOLLOWING THE ORIGINAL ILLNESS: · Continue with good food and good positions. · As soon as the fever drops, start exercises to prevent contractures and return strength. Range-of-motion</p>		
50/149	SUBMITTED TEXT	25 WORDS	87% MATCHING TEXT	25 WORDS
<p>Contractures of Joints : A contracture is a shortening of muscles and tendons (cords) so that the full range of limb movements is prevented. 52 2.4.5</p> <p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>		<p>CONTRACTURES OF JOINTS A contracture is a shortening of muscles and tendons (cords) so that the full range of limb movement is prevented.</p>		

51/149	SUBMITTED TEXT	41 WORDS	93% MATCHING TEXT	41 WORDS
<p>Crutches, leg braces (calipers) and other aids may help the child to move better and may prevent contractures or deformities. In special cases surgery may be needed to correct contractures or to change the place where strong muscles attach. So that they help</p>		<p>Crutches, leg braces (calipers), and other aids may help the child to move better and may prevent contractures or deformities. In special cases, surgery may be needed to correct contractures, or to change the place where strong muscles attach, so that they help</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
52/149	SUBMITTED TEXT	16 WORDS	100% MATCHING TEXT	16 WORDS
<p>the work of weak ones. When a foot is very floppy or bends to one side, surgery.</p>		<p>the work of weak ones. When a foot is very floppy or bends to one side, surgery</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
53/149	SUBMITTED TEXT	29 WORDS	95% MATCHING TEXT	29 WORDS
<p>Encourage the child to use his body and mind as much as possible, to play actively with others children to take care of his daily needs, to help with work.</p>		<p>Encourage the child to use his body and mind as much as possible, to play actively with other children, to take care of his daily needs, to help with work,</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
54/149	SUBMITTED TEXT	37 WORDS	100% MATCHING TEXT	37 WORDS
<p>Rehabilitation of the child with paralysis : All children paralyzed by polio can be helped by certain basic rehabilitation measures – such as exercise to keep a full range of motion in the affected limbs. However, each child will</p>		<p>REHABILITATION OF THE CHILD WITH PARALYSIS All children paralyzed by polio can be helped by certain basic rehabilitation measures - such as exercise to keep a full range of motion in the affected limbs. However, each child will</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
55/149	SUBMITTED TEXT	16 WORDS	100% MATCHING TEXT	16 WORDS
<p>have a different combination and severity of paralyzed muscles and therefore will have his own special needs. (</p>		<p>have a different combination and severity of paralyzed muscles, and therefore will have his own special needs.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

56/149	SUBMITTED TEXT	79 WORDS	95% MATCHING TEXT	79 WORDS
	<p>Exercise : To keep as strong as possible and prevent, contractures, probably the best therapy, at least at first, is to stay active, to walk, run, and play. While range of motion and stretching exercises may help, it is even better to involve the child in games, work and other activities that keep his joints flexible. Even though he is slow and awkward, encourage him to take part. Feeling sorry for him and just letting his sit is the worst thing you can do. (</p>		<p>Exercise. To keep as strong as possible and prevent contractures, probably the best therapy, at least at first, is to stay active, to walk, run, and play. While range-of-motion and stretching exercises may help (see Chapter 42), it is even better to involve the child in games, work, and other activities that keep his joints flexible. Even though he is slow and awkward, encourage him to take part. Feeling sorry for him and just letting him sit is the worst thing you can do.</p>	
	<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>			

57/149	SUBMITTED TEXT	62 WORDS	91% MATCHING TEXT	62 WORDS
	<p>Braces. Long-leg braces should not be used until absolutely necessary, as they will let the child's legs grow weaker faster. Sometimes lightweight plastic ankle splints, worn day and night, will help delay ankle contractures and keep him walking better. (iii) If contractures of the knees and hips begin to develop, try resting or sleeping with 'sand bays' to press down the legs and help straighten them. 2.5</p>		<p>Braces. Long-leg braces should not be used until absolutely necessary, as they will let the childs legs grow weaker faster. Sometimes lightweight plastic ankle splints, worn day and night, will help delay ankle contractures and keep him walking better. (See Chapter 58.) Figure If contractures of the knees and hips begin to develop, try resting or sleeping with sand bags to press down the legs and help straighten them.</p>	
	<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>			

58/149	SUBMITTED TEXT	24 WORDS	93% MATCHING TEXT	24 WORDS
	<p>Spinal cord injury usually results from an accident that breaks or severely damages the central nerve cord in the neck or back : falls</p>		<p>Spinal cord injury usually results from an accident that breaks or severely damages the central nerve cord in the neck or back: falls</p>	
	<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>			

59/149	SUBMITTED TEXT	57 WORDS	82% MATCHING TEXT	57 WORDS
	<p>diving accidents, bullet wounds and other injuries spinal cord injury is more common in young adults and in general it is twice as common in men as in women. The spinal cord is the line collection of nerves that comes out of the brain and runs down the back bone from the cord, nerves go out to the whole body.</p>		<p>diving accidents, bullet wounds, and other injuries. Spinal cord injury is more common in adults and older children - and in many cultures it is twice as common in men as in women. The spinal cord is the line of nerves that comes out of the brain and runs down the From the cord, nerves go out to the whole body.</p>	
	<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>			

60/149	SUBMITTED TEXT	104 WORDS	88% MATCHING TEXT	104 WORDS
	<p>and movement are controlled by messages that travel back and forth through the spinal cord. When the cord is damaged, sensations and movement in the body below the level of the injury are lost or reduced. 2.5.2 Level of the Injury : How much of the body is affected depends on the level of the injury along the backbone. The higher the point of injury is the greater the area of the body that is affected. Complete and incomplete injuries : When the spinal cord is damaged so completely that no nerve messages get through the injury is said to be complete feeling and completely and permanently lost. If the injury</p>		<p>and movement are controlled by messages that travel back and forth to the brain through the spinal cord. When the cord is damaged, feeling and movement in the body below the level of the injury are lost or reduced. Level of the injury How much of the body is affected depends on the level of the injury along the backbone. The higher the injury is, the greater the area of the body that is affected. Figure Complete and incomplete injuries When the spinal cord is damaged so completely that no nerve messages get through, the injury is said to be complete. Feeling and controlled movement below the level of the injury are completely and permanently lost. If the injury</p>	
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			
61/149	SUBMITTED TEXT	34 WORDS	91% MATCHING TEXT	34 WORDS
	<p>some feeling and movement may remain or felling and controlled movement may return (partly or entirely) little by little during several months. In incomplete injuries, one side may have less felling and movement than the other.</p>		<p>some feeling and movement may remain. Or feeling and controlled movement may return (partly or entirely) little by little during several months. In incomplete injuries, one side may have less feeling and movement than the other.</p>	
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			
62/149	SUBMITTED TEXT	31 WORDS	90% MATCHING TEXT	31 WORDS
	<p>Early Question That a Spinal Cord Injured Child and Family May Ask : "Will my child always remain paralyzed?" This will depend on now much the spinal cord has been damaged. If</p>		<p>EARLY QUESTIONS THAT A SPINAL CORD INJURED CHILD AND FAMILY MAY ASK Will my child always remain paralyzed? This will depend on how much the spinal cord has been damaged. If</p>	
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			

63/149	SUBMITTED TEXT	104 WORDS	89% MATCHING TEXT	104 WORDS
<p>Helping The Child and Family Adjust : Spinal cord injury especially in the child brings many of the same problems as does are similar. Suggest you read spina bifida to get additional ideas for the rehabilitation of young children with spinal cord injuries. Perhaps the biggest difference from spina bifida is that spinal cord injury beging later. One day the child is physically active and able the rest he is suddenly prarlyzed and (at first) unable to do much for himself. He has lost all feeling and control inpart of his body. It is like a dead weight. This is very hard for the child and family to accept. Both have</p>		<p>HELPING THE CHILD AND FAMILY ADJUST Spinal cord injury, especially in the child, brings many of the same problems as does spina bifida. Also many aspects of rehabilitation are similar. (We suggest you read Chapter 22 on spina bifida to get additional ideas for the rehabilitation of young children with spinal cord injuries.) Perhaps the biggest difference from spina bifida is that spinal cord injury begins later. One day the child is physically active and able, the next he is suddenly paralyzed and (at first) unable to do much for himself. He has lost all feeling and control in part of his body; it is like a dead weight. This is very hard for the child - and family - to accept. Both have</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
64/149	SUBMITTED TEXT	15 WORDS	100% MATCHING TEXT	15 WORDS
<p>fear and uncertainly about the future the child may become deeply depressed or angry and</p>		<p>fear and uncertainty about the future. The child may become deeply depressed, or angry and</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
65/149	SUBMITTED TEXT	18 WORDS	100% MATCHING TEXT	18 WORDS
<p>The child in the hospital to make sure the child is kept clean and turned regularly. So that</p>		<p>the child in the hospital to make sure the child is kept clean and turned regularly, so that</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
66/149	SUBMITTED TEXT	13 WORDS	87% MATCHING TEXT	13 WORDS
<p>Preventing Pressre Sores (bed sores) : When feeling has been lost pressure sores</p>		<p>Preventing pressure sores (bed sores) When feeling has been lost, pressure sores</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
67/149	SUBMITTED TEXT	31 WORDS	84% MATCHING TEXT	31 WORDS
<p>sores can easily form on the over body areas-especially on the hips and buttock. The biggest risk of sores is in the fast weeks after the injury. This is because. The child,</p>		<p>sores can easily form on the skin over bony areas - especially on the hips and butt. The biggest risk of sores is in the first weeks after the injury. This is because the child</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

68/149	SUBMITTED TEXT	36 WORDS	86% MATCHING TEXT	36 WORDS
<p>must stay very still and has not yet learned to move or turn over his body. Prevention of pressure sores is extremely. Importance and needs under standing and continuous care, both the child and house caring for him.</p>		<p>must stay very still, and has not yet learned to move or turn over his body. Prevention of pressure sores is extremely important, and needs understanding and continuous care, both by the child and those caring for him.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

69/149	SUBMITTED TEXT	78 WORDS	83% MATCHING TEXT	78 WORDS
<p>Avoiding Contractures : In the first weeks following a spinal cord injury, when the child in a lying position, joint contractures (muscles shortening) can easily develop, especially in the feet and elbows, pillows and pads should be placed to keep the feet supported the elbows straight, and the hands in a good position, gentle range of motion exercises of the feet, hands and arms should begin as early as possible taking care not to move the back until the injury is healed.</p>		<p>Avoiding contractures In the first weeks following a spinal cord injury, when the child is in a lying position, joint contractures (muscles shortening) can easily develop, especially in the feet and elbows. Pillows and pads should be placed to keep the feet supported, the elbows straight, and the hands in a good position. Gentle range-of-motion exercises of the feet, hands, and arms should begin as early as possible, taking care not to move the back until the injury is healed.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

70/149	SUBMITTED TEXT	41 WORDS	82% MATCHING TEXT	41 WORDS
<p>Physical Therapy Following Spinal Cord Injury : Assisted Breathing and Coughing : Persons with spinal cord injury in the neck or upper back after have part of their breathing muscles paralyzed. Slowly the remaining muscles become stronger and breathing improves. But breathing often stays weak.</p>		<p>PHYSICAL THERAPY FOLLOWING SPINAL CORD INJURY ASSISTED BREATHING AND COUGHING Persons with spinal cord injury in the neck or upper back often have part of their breathing muscles paralyzed. Slowly the remaining muscles become stronger and breathing improves. But breathing often stays weak.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

71/149	SUBMITTED TEXT	32 WORDS	89% MATCHING TEXT	32 WORDS
<p>Movement and Exercise : Do range of motion exercises for about 10 minutes for each arm and leg in the first week do this twice a day. Later once a day may be enough.</p>		<p>MOVEMENT AND EXERCISE Do range-of-motion exercises for about 10 minutes for each arm and leg. In the first weeks, do the exercises twice a day. Later, once a day may be enough.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

72/149	SUBMITTED TEXT	39 WORDS	85% MATCHING TEXT	39 WORDS
<p>Range of motion exercises should begin with great care the day after the spine is injured, the exercises will help to improve the flow of blood to prevent contractures, and to build the strength of the muscles that still work. 2.6</p>		<p>Range-of-motion exercises should begin with great care the day after the spine is injured (see Chapter 42). The exercises will help to improve the flow of blood (which reduces the chance of bed sores), to prevent contractures, and to build the strength of the muscles that still work.</p>		
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			
73/149	SUBMITTED TEXT	14 WORDS	89% MATCHING TEXT	14 WORDS
<p>It happens when some of the back bones (vertebral) do not close over the</p>		<p>It happens when some of the back bones (vertebrae) do not close over the</p>		
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			
74/149	SUBMITTED TEXT	22 WORDS	79% MATCHING TEXT	22 WORDS
<p>Hips one or both hips may be dislocated The feet may turn down and in. If the defect is relatively highly up the back</p>		<p>Hips. One or both hips may be dislocated. (4) The feet may turn down and in (club feet), or up and out. Figure (5) If the defect is relatively high up the back (</p>		
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			
75/149	SUBMITTED TEXT	20 WORDS	100% MATCHING TEXT	20 WORDS
<p>Foot injuries : Children who can walk but have no feeling in their feet may easily develop sores or injuries. 58</p>		<p>Foot injuries. Children who can walk but have no feeling in their feet may easily develop sores or injuries.</p>		
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			
76/149	SUBMITTED TEXT	22 WORDS	85% MATCHING TEXT	22 WORDS
<p>Bladder and Bowel Management : A child with spina bifida usually does not develop the some control of urinating (bladder control) and</p>		<p>Bladder and bowel management A child with spina bifida usually does not develop the same control of peeing (bladder control) and</p>		
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			

77/149	SUBMITTED TEXT	35 WORDS	87% MATCHING TEXT	35 WORDS
<p>bowel control) as other children do. The child may always dribble urine or as she gets older she may continue to empty her baldder or bowels with out warning perhaps without even knowing or feeling it. 2.6.4</p>		<p>bowel control) as other children do. The child may always dribble urine. Or, as she gets older, she may continue to empty her bladder or bowels without warning, perhaps without even knowing or feeling it.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
78/149	SUBMITTED TEXT	48 WORDS	90% MATCHING TEXT	48 WORDS
<p>Prevention and correction of contractures : Some children with spina bifida tend to develop contractures either because of muscle imbalance or, less often, because of spasticity (abnormal muscle tightness). Contractures most often develop in the feet heps, and knees range of motion and stretching exercises can help prevent and correct early</p>		<p>PREVENTION and correction of contractures Some children with spina bifida tend to develop contractures either because of muscle imbalance or, less often, because of spasticity (abnormal muscle tightness). Contractures most often develop in the feet, hips, and knees. Range-of-motion and stretching exercises, as discussed in Chapter 42, can help prevent and correct early</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
79/149	SUBMITTED TEXT	52 WORDS	92% MATCHING TEXT	52 WORDS
<p>Helping the child develop : Many children with spina bifida are paralyzed from the waist down. In spite of their disability,it is important for them to develop their bodis, their minds, and their social abilities as much as possibles. Certain adaptive aids can be used to help paralyzed children go through the same stages of development.</p>		<p>HELPING THE CHILD DEVELOP Many children with spina bifida are paralyzed from the waist down. In spite of their disability, it is important for them to develop their bodies, their minds, and their social abilities as much as possible. Certain adaptive aids can be used to help paralyzed children go through the same stages of development</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
80/149	SUBMITTED TEXT	21 WORDS	100% MATCHING TEXT	21 WORDS
<p>braces perhaps with the aid of parallel bars like these, and later crutches, others will need above knee or below knee braces.</p>		<p>braces, perhaps with the aid of parallel bars like these, and later crutches. Others will need above-knee or below-knee braces (</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

81/149	SUBMITTED TEXT	41 WORDS	96% MATCHING TEXT	41 WORDS
<p>Prevention of pressure sores and injuries : As a child who has no feeling in parts of his body grows older and heavier there is increasing danger that pressure sores (bed sores) will form over bony areas that support his wieght (mostly his</p>		<p>PREVENTION of pressure sores and injuries As a child who has no feeling in parts of his body grows older and heavier, there is increasing danger that pressure sores (bed sores) will form over bony areas that support his weight (mostly his</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

82/149	SUBMITTED TEXT	48 WORDS	81% MATCHING TEXT	48 WORDS
<p>his feet) to prevent this : Have the child sleep and sit on a mattress or cushion that is soft (such foam rubber) clean and move on turn over often. Examine the child's lower body daily for early signs of irritation on sores everyday cheak especially the hipe knees and feet</p>		<p>his feet). To prevent this: · Have the child sleep and sit on a mattress or cushion that is soft (such as foam rubber), and move or turn over often. · Examine the childs lower body daily for early signs of irritation or sores. Check especially the hips, knees, and feet. ·</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

83/149	SUBMITTED TEXT	20 WORDS	92% MATCHING TEXT	20 WORDS
<p>When he is a little older the child can learn to check his owe body each day for sores. 59 2.7</p>		<p>When he is a little older, the child can learn to check his own body each day for sores.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

84/149	SUBMITTED TEXT	43 WORDS	100% MATCHING TEXT	43 WORDS
<p>Muscular dystrophy is a condition in which muscles, month by month and year by year, get weaker and weaker. Because the disability gradually gets worse, we say it is progressive. 1. How to Recognize if Muscle Weakness is Caused by Muscular Dystrophy : (i) Mostly affects</p>		<p>Muscular dystrophy is a condition in which muscles, month by month and year by year, get weaker and weaker. Because the disability gradually gets worse, we say it is progressive. HOW TO RECOGNIZE IF MUSCLE WEAKNESS IS CAUSED BY MUSCULAR DYSTROPHY · Mostly affects</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

85/149	SUBMITTED TEXT	17 WORDS	81% MATCHING TEXT	17 WORDS
<p>problem. (iii) First signs appear around ages 3 to 5 the child may seem awkward or clumsy or</p>		<p>problem. · First signs appear around ages 3 to 5: the child may seem awkward or clumsy, or</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

86/149	SUBMITTED TEXT	52 WORDS	83% MATCHING TEXT	52 WORDS
<p>begins to walk 'tiptoe' because he cannot put his feet flat. Runs strangely. Falls often. (iv) Problem gets steadily worse over the next several years. (v) Muscle weakness first affects feet, fronts of things, hips, belly shoulders and elbows later it affects hands, face and neck muscles. (vi) Most children become unable to walk by age 10. (</p>		<p>begins to walk tiptoe because he cannot put his feet flat. Runs strangely. Falls often. · Problem gets steadily worse over the next several years. · Muscle weakness first affects feet, fronts of thighs, hips, belly, shoulders, and elbows. Later, it affects hands, face, and neck muscles. · Most children become unable to walk by age 10. ·</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
87/149	SUBMITTED TEXT	39 WORDS	85% MATCHING TEXT	39 WORDS
<p>Heart and breathing muscles also get weak. Child usually dies before age 20 from heart failure or Pheumonia. 2. Early Common Sign of Muscular Dystrophy : (i) To get up from the ground, the child 'walks up' his things with his hands. (</p>		<p>Heart and breathing muscles also get weak. Child usually dies before age 20 from heart failure or pneumonia. Figure Early common sign of muscular dystrophy Figure · To get up from the ground, the child walks up his thighs with his hands.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
88/149	SUBMITTED TEXT	12 WORDS	87% MATCHING TEXT	12 WORDS
<p>This is maily because of weak thigh muscles. 3. Questions about Muscular Dystrophy : (</p>		<p>This is mainly because of weak thigh muscles. QUESTIONS ABOUT MUSCULAR DYSTROPHY</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				
89/149	SUBMITTED TEXT	55 WORDS	94% MATCHING TEXT	55 WORDS
<p>What causes it? Nobody knows, but in 2 out of 3 families with muscular dystrophy, there is a history of it among male rlatives of the mother. Though 60 the parents are usually normal the mother carries the 'gene' that produces dystrophy in her sons. Her daughters will develop normaly, but they may have sons with muscular dystrophy. 2.7.2</p>		<p>What causes it? Nobody knows. But in 2 out of 3 families with muscular dystrophy, there is a history of it among male relatives of the mother. Though the parents are usually normal, the mother carries the gene that produces dystrophy in her sons. Her daughters will develop normally, but they may have sons with muscular dystrophy.</p>		
<p>W http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...</p>				

90/149	SUBMITTED TEXT	41 WORDS	96% MATCHING TEXT	41 WORDS
<p>Other aids. The child will reach a point where he needs to use crutches, later (often by age 10) he will not be able to walk. Do not force him when it becomes too hard. Instead, try to obtain or make a wheelchair. (</p>		<p>Other aids. The child will reach a point where he needs to use crutches. Later, (often by age 10) he will not be able to walk. Do not force him when it becomes too hard. Instead, try to obtain or make a wheelchair. (</p>		
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			
91/149	SUBMITTED TEXT	29 WORDS	95% MATCHING TEXT	29 WORDS
<p>Breathing deeply is important, especially when the muscles that move the lungs begin to weaken. Encourage the child to sing loudly to shout to blow whistles and to blow up</p>		<p>Breathing deeply is important, especially when the muscles that move the lungs begin to weaken. Encourage the child to sing loudly, to shout, to blow whistles, and to blow up</p>		
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			
92/149	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
<p>Arm weakness in time may become a problem for self care and eating. 2.8</p>		<p>Arm weakness in time may become a problem for self-care and eating.</p>		
W	http://www.nzdl.org/gsdmod?e=d-00000-00---off-0cdl--00-0----0-10-0---0---0direct-10---4-----0- ...			
93/149	SUBMITTED TEXT	10 WORDS	95% MATCHING TEXT	10 WORDS
<p>Multiple Disabilities and Other Disabling Conditions Structure 3.1 Introduction 3.2 Objectives 3.3 Multiple Disabilities:</p>		<p>MULTIPLE DISABILITIES AND OTHER DISABLING CONDITIONS Structure Introduction Objectives Unit 11 Multiple Disabilities 11.1</p>		
W	https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...			
94/149	SUBMITTED TEXT	18 WORDS	100% MATCHING TEXT	18 WORDS
<p>of Multiple Disabilities 3.4 Various Combinations of Multiple Disabilities and Associated Conditions Such as Epilepsy, Motor and Sensory Conditions 3.4.1</p>		<p>OF MULTIPLE DISABILITIES Various combinations of multiple disabilities and associated conditions such as epilepsy, motor and sensory conditions</p>		
W	https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...			

95/149	SUBMITTED TEXT	23 WORDS	69% MATCHING TEXT	23 WORDS
<p>Various combinations of Multiple Disabilities 3.4.2 Associated Conditions with Multiple Disabilities 3.5 Other Disabling Conditions such as Leprosy Cured Students, Tuberos Sclerosis and Multiple Sclerosis 3.5.1</p>		<p>Various Combinations of Multiple Disabilities and Associated Conditions Such as Epilepsy, Motor and Sensory Conditions; Other Disabling Conditions such as Leprosy Cured Students, Tuberos Sclerosis and Multiple Sclerosis;</p>		
<p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>				

96/149	SUBMITTED TEXT	21 WORDS	100% MATCHING TEXT	21 WORDS
<p>of Functional Limitations for Education and creating Prosthetic Environment in School and Home : Seating Arrangements, Positioning and Handling Techniques at Home and School.</p>				
<p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

97/149	SUBMITTED TEXT	29 WORDS	85% MATCHING TEXT	29 WORDS
<p>Creating prosthetic environment in school and home 3.7 Facilitating Teaching-Learning: IEP, Developing TLM; Assistive technology 3.7.1 IEP 3.7.2 Teaching Learning Material 3.7.3 Assistive Technology 67 3.8 Let us Sum Up 3.9 "Check your Progress" 3.10</p>		<p>Creating Prosthetic Environment in School and Home Facilitating Teaching-Learning: IEP, Developing TLM; Assistive technology 15.1 IEP 15.1.1 Developing Teaching Learning Materials 15.1.2 Assistive Technology Let Us Sum Up Glossaries Answers to Check Your Progress</p>		
<p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>				

98/149	SUBMITTED TEXT	27 WORDS	92% MATCHING TEXT	27 WORDS
<p>Implications of Functional Limitations for Education and Creating Prosthetic Environment in School and Home: Seating Arrangements, Positioning and Handling Techniques at Home and School 3.6.1 Functional Limitations for Education. 3.6.2</p>				
<p>SA SED-16 19.1.21.docx (D94093924)</p>				

99/149	SUBMITTED TEXT	13 WORDS	100% MATCHING TEXT	13 WORDS
<p>Children who have a combination of severe disabilities are called "Multiply Disabled". Caring</p>				
<p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

100/149 SUBMITTED TEXT 12 WORDS **100% MATCHING TEXT** 12 WORDS

and severely disabled children is never easy and they need an enormous

SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)

101/149 SUBMITTED TEXT 24 WORDS **100% MATCHING TEXT** 24 WORDS

refers to: a combination of two or more disabling conditions that have a combined effect on the child's communication, mobility and performance of day-to-day tasks.

SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)

102/149 SUBMITTED TEXT 23 WORDS **45% MATCHING TEXT** 23 WORDS

Objectives After going through this unit you will be able to ? About Multiple Disabilities and different definitions ? Characteristics of children with Multiple disabilities ?	OBJECTIVES After reading this unit, you will be able to: ? Identify the locomotor disabilities and assess the needs of children with locomotor disabilities. 80 81 ?
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W <https://egyankosh.ac.in/bitstream/123456789/46061/1/Unit-4.pdf>

103/149 SUBMITTED TEXT 85 WORDS **94% MATCHING TEXT** 85 WORDS

We can say that just as every child is different, similarly every child with MD is different. However there are some things that this group of children has in common. ? It affects the all-round development of the child ? Communication with the world around is most severely affected ? Opportunities to interact with the environment becomes very limited ? Ability to move around in the environment is restricted 68 ? Need regular help in simple day-to-day activities such as wearing a shirt, opening a door, finding a chair to sit down

SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)

104/149	SUBMITTED TEXT	39 WORDS	94% MATCHING TEXT	39 WORDS
<p>multiple disabilities refers to "concomitant [simultaneous] impairments (such as intellectual disability-blindness, intellectual disability-orthopedic impairment, etc.), the combination of which causes such severe educational needs that they cannot be accommodated in a special education program solely for one of the impairments. The term</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
105/149	SUBMITTED TEXT	25 WORDS	87% MATCHING TEXT	25 WORDS
<p>Act Multiple disabilities means a combination of two or more disabilities as defined in clause (i) of Section (2) of the Persons with Disabilities. (Equal Opportunities,</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
106/149	SUBMITTED TEXT	13 WORDS	100% MATCHING TEXT	13 WORDS
<p>Children who have a combination of severe disabilities are called "Multiply Disabled". Caring</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
107/149	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>and severely disabled children is never easy and they need an enormous</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

108/149**SUBMITTED TEXT**

64 WORDS

100% MATCHING TEXT

64 WORDS

Disabilities under the National Trust Act are in fact Developmental Disabilities 70 caused due to insult to the brain and damage to the central nervous system. These disabilities are Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities. These are neither diseases nor contagious nor progressive. They cannot be cured by drugs or surgery. But early detection and training improve outcome. This is done using the services of Physio-Occupational

SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)**109/149****SUBMITTED TEXT**

125 WORDS

100% MATCHING TEXT

125 WORDS

Speech Therapists, Community Based Rehabilitation Workers and Special Educators. The combination of disabilities and degree of severity is different in each child. The time at which the disability occurs in the child, what is known as the 'age of onset', may also range from birth to a few days after birth, from early childhood till late teens. Sometimes children are born with one disability but acquire the second or third disabling conditions during childhood. The characteristics and the needs of the children depend on the nature of combination of the disabilities, the age of onset and the opportunities that have been available to a child in his environment. Multiple Disability refers to: a combination of two or more disabling conditions that have a combined effect on the child's communication, mobility and performance of day-to-day tasks.

SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)

110/149	SUBMITTED TEXT	84 WORDS	96% MATCHING TEXT	84 WORDS
<p>We can say that just as every child is different, similarly every child with MD is different. However there are some things that this group of children have in common. ? It affects the all-round development of the child ? Communication with the world around is most severely affected ? Opportunities to interact with the environment becomes very limited ? Ability to move around in the environment is restricted ? Need regular help in simple day-to-day activities such as wearing a shirt, opening a door, finding a chair to sit down</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
111/149	SUBMITTED TEXT	27 WORDS	56% MATCHING TEXT	27 WORDS
<p>Deaf-Blindness Deafness Developmental Delay (ages 3-5) Emotional Disturbance Hearing Impairment Intellectual Disability (formally referred to as Mental Retardation) Multiple Disabilities Orthopedic Impairment Other Health Impairment Specific Learning Disability Speech or Language Impairment Traumatic Brain Injury Visual Impairment (including blindness)</p> <p>Deaf-Blindness • Deafness • Emotional Disturbance • Hearing Impairment • Mental Retardation (I.D.) • MR and ID • Multiple Disabilities • Orthopedic Impairment • Other Health Impairment • Specific Learning Disability • Specific Learning Disability • Speech or Language Impairment • Traumatic Brain Injury • Visual Impairment including Blindness •</p> <p>W https://sites.google.com/site/specialeducationnation/orthopedic-impairment</p>				
112/149	SUBMITTED TEXT	19 WORDS	100% MATCHING TEXT	19 WORDS
<p>of Multiple Disabilities. 3.4 Various Combinations of Multiple Disabilities and Associated Conditions Such as Epilepsy, Motor and Sensory Conditions</p> <p>OF MULTIPLE DISABILITIES Various combinations of multiple disabilities and associated conditions such as epilepsy, motor and sensory conditions</p> <p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>				
113/149	SUBMITTED TEXT	15 WORDS	71% MATCHING TEXT	15 WORDS
<p>A highly structured educational / rehabilitation programme helps in their training. 3.3.3 Classification of Multiple Disabilities</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

114/149	SUBMITTED TEXT	17 WORDS	88% MATCHING TEXT	17 WORDS
<p>Cerebral" means brain. "Palsy" means a disorder of movement. CP refers to a group of non progressive</p>		<p>Cerebral" means brain. "Palsy" means a disorder of movement. 'Cerebral palsy' refers to a group of non-progressive</p>		
<p>W https://egyankosh.ac.in/bitstream/123456789/46061/1/Unit-4.pdf</p>				
115/149	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
<p>Other Disabling Conditions such as Leprosy Cured Students, Tuberos Sclerosis and Multiple Sclerosis 3.5.1</p>		<p>Other Disabling Conditions such as Leprosy Cured Students, Tuberos Sclerosis and Multiple Sclerosis;</p>		
<p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>				
116/149	SUBMITTED TEXT	85 WORDS	97% MATCHING TEXT	85 WORDS
<p>Leprosy cured person" means any person who has been cured of leprosy but is suffering from: (i) loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity; (ii) manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity; (iii) extreme physical deformity as well as advanced age which prevents him from undertaking any gainful occupation, and the expression "leprosy cured" shall be construed accordingly; 3.5.2</p>		<p>Leprosy cured person means a person who has been cured of leprosy but is suffering from- (i) loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity; (ii) manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity; (iii) extreme physical deformity as well as advanced age which prevents him or her from undertaking any gainful occupation, and the expression "leprosy cured" shall be construed accordingly.</p>		
<p>W https://egyankosh.ac.in/bitstream/123456789/46061/1/Unit-4.pdf</p>				
117/149	SUBMITTED TEXT	42 WORDS	100% MATCHING TEXT	42 WORDS
<p>Children with multiple disabilities will have a combination of various disabilities that may include: speech, physical mobility, learning, mental retardation, visual, hearing, brain injury and possibly others. Along with multiple disabilities, they can also exhibit sensory losses and behaviour and or social problems. 3.4.1</p>				
<p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

118/149	SUBMITTED TEXT	30 WORDS	93% MATCHING TEXT	30 WORDS
<p>Implications of Functional Limitations for Education and Creating Prosthetic Environment in School and Home: Seating Arrangements, Positioning and Handling Techniques at Home and School 3.6.1 Functional Limitations for Education. Children with Multiple Disabilities</p> <p>SA SED-16 19.1.21.docx (D94093924)</p>				
119/149	SUBMITTED TEXT	14 WORDS	89% MATCHING TEXT	14 WORDS
<p>Vision Problems: As children grow, some of them appear to always squeeze their eyes</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
120/149	SUBMITTED TEXT	32 WORDS	100% MATCHING TEXT	32 WORDS
<p>look at something closely, or keep looking at their moving fingers/paper, bump into things while walking, complain of too much light all the time. Their eyes may also look different from 'normal' eyes. Hearing</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
121/149	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>A child with a hearing problem may respond to only particular sounds.</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
122/149	SUBMITTED TEXT	15 WORDS	100% MATCHING TEXT	15 WORDS
<p>take a long time and repeated training to develop speech. And mostly they may only</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

123/149	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
<p>they hear. They may also learn to adapt to their routine environment by 'guessing'</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
124/149	SUBMITTED TEXT	15 WORDS	100% MATCHING TEXT	15 WORDS
<p>going around, but may actually face a lot of difficulty in a new place with</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
125/149	SUBMITTED TEXT	28 WORDS	84% MATCHING TEXT	28 WORDS
<p>Sometimes deaf children also show difficulty in balancing their body or walking in a straight line. Learning Problems: Due to two or more disabilities, the rate and speed of</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
126/149	SUBMITTED TEXT	52 WORDS	89% MATCHING TEXT	52 WORDS
<p>of the children is very slow. Learning often becomes repetitive and meaningless, unless special care is taken to make the child feel safe about exploring the world around him. Multi handicapped children also have very limited ideas to play with toys or things around them. Communication: Communication is probably the one area that is most significantly affected</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
127/149	SUBMITTED TEXT	57 WORDS	95% MATCHING TEXT	57 WORDS
<p>with multiple disabilities. The children are unable to see or hear or follow the different ways in which their brother and sister play with each other, elders are greeted, standing in a line to get a ticket or passing a bottle of water around a dining table. Posture and Mobility: Our sight, hearing and body movements help us to move around,</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

128/149	SUBMITTED TEXT	17 WORDS	100% MATCHING TEXT	17 WORDS
<p>into things, remember the way to reach places or even to use our own hands to hold</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
129/149	SUBMITTED TEXT	29 WORDS	89% MATCHING TEXT	29 WORDS
<p>at things. Presence of Cerebral Palsy, locomotor disabilities and balance difficulties makes it hard for the child to manage his own body movements 80 sometimes and so it becomes very</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
130/149	SUBMITTED TEXT	9 WORDS	100% MATCHING TEXT	9 WORDS
<p>use his body to move from one place to another.</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
131/149	SUBMITTED TEXT	37 WORDS	100% MATCHING TEXT	37 WORDS
<p>Odd Behaviours: Most children with multiple disabilities show strange behaviours that are called 'self-stimulating' behaviours. Some of these are moving one's body repeatedly, shaking head side to side, moving fingers in front of eyes, hitting or slapping the ears,</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
132/149	SUBMITTED TEXT	45 WORDS	91% MATCHING TEXT	45 WORDS
<p>Sometimes it is important for them to continue doing it from time to time as it helps them get some information about the world around them in their own special way. Sometimes these children also show disturbed sleep patters. Medical Conditions: Most multi-handicapped children also suffer from other medical</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				

133/149	SUBMITTED TEXT	23 WORDS	100% MATCHING TEXT	23 WORDS		
<p>as epilepsy, frequent eye and ear infections, respiratory disorders, muscular degeneration frequent surgeries and so on. Such medical conditions lead to frequent hospitalizations and</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>						
134/149	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS		
<p>again misses out on a lot of exposure and learning from the environment. 3.6.2</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>						
135/149	SUBMITTED TEXT	25 WORDS	94% MATCHING TEXT	25 WORDS		
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>provide a small foot rest. ? The hips should always be kept apart. This can be done by keeping a roll between the legs. ? If a child</p> <p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p> </td> <td style="width: 50%; vertical-align: top;"> <p>provide a small foot rest. The hips should always be kept apart. 76 This can be done by keeping a roll between the legs. If child</p> </td> </tr> </table>					<p>provide a small foot rest. ? The hips should always be kept apart. This can be done by keeping a roll between the legs. ? If a child</p> <p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>	<p>provide a small foot rest. The hips should always be kept apart. 76 This can be done by keeping a roll between the legs. If child</p>
<p>provide a small foot rest. ? The hips should always be kept apart. This can be done by keeping a roll between the legs. ? If a child</p> <p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>	<p>provide a small foot rest. The hips should always be kept apart. 76 This can be done by keeping a roll between the legs. If child</p>					
136/149	SUBMITTED TEXT	64 WORDS	97% MATCHING TEXT	64 WORDS		
<p>Seating Arrangement ? Corner sitting: lap boards to be provided, so that the child can engage in activities ? Corner stools: Can be used when the child has some amount of head control. It provides trunk support to the child. Lap boards to be provided. ? Make sure that, the hips, knees and ankle are at 900. ? The feet should always rest on the floor. If not,</p> <p>SA SED-16 19.1.21.docx (D94093924)</p>						

137/149**SUBMITTED TEXT**

92 WORDS

100% MATCHING TEXT

92 WORDS

Height of the back should depend on the child's trunk control. ? If the child does not have head control, provide support for that also. ? A lap board should be provided, so that the child can do activities on it. ? If the child bends his trunk to one side while sitting, it will lead to deformities. 81 ? Trunk blocks can be added to prevent this. ? If the child is not mobile, wheels can be attached to the chair, so that it will be easier for the parents to move the child around the house.

SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)**138/149****SUBMITTED TEXT**

85 WORDS

90% MATCHING TEXT

85 WORDS

Positioning and Handling Positioning refers to the use of appropriate body positions. Due to abnormal pull of muscles, children with cerebral palsy and MD spend a lot of time in abnormal positions. These abnormal positions can lead to increased tightness and other contractures and deformities and should be avoided whenever possible. Proper positioning should be used in all routines throughout the child's day. Try to encourage proper positing appropriate to the child's motor development. Handling refers to the techniques and methods that are used to move a child or assist a child

SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)**139/149****SUBMITTED TEXT**

66 WORDS

92% MATCHING TEXT

66 WORDS

as independently as possible from one position to the next. It relates to how the child is picked up, put down, carried, held etc through movement transitions (e.g.: laying to sitting). Actually, handling is not done only with therapist's hands, but with his/her entire body. Specific handling, lifting and carrying techniques will vary according to the child's individual needs. Support can be gradually decreased as the child learns to support himself.

SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)

140/149	SUBMITTED TEXT	132 WORDS	94% MATCHING TEXT	132 WORDS
<p>Positioning a Child with Multiple Disabilities When the child does not have adequate head control or trunk control ? In prone ? Position the child on a wedge ? Head and neck should be off the wedge ? Child can weight bear on flexed or extended elbows 82 ? Place a roll between the legs ? A small roll can be placed under the chest as well Positioning a child in prone will help the child to develop head control and some amount of trunk control. ? Side lying ? Place a small roll under the head such that the neck is slightly laterally flexed ? Long roll in front extending from chest to legs ? One leg to be kept on the top of the roll ? Position the child on both sides Carrying Techniques While carrying the child or shifting the child from one position</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
141/149	SUBMITTED TEXT	28 WORDS	100% MATCHING TEXT	28 WORDS
<p>and knees separate and not over the shoulders ? Carrying the child with the child facing forwards, with bent hips and knees and knees separate ? Using a wheel chair. 3.7</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
142/149	SUBMITTED TEXT	17 WORDS	85% MATCHING TEXT	17 WORDS
<p>TLM help develop? ? Language & Communication ? Sensory development ? Orientation & Mobility training ? Cognitive & Social skills ? ADL</p> <p>SA EDU 294Introduction To Locomotor And Multiple Disabilities.pdf (D165064983)</p>				
143/149	SUBMITTED TEXT	39 WORDS	96% MATCHING TEXT	39 WORDS
<p>multiple disabilities in the classroom. Communication boards, computers, head sticks and adaptive switches allow disabled children to communicate effectively with others. Teenage Switch 85 Progressions allow students to press a switch to activate activity-based instruction on the computer. Other types of AT</p> <p>multiple disabilities in the classroom. Some examples Communication boards, computers, head sticks and adaptive switches allow disabled children to communicate effectively with others. Teenage Switch Progressions allow students to press a switch to activate activity- based instruction on the computer. Other types of AT</p> <p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Loomotor-and-Multiple-Disab ...</p>				

144/149	SUBMITTED TEXT	28 WORDS	100% MATCHING TEXT	28 WORDS
<p>wheelchairs, walkers, speech synthesizers, alternative keyboards, pointing systems, talking clocks and calculators, voice recognition software, picture boards, Braille machines, reading machines, magnification software, phonic ear devices, telecommunication devices and sound magnification systems.</p>		<p>wheelchairs, walkers, speech synthesizers, alternative keyboards, pointing systems, talking clocks and calculators, voice recognition software, picture boards, Braille machines, reading machines, magnification software, phonic ear devices, telecommunication devices and sound magnification systems. 82</p>		
<p>W https://tnou.ac.in/wp-content/uploads/2021/06/SED-16-Introduction-to-Locomotor-and-Multiple-Disab ...</p>				
145/149	SUBMITTED TEXT	19 WORDS	90% MATCHING TEXT	19 WORDS
<p>Adapted Furniture Adapted chair, CP chair, corner stools, lap boards and standing frame: mentioned in positioning a child with CP. Mobility Aids</p>		<p>Adapted Furniture includes adapted chair, CP chair, corner stools, lap boards and standing frame in positioning a child with CP. Mobility aids</p>		
<p>W https://egyankosh.ac.in/bitstream/123456789/46061/1/Unit-4.pdf</p>				
146/149	SUBMITTED TEXT	69 WORDS	97% MATCHING TEXT	69 WORDS
<p>Mobility aids are appliances used to help people who have difficulty in walking. They enable some of the body weight to be supported by the upper limbs. Selection of a specific type of a mobility device depends on several factors: ? The purpose of using the mobility device ? The indoor and outdoor environments in which it will be used ? The effort required by the individual to use the device ? Positioning needs ?</p>		<p>Mobility aids are appliances used to help people who have difficulty in walking. They enable some of the body weight to be supported by the upper limbs. Selection of a specific type of a mobility device depends on several factors such as the purpose of using the mobility device, the indoor and outdoor environments in which it will be used, the effort required by the individual to use the device, the positioning needs</p>		
<p>W https://egyankosh.ac.in/bitstream/123456789/46061/1/Unit-4.pdf</p>				
147/149	SUBMITTED TEXT	15 WORDS	100% MATCHING TEXT	15 WORDS
<p>Optimal use in functional activities such as eating, transfers, augmentative communication, personal hygiene, and school activities</p>		<p>optimal use in functional activities such as eating, transfers, augmentative communication, personal hygiene, and school activities</p>		
<p>W https://egyankosh.ac.in/bitstream/123456789/46061/1/Unit-4.pdf</p>				

148/149

SUBMITTED TEXT

91 WORDS

100% MATCHING TEXT

91 WORDS

Commode Chair or Toilet Stool Commode chair or toilet stool is needed for a child who cannot squat and use Indian toilets. It can be made by cutting a hole over the seat of a plastic chair for children. Other options are to place a tyre over the toilet on which the child can sit comfortably. Other modifications in the toilet – Side bars near the toilet will help a child with poor sitting balance to maintain his balance. – Hose pipe for a child who cannot hold a mug with water and clean himself. 86 3.8

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149/149

SUBMITTED TEXT

64 WORDS

100% MATCHING TEXT

64 WORDS

Disabilities under the National Trust Act are in fact Developmental Disabilities caused due to insult to the brain and damage to the central nervous system. These disabilities are Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities. These are neither diseases nor contagious nor progressive. 2. They cannot be cured by drugs or surgery. But early detection and training improve outcome. This is done using the services of Physio-Occupational

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Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) -available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme B-10 (

A) GUIDANCE AND COUNSELLING

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A) GUIDANCE AND COUNSELLING B-10 (A) □□□□ GUIDANCE AND COUNSELLING UNIT-1 : INTRODUCTION TO GUIDANCE AND COUNSELLING 9-25 UNIT-2 : ENHANCING SELF IMAGE AND SELF ESTEEM 26-46 UNIT-3 : GUIDANCE AND COUNSELLING IN INCLUSIVE EDUCATION 47-72

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Unit - I □ Introduction to Guidance and Counselling Structure 1.1 Introduction 1.2 Objective 1.3 Guidance and Counselling: Definition and Aims 1.3.1 Definition of Guidance 1.3.2 Definition of Counselling 1.3.3 Aims and Objective of Guidance and Counselling 1.4 Areas of Guidance and Counselling 1.4.1 Areas of Guidance 1.4.2

Areas of Counselling 1.5 Core condition

of Counselling 1.6 Skills and Competencies of the Counsellor 1.7 Role of Teacher in Guidance and Counselling Students with Special Needs 1.8 Let Us Sum Up 1.9

Check Your Progress 1.10 Reference 1.1 Introduction Guidance and Counselling is indispensable in every cultured civilization where

attempts have been made to discover human potentialities, to assess human behaviors and to predict human activities.

Guidance

and Counselling is prevalent in every civilized and organized society. In modern era life needs new skills which were not so much necessary in earlier societies, rather the teachers need to master those skills to meet the day by day necessities of the young stars. Guidance efforts are not based on personal experiences, superstitions or sudden idea of the parents and teachers. Moreover, guidance efforts are based on the study and research in the periphery of natural and social sciences. Guidance and counselling programs are the reflection of the scientific work performed in the fields of psychology, sociology mental hygiene and

10 education. Education, guidance and counselling are interrelated as they are all concerned with the social welfare of the society. This chapter attempts to create awareness among teachers about the significance and application of guidance and counselling in any educational institution. 1.2

Objective After passing through the unit the learners will be able to: - • Define the concept of guidance and counselling. • Explain the nature, purpose and scope of guidance and counselling. • Describe the need for guidance. • Describe the bases of guidance and counselling. •

Establish the relationship between guidance and education. • Examine the roles of guidance and counselling services in the field of Special Education. 1.3 Guidance and Counselling: Definition and Aims Guidance is not a direction neither it is a decision of another

individual which he can make by himself nor it is the burden of another's life.

Crow and Crow have defined guidance as the assistance made available by competent counsellors,

to an individual of any age

to help him direct his own life, develop his own point of view, make his own decisions,

and

carry his own

burdens.

Jones points out that

the focus of guidance is the individual, not his problems; its purpose is to promote the growth of the individual in self-direction.

According to Good,

guidance is a process of dynamic interpersonal relationship designed to influence the attitude and subsequent behavior of

the person.

Good has given emphasis on interpersonal relationships, which plays a great role in determining the degree of success the individual will achieve in the society. Guidance can help an individual to develop his desirable attitudes and behaviors.

National Vocational Guidance Association established by Fatima Wilson has defined

guidance as the

process of helping a person to develop and accept an organized and fully sufficient picture of himself and his role in the world of work, to test his concept against reality and to convert it into reality with satisfaction to himself and benefit to society.

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Guidance is a support given to individuals through various techniques

so that he is able to understand the social requirements and to know the ways and means to adjust himself to these situations, Guidance is a classified set of specific services established as a basic part of the education system sketched to boost the development of students and assist them toward comprehension of sound, decent adjustment and maximum attainments appropriate with their potentialities. Guidance is also a point of view that includes a positive attitude toward students and a realization that it is to complement, make more

powerful and make more intelligible to all other phases of an individual's education. Counselling symbolize only one but most valuable of the service to be found in any guidance programme. Guidance affects all aspects of an individual's life and it tries to help the individual in clarifying his problems, counselling may be considered of as the gist of helping process. Counselling wrap ups a wide area of measures like advising, psychotherapy and follow-ups. Counselling is the focal point of all guidance services. It is a confronting relationship in which evolution takes place. It accelerates an individual's self-understanding, self-acceptance and self-realization. Halm and McHean defined Counselling as

a one-to-one relationship between an individual worried by problems with which he cannot deal alone and a professional worker whose training and experience have equipped him to help others to achieve a solution.

Counselling is that communication which occurs between two individuals called counsellor and client which takes place between a

professionally trained counsellor and an individual seeking help. This relationship is not accidental, or trade like. It is characterized by compassion, understanding, acknowledgement and dependence 1.3.1. Definition of Guidance: "

Guidance involves personal help given by someone; it is designed to assist the individual to decide

where he wants to go, what he wants to do and how best he can accomplish his purpose."- Jones. "Guidance is a term with many meanings. It is a point of view a group of services, a field of study which we should be required to choose one of the emphasized service would pre-dominate."- Moser and Moser. "Guidance is a process of enabling each individual to understand his abilities and interest to develop them as well as possible and to relate them to life goals and finally to reach a state of complete and matured self-guidance as a desirable human element of the social order."- Traxler.

12 "

Guidance is a

means of helping individuals to understand and use wisely the educational, vocational and personal opportunities they have or can develop and as a form of systematic assistance whereby students are aided in achieving satisfactory adjustment to school

and

in life."- Dunsmoor and Miller "The elements of guidance are learning about the individual student, helping him to understand himself, affecting changes in him and in his environment which will help him to grow and develop as much as possible."- Knapp 1.3.2. Definition of Counselling: ●

Counselling is a dynamic and personal relationship between two people who approach a mutually defined problems with mutual consideration

of

each other to the end that the younger or less mature, or more troubled of the person is aided to a self-determined resolution of his problem. -Waen. ● Counselling is a

personal and face-a-face relation between two people in which the counsellor by means of his special competencies, provides a learning situation in which the counsellee a normal person is helped to know himself and his possible future so that he can use his characteristics and his potentialities in a way that is satisfying both to himself and to society, can learn further as how to solve further problems and future needs. - Tobler ●

Counselling

is a series of direct contact with the individual which aims to offer him assistance in

attitude and behavior. -

Carl Rogers. ● A counseling

is a person to person relationship in which one individual turns another person for assistance. - Ericson. ● Consultation, mutual interchange of

opinions, deliberation together. - Webster's Dictionary. 1.3.3. Aims and objectives of Guidance and Counselling Guidance and

Counselling ensues at helping the clients to understand and accept themselves "as they are", and Counselling is to help the student to help himself.

The main objective of counselling is to

bring about a spontaneous change in

the

client. For this purpose, the counsellor provides facilities to collect the desired changes or make the suitable choice.

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According to Dunsmoor and Miller, the purpose of student guidance counselling are: - 1. To give the student clue on matters important to success. 2. To get information about student which will be helpful in solving his problems. 3. To establish a rapport between student and teacher. 4. To help the student to execute a plan for solving his difficulties. 5. To help the student know himself better his curiosity, performances, inclinations and favorable circumstances. 6. To stimulate and cultivate distinctive abilities and appropriate attitudes. 7. To elicit favorable effort toward achievement. 8. To help student in outlining for educational and vocational choices. 1.4

Areas of

Guidance and Counselling 1.4.1. Area of Guidance Life is getting more and more complicated and miscellaneous nowadays. The present situation is that people have to face many difficult problems in their everyday life. All these life situations point to different areas of guidance and counselling which are as follows: - 1. Education 2. Vocation 3. Avocation 4. Social Relationship 5. Health 6. Morals 7. Personal Problems 1. Education:- As educational problem is prime in the list of student's problems, education is an important guidance area. Guidance in education includes syllabus offered by colleges and universities, guidance in education may be categories in the following two classes: 14 A. Pre-admission guidance B. Post admission guidance Pre-admission guidance focuses on people who are considered as entering into an Intermediate Care Facility(ICF). 2. Vocation: - All persons are not suitable for all jobs. Every job requires certain academic and skilled environment and arrangement. In order to guide the people for right choice of job compact lay out has been made to benefit. 3. Avocation: - Woodrow Wilson has truly said," The real intellectual life of a body of undergraduates, if there are any, manifests itself, not in the classroom, but in what they do and talk of and set before themselves as their favorite objects between class and lectures." Thus the liability of any College or University doesn't end with covering the syllabus by the teacher's performance. Teacher must help the students plan for them and cooperate in activities of them. 4. Social Relationship Social communications or relationships create problems for most of the people in our society. Social Relationships refer to social interactions between two or more individuals. We human beings sometimes get puzzled with social relationships, hence social relationships can be improved by the help and support of guidance and counseling. By this means friendship can be established spontaneously and casually. 5. Promotion of Health People has a special stake in the health and tangible prosperity of the society. Guidance aims at the entire health of the people. Surveillance, Booster Doses and Injections and other guidances are also provided by the guidance services. 6. Moral Needs Moral development focuses on the emergence, change and understanding of morality from infancy to adulthood. In the field of moral needs morality is defined as principles for how individuals ought to treat one another, with respect to justice, other's welfare and rights. In this periphery too, we sometimes face awkward situations. Guidance about moral needs is to be provided to students to keep them on the track and lead noble lives. 15 7. Personal Problems:- People may face many personal issues related to themselves, their friends, family, relatives and teachers their educational enactment and social adaptation. Through guidance these problems can be sorted out. 1.4.2.

Area of Counselling

Addictions (Alcohol, Drugs, Gambling, Shopping, Smoking, Work, Sex) People often becomes habituated to something as a way of trying to get some kind of command in their lives.

Controlling and limiting anger is very important in every aspect of one's life. Without control one is putting limits on what one can accomplish. Anger can incredibly destroy many things which is too much essential in one's life.

Anger management counselling is about teaching people that anger can be expressed in a constructive way.

Whether the bereavement or loss

is sudden or wanted, it is highly painful and shocking. People feels under great tension and pressure when someone they love dies, and no matter what

is the state or situation, agony can include an ample sphere of mental states from depression to violence. Loss can also be the loss or deprivation of a bond after apemisfortune that can leave people feeling vacant and unattended but also help to sink him into total bereavement. In that case counselling can really support people as they go through the phases of mental sufferings and tries to secure the platform which they need.

Depression Living with despair can be very hurtful and troublesome place to be. Low spirits can take over and leave people both sensibly and intensely exhausted. People often feel very detached and confined, as though no one fully understands what they are undergoing through, counselling aids to afford people with a room where they are perceived and sustained through a very shadowy and awful period. It also benefits people to deliberately reconstruct and steadily put their lives

well organized, well balanced and well adjusted. Eating Disorders (Thinness, Spree Eating Disorder, Compulsive

Eating Disorder and Irresistible Overeating) Eating disorders can really seize people's lives and existence, and often they find themselves absorbed with issues around food, body size, shape and obesity. Eating 16 disorders purviews binge eating to constricting, and they can frequently contain mismanagement of purgatives, vomiting and activity. Eating disorders are not just about food and activity though, they have lot to do with affairs, acquaintances, past events and in belief in oneself. Counselling can help people virtually to change the manner they eat and exercise, and advice to confront the harmful motive.

It can also benefit people to flourish and raise all other scopes of their lives. Low Self-Esteem and Confidence People often come for counselling because they have very low dignity. This means that they lack determination and their self-respect is very shatter able. This can often be the consequences of what they have suffered in the past, either in their

growing up, or in a commitment. It may be the conclusion of intimidate or corruption for instance. Counselling can honestly guide people how to begin to rely in themselves afresh and to identify what they have to suggest, and the definite and visible features

of themselves. It can cooperate people in prospering and acquiring. Relationships (Couple's Counselling, Divorce Counselling, Issues around Sex/ Affinity, Adultery) Relationships can often be intensely problematic and challenging. Couples come for counselling because they are striving to broadcast, or because they have controversies about closeness between them or their sex life is being afflicted. Sometimes one mate has been disloyal and people want to be able to work through with a noncommittal person. A counsellor can surely cure couples to initiate listening to one another repeatedly, to perceive and sense each other and to shape up their way of relating. On the contrary counselling can also be profitable if individuals or couples are going through a divorce and they want someone to guide them through this. Stress (Money, Health, Relationships, Work) Stress performs a substantial part in many people's life.

Sometimes jobs, commitments, wealth and or health concerns can cause people to feel under a lot of compression. Evidences of being stressed are feeling overpowered, depreciate, annoyance, lack to sleep and sometimes eating can be influenced (either over or under eating). Stress can often precede to phenomenal fitness dilemmas and impulsive outbreaks. Stress is practically tough to live with, and counselling can offer an avenue for this, and a field where you can converse and perform through the antecedents that are evoking you to feel so much affected mentally.

17 Trauma (Experiencing/witnessing accidents, attacks, abuse, violence, wars, natural disasters etc.) As an outcome of either enduring or observing a traumatic event an individual can be left in inquisition

their faiths and with their expectations destroyed. They can feel devastated and their mental states may be puzzling and difficult to apprehend. They may experience memories, upsetting memories, fantasies and restlessness. People can often feel deeply disconnected from what has happened and find themselves recapturing the event repeatedly. The aftereffect of this can neither be despair, low self-content, annoyance, stress, nervousness or even anxiety attacks. Some people may also promote obsessive markings as a way of coping. Counselling can comfort people to manage with shocking experiences and cooperate them to conceive what they have passed through. It can also lay hand to them in dealing with the signs of illness

that they may have grown. Post-traumatic Stress Disorder(PTSD) PTSD is most generally used to define manifestations originating from intensely scary experiences. However not everyone who experiences a dreadful accident will develop PTSD.

There may be an acute sensitivity of apprehension and a sense of being upset. Others may stay away from expressing or pertaining to think

about the event as a mode of self-protection. This can lead to confinement, a feeling of apathy and extended shock. In turn relationships will

collide,

feeling on edge and likely to leap at any noise or sound. Insomnia or restlessness

and mood swings are also likely. In the case of PTSD Cognitive Behavioural therapy techniques work best, as these can inspire an individual to alter undesirable thoughts and feelings with decisive ones. It is recommended that therapy initiates at least four weeks after the event has taken place.

Any other areas are also required for the Counselling like Vocation, Education etc. 1.5 Core Conditions of Counselling
Carl Roger was the founder of Humanistic psychology. At that time Freud's style was the model and Roger was worried about corrupt the unconcealed. It is truly said that he didn't like people of isolated type. The last time he fascinated someone is when she came out of coma and welcomed him. Carl Roger turned the chair reverse to face the patient and greeted him. He switched the autocratic pattern of therapist led psychotherapy toward a client or person-centered convention. That gave command to the client's self-knowledge and appetite toward mending one's own problems. The primitive idea of Rogarian theory is that the human experience is exclusive to each
18 individual and under suitable conditions, people will cut down their walls such as masks or covers and possibility of danger becomes healthy. Rogers believed the person (or self) is not a constant structure but a progress and the person is always becoming. He trusted in the instinctive affirmative abilities of all living creatures. In addition to the dilemmas that emerges when personal power is decreased, divergences between a personal Absolute Self and an Actual Self may lead to psychological pain or agony. The following are his percepts about people: - 1. Openness to Experience: His own and around him and "abide vagueness." "It is the opposite of defensiveness." 2. Trust in one's own emotional Self: "there is a continuous development of faith or hope in and even passion for the complicated, affluent, diverse combination of feelings and impulses which remain in each of us. This assurance leads to preminent self-acceptance and dependence on one's internal foresight. 3. An Internal Locus of Evaluation: Rogers believed power or control lies within the self rather than in society or even another person. The fundamental assumption deviates from trying to live up to or make others happy: "Am I living in a way which is who I truly am and expresses my passion?" 4. Willingness to be a Process: Rather than seeing people as a commodity, Rogers believed the human experience is a flowing energy. Therapy doesn't conclude in the outcome of a permanent state where problems are resolved, rather, it allows the legitimization of the individual to be able to handle situations while still being true to self. For Rogers, the process of therapy should be non-directive. The prime aspect of the therapist in client-centered therapy is related to the attribute of the psychotherapeutic relationship: that "unconditional positive regard." He considered it is essential for therapists to establish "a coordination which give emphasis to the significance and value of each person and their individuality. 1.6. Skills and Competencies of the Counsellor

The personal and professional traits of counsellors are very important in simplifying any helping relationship. A counsellor must be well equipped to support individuals to make adaptations and live a cheerful and cordial life.

The orientation can be with regard to the school and syllabus, job and a person's character.

For adequate counselling, the counsellor must be equipped with two kinds of evidence. First he must
19 have data relating to the counselee's

history of inclinations, efforts, curiosities, strategies etc. In addition to this

he must have the proficiency to clarify this data. Secondly, the counsellor must have knowledge about the areas in which the counselee may look for his service. These areas may be educational or personal.

With these two kinds of information he helps the counselee to meet his individual diagram of aptitude with convenient favorable circumstances. As the method of counselling advances, both the counsellor and the counselee must appear at a commonplace. Counsellors who steadily cultivate their self-awareness expertise are in contact with their principles, thoughts and feelings. They are probable to have a fair understanding of their own and their client's need and precisely evaluate both. Such awareness can help them be truthful with themselves and with others. They are able to be more compatible and frame trust concurrently. Counsellors who acquire this type of knowledge are most expected to relate distinctly and precisely. Three other characteristics that make counsellors originally more effective are recognized proficiency, charisma and dependability. Specialization

is the grade to which a counsellor is recognized as knowledge able and well versed about his or her traits. Counsellors who demonstrate certificates and diplomas in their offices are usually perceived as more dependable than those who do not and as a result, are likely to be effective. Clients went to work with counsellor who appears to know the line of work well.

Attractiveness is a behavior of seen closeness between a client and a counsellor. Counsellors can make themselves attractive by speaking in

fine, understandable and dialect free sentence and proposing relevant self- disclosure. Any other qualities of a Counselor are as follows: - 1. Sympathy 2. Listening skill and patience 3. Virtue or Self-Respect and Confidentiality 4. Attention power 5. Conversation Skill 6. Sensitivity or Delicacy 7. Crisis or critical situation Management 8. Knowledge of Psychology 9. Organizing or systematizing Facts

20 The Desirable Qualities of a School Counsellor are the Following:- 1. Hypnotic Personality 2. Personal adjustment 3. Interpersonal or Mutual Relationship 4. Professional Competence or Ability 5. Leadership 6. Professional dedication or Commitment 7. Philosophy of life 8. Wide range of interest Counsellors who are nonverbal signs in responding to clients, such as more nodding and eye contacts are seen as more attractive than those do not. The apparel of the counsellor also makes a distinctness, clothes should be clean, neat and professional looking but not emphasized to themselves. Dependability

is related to the sincerity and abiding of the counsellor. The counsellor should be genuinely concerned about the client by establishing an intimate relationship with the client. "

There is and can be no such thing as instant intimacy" or trustworthiness. Rather, both should be generated through patterns of behavior that are demonstrated and most clients should neither disbelief nor given to blind trust. 1.7 Role of Teacher in Guidance and Counselling Students with Special Needs Special education counselling is a specialization of school counselling that is concerned with the success of special needs students. The essential purpose of special education counselling is to ensure that special needs of students and their families who have approach to the appropriate supports and interferences in order to facilitate enhanced accomplishment in a school ambience. In addition to facilitating academic and rational growth, special education counselling is concerned with improving a student's ability to function in civil, sentimental and behavioral capacities. Special education counselling is a multi-modular discipline in which special education counsellors must be well versed in counselling theories and techniques, as well as educational theory, educational law, and special

21 education regulations. Special education counsellors work with special needs students in elementary schools, middle schools, and high schools to certify that they have the support services they need in order to achieve their highest potential in the areas of academics, personal and social growth, and career development. This is cultivated by working with students in social, emotional, behavioral, and physical disabilities in various frameworks including in one-on-one counselling, group counselling, in special education classrooms, as well as in regular education classrooms. Another essential duty of special education counsellors is to work with special education and general education teachers and staff members to guarantee that the needs of each special needs student are being met. Special education counsellors do this by advocating on the child's behalf co-functioning with teachers to cultivate more effective support services for the child, or working with teachers and staff members to develop a considerate understanding of the interventions in place to help the child succeed. Much collusion and consultation is also undertaken with other special services workers, such as school psychologists, occupational and physical therapists, speech-language pathologists, and the like. Special education counsellors work broadly with families as well. In this context, they might serve as an intermediate helping families to understand school policies and procedures or laying services to families about their rights concerning special education services. Special education counsellors also often work with families to improve their competence to meet their child's needs at home. This might comprehend tendering parent's and guardian's intuition into productive planning for enhancing their child's functioning. It may also be associated with assigning to families to outside resources, such as child and family counsellors, vocational training, or non-profit organizations that specialize in working with families of special needs children. What is the Role of a School Counsellor in Special Education? The aspect of a school counsellor is to help all students, combining those with special needs, to attain their full potential. Introducing an appropriate Individualized Education Program (IEP) at an early age can make all the difference, not only in these children's bookish learning, but also in their ecstatic health and social balancing and eventually in their ability to become fruitful endowing members of society. However, the population of children who are referred to special education classes is very assorted. So simply section them into broad categories won't work. It is vital for

22 each child's particular stamina's, weaknesses, and special needs to be adequately diagnosed and consigned. The school counsellor is the person who can help earnestly by justifying these children. The following are some of the other important services that school counsellors provide :

- Holding Counselling sessions with special education students.
- Encouraging family involvement in the IEP. It helps extremely if the parents or other accountable adults understand and are route with the services that have been approved, including probable criteria to outside organizations. The special education counsellor can also address specific questions or concerns and inform parents and guardians of their rights.
- Consulting with and working with other school staff to better understand the child's special needs and what backing systems, alterations and modifications may be necessary.
- Co-acting with other school and community professionals, including but not restricted to teachers, school psychologists, physical therapists, occupational therapists, and speech and language pathologists, in the transmission of services.
- Classifying other students who should be evaluated to regulate eligibility for special education.

What are the Educational Requirements to Become a Special Education Counsellor? The educational prerequisites for special education counsellors are quite different from those for counsellors that work outside the school system. It is highly recommended that students begin their studies not in counselling, but instead with a bachelor's degree in special education and gain experience as a special education teacher. To achieve this goal, students must complete a four-year special education program, including a student teaching placement in a special education setting. Upon graduation, students will need to pass a written examination and fulfil the requirements of obtaining teaching license in the state in which they live. After a few years in the classroom as a special education teacher, prospective special education counsellors should then pursue a master's degree in school counselling, which is most often the utmost degree in this field of work. Courses in master's degree programs revolve around developing a deep understanding of human behavior, educational policies and principles, and topics related to working with special

23 needs community. Human development, research methods, evaluation and assessment procedures, and statistics are common areas of study as well.

1.8 Let Us Sum Up

The general public tends to view counselling as a therapeutic function and emphasizes immediate goals, such as problem resolution, tension reduction, and the like. Counselee may refer to the verdict of a particular rivalry or bad situation. However, the goals of counselling are appropriately concerned with such fundamental and basic aspects such as self-understanding and self-actualization. These help provide the counselee with self-direction and self-motivation. Counselling in its attitude and attribute is productive. It aims at assisting the individual to develop such that he becomes psychologically mature and is capable of realizing his potentialities optimally. Counselling has no miraculous solutions. The only concise, rational and pragmatic view of counselling is that it is not and cannot be everything to everybody. It is concerned with helping individuals find prudent and feasible solutions to their problems by helping them gain a vision into themselves so that they are able to apply their own potentialities and opportunities and thus become self-sufficient, self-directed and self-actualized.

An important attribute of a counsellor is that he like and respects himself, but he does not use the counselee to satisfy his own needs. Every normal human being has a craving to be appreciated, acknowledged and accepted. The counsellor must possess good personality, good character and decent philosophy, health, emotional adherence, approachability, sympatric understanding of youth, intelligence, social culture, broad knowledge and interest in guidance and personal working conditions and understanding of social economic conditions.

The above given qualities must be possessed by counsellor.

1.9 Check Your Progress

1. Give definition of Counselling
2. Give definition of Guidance
3. What is different between Guidance and Counselling
4. Discuss about areas of Guidance and Counselling
- 24 5. Discuss about the Competencies of the Counsellor
6. Discuss about the role of teacher in guidance and counseling students with

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Unit - 2 Enhancing self Image and Self Esteem Structure 2.1 Introduction 2.2 Objective 2.3 Concept of Self as Human 2.4 Understanding of

Feeling and Changes 2.4.1 Are feeling good or bad? 2.4.2 Feeling usually leak out 2.4.3 Methods for Changing Your Emotions 2.5 Growth to Autonomy 2.5.1 Autonomy and Psychological Development 2.5.2 Personal Autonomy 2.6 Personality Development 2.6.1 Evolutionary Perspective 2.6.2 Lifespan Perspective 2.6.3 Influencing Factors 2.6.4 Genetics 2.6.5 Environmental 2.6.6 Gene-environment interactions 2.7 Role of Teacher in Development Self- Esteem in Children 2.7.1 Positive, Charismatic Teachers 2.7.2 Nature Self - Esteem and Resilience at School 2.7.3 Demystifying the Problems 2.7.4 Accommodations that Maximizing Success 2.7.5 Teach Decision Making Problem Solving 2.7.8 Teachers Can Provide Choices in Many Ways. Examples Include 2.7.8 Have Children Contribute

27 2.8 Let Us Sum Up 2.9 Check Your Progress 2.10 Reference 2.1 Introduction Shallow confidence can be intensely implanted, with its connection with its scary childhood involvements such as continuation of being apart from parental care disregard, or impassioned, tangible, or sexual abuse. In posterior life, vanity can be weakened by ailment, adverse life events such as losing a job or getting divorced, inadequate or discouraging relationships, and an accepted sense of absence of command. This sense of lack of control may be notably manifested in sacrifices of heart-warming, materialistic, or sexual abuse, or victims of bias on the grounds of religion or creed, culture or art, race or pursuit, sex, or sexual coordination. The relationship between low self-esteem and psychological chaos and psychic agony is very complicated. Low self-esteem inclines to mental disorder, which successively strikes self-esteem. In some cases, low self-esteem is in itself an overriding feature of mental disorder, as, for example, in despair or marginal trait anarchy. People with low self-esteem bears to detect the world as an unsympathetic place and themselves as its sufferer. As a conclusion, they are hesitant to precise and insist themselves, fails out on experiences and favorable circumstances, and feels helpless to alter things. All these decreases their self-esteem still further, sucking them into a descending wound. If you feel that you endure from indigent self-esteem, there are a number of elementary things that you can do to lift yourself and, optimistically, emerge out of the downward spiral. You may already be doing some of these things, and you certainly don't need to be doing them all. Just do those that you feel most cozy with. 2.2 Objective After going through the

unit you will be able to: • Define the concept of self as human. • Explain the understanding of feeling and changes. • Describe the growth to autonomy.

28 • Describe the personality development. •

Establish

the role of teacher in developing self-esteem in children. 2.3 Concept of Self as Human

The emotional and mental constitution of self is the study of either the subjective, conative or intuitive portrayal of one's individuality or the apt of experience. The primeval conception of the self in modern psychology derived from the discrepancy between the self as I, the subjective or abstract knower, and the self as Me, the object that is known. Prevailing views of the self in psychology position the self as playing a component part in human desire, apprehension, influence, and social existence. It may be the case that we can now approvingly work out to ground experience of self in an auditory process with emotional consequences, which will give us penetration into the components of which the intricate build up planted selves of modern identity are repressed. The self has many aspects that aid to create essential parts of it, such as self-awareness, self-esteem, self-knowledge, and self-perception. All parts of the self-enable people to alter, change, add, and customize aspects of themselves in order to payoff social acceptance in society. "Probably, the best account of the origins of selfhood is that the self comes into being at the interface between the inner biological processes of the human body and the sociocultural network to which the person belongs." One's self-perception is defined by one's self-concept, self-knowledge, self-esteem, and social self. One's self-concept (also called self-construction, self-identity, self-perspective or self-structure) is a collection of beliefs about oneself that includes elements such as academic or scholastic performance, gender identity, sexual identity, and racial identity. Generally, self-concept embodies the answer to "Who am I?".

29 Self-concept is detectable from self-awareness, which attributes to the magnitude to which self-knowledge is designated, dependable, and presently pertinent to one's mental outlooks and inclinations. Self-concept also differs from self-esteem: self-concept is about concerning the mind (e.g. "I am a fast runner"), while self-esteem is evaluative and assertive (e.g. "I feel good about being a fast runner"). Self-concept is made up of one's self-architecture, and collaborates with self-esteem, self-knowledge, and the social self to design the self as complete. It comprises the past, present, and future selves, where future selves (or possible selves) perform individuals' ideas of what they might become, what they would like to become, or what they are anxious of becoming. Possible selves may function as encouragement for certain behavior. The recognition people have about their past or future selves is akin to the perception of their current selves. The secular self-estimation theory disputes that people have an addiction to manage a positive self-evaluation by dissociate themselves from their negative self and compensate more consideration to their positive one. In addition, people have an impulse to apprehend the past self-less cordially (e.g. "I'm better than I used to be") and the future self-more positively (e.g. "I will be better than I am now"). The self-concept is a centralized model that uses self-evaluation in order to describe one's self-designs. Features such as personality or temperament, skills and abilities, occupation and hobbies, physical characteristics, etc. are estimated and enforced to self-schemas, which are ideas of oneself in a specific extent (e.g., someone that considers themselves a geek will associate "geek-like" qualities to themselves). An accumulation of self-schemas makes up one's overall self-concept. For example, the statement "I am lazy" is a self-assessment that subsidizes to self-concept. Statements such as "I am tired", however, would not be part of someone's self-concept, since being tired is a momentary state and therefore cannot become a part of a self-schema. A person's self-concept may change with time as revision occurs, which in acute cases can lead to identity crises.

30 2.4 Understanding of Feelings and Changes Emotions are high-priority to your competence to accustom to the confrontations of your daily life. When you feel good or pleasant, you're able to wink off even the most burdensome of tasks, but when you're miserable or unhappy, you stretch even an entertaining activity with a sensation of melancholy and fate. Emotions also influence our relationships with others. If a friend tells you a tragic or unfortunate story and you reciprocate by chuckling rather than looking heartbroken or worried, you'll seem disrespectful and heartless. On the contrary, if you frown when you should smile at your friend's jokes, you'll cause offense for different reasons. Flying off the handle to an insignificant frustration can make you seem aggressive or even not stable. Contrariwise, if you counter with improper delight to a nearly minor piece of good news, people will also inquire your development and dependability. Babies are granted to blare with pleasure or groan with extreme anger but as adults, we're expected to control in the visible show of our feelings. Our mental states affect emotionally not only the way others treat us, but our extrasensory perception of well-being.

We are likely to rely on that whether we are experiencing positive or negative emotions imitates forces outside our jurisdiction, accusing everything from our chromosomes to the weather. However, what many people do not comprehend is that emotions aren't rigorously controlled by your body's anatomy the way that reflexes are. You're not stuck for life with the emotional equipment programmed into your DNA. To understand the way that you can control your emotions, we first have to take a modest deviation through the early history of psychology. Glimpses about what emotions are, and what causes them, have transformed entirely in the last 100 or so years. To take this expedition, who is surpassing to start with than William James, the founder of American psychology? According to James, and the closely related views of physiologist Carl Lange, your emotions are completely governed or administered by your body's responses. In fact, they are the emotions. Imagine you're being pursued by a bear. If you're like most of us, terror and extreme fright will take over your entire being, causing your heart to race, your palms to get sweaty, and your stomach to turn somersaults. James and Lange equated these responses of your autonomic nervous system with the actual emotion of fear. According to their theory (known to intro psych students as the infamous "James-Lange Theory"), your bodily reaction doesn't follow the emotion, it is the emotion. As James said, "Common sense says we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike, afraid because we tremble ... the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble" (Ellsworth, 31 1994, p. 222). Quite literally, when James and Lange talked about a "visceral" (or gut) emotional reaction, they meant it. Many people found the James-Lange theory hard to accept. Common sense seems to work out just fine, despite James' assertion. Apart from the theory just "feeling" wrong (so to speak), it also failed to meet the test of scientific acceptability and was therefore eventually dropped as an explanation. One very similar theory that appeared soon after the James-Lange foray into the field was that proposed by physiologist Walter Cannon; a view that is now known as the "Cannon-Bard" theory (reflecting his collaboration with a doctoral student named Philip Bard). This theory suggests that our emotions are organized by the response of a small structure in the brain known as the thalamus. It's the thalamus that would sense, for example, the onrushing bear. This sensation simultaneously causes the visceral reactions in the body and the subjective experience in the brain. The Cannon-Bard theory eventually became discredited too because it did not withstand experimental scrutiny. The thalamus may be involved in some emotional regulation, but it's not the brain's hot spot for our feelings. Instead, the amygdala seems to be the culprit when it comes to such emotions as fear, rage, and jealousy. Rational-emotive psychologist Albert Ellis takes another approach to cognitive theory, accounting more broadly for our tendencies to let our thoughts produce our own self-produced misery. Ellis believed that through "musturbation" we allow our emotions to be dominated by the "must's": "I must be successful," "I must be loved," "I must have what I want." Ellis talked about the "A-B-C" model of emotion: To modify the consequence (i.e. your emotion), you need to change your beliefs. To change your beliefs, you need to analyze them. In this example, you can the belief that "no one likes me" by looking at the evidence for this belief. Why do you think that no one likes you? Does one person's turn you down mean that no one likes you? Does this mean that no one will ever like you? Does it mean that you must have everyone like you? It's through challenging your thoughts and beliefs about yourself that you can change your emotional reactions. Once you start to pick separate the illogical or absurd basis for your emotions you can free yourself from being dictated by the non-adaptative emotions of rage, jealousy, rejection, and dejection and alternatively boost your adaptive emotions of happiness, contentment, and joy. With this emotional mending apparatus, you'll be able to make more than the gray skies clear up. You don't have to be held hostage to your gut, your thalamus, or even your amygdala. Focus on the thoughts that precede your emotions and you'll find that you can control your mood.

32 2.4.1 Are feelings good or bad? A common saying is "you are responsible for your feelings." (For the moment, let's forget about involuntary and out cold feelings.) Prosperously, all feelings can be viewed as instinctive, as neither good nor bad. This is how: many people believe that feelings and thoughts cannot be bad because they hurt no one. Acts can be bad (because they can hurt). From this viewpoint, there would be no need to hide our feelings (unless disclosing the feelings hurt someone) and no need to feel guilty about any thoughts or feelings. However, it is easy to see how we come to believe that thoughts and feelings are bad. Suppose as a child you hit your little brother and were slapped and told, "don't do that." As a 5-year-old you aren't likely to figure out that the parent who hit you meant "your hitting is bad but feeling angry is OK," so you grow up thinking "feeling angry is bad."

2.4.2 Feelings usually leak out Feelings usually find a way to express themselves, however, there are several ways of subjective feelings get expressed: 1. You may act on feelings: scream at someone when angry, cry when sad, communicate (in body language) your enthusiasm when captivated to someone. 2. You may have physiological reactions when feeling something: you blush or bloom when embarrassed, have high blood pressure when anxious, sexual arousal when attracted. 3. You may try to suppress the feelings and deny being upset or angry. Quite often people who decline their emotions think they are healthy and well adjusted, but they tend to have high blood pressure, high heart rate, an immune deficiency, high incidence of cancer (Temoshok, 1992), difficulty sleeping, and lots of aches and pains. 4. You may try to change the situation: shout out orders like a drill informer when things go erroneous or become charming to attract and influence someone. Note: howling "shut up" at someone implies but doesn't directly express your feeling, "I'm angry at you." 5. You may have one feeling to deny or conceal another: criticism or appreciation may hide allurements, crying may occur when you are mad, love may hide scared dependency. 6. You may blame others rather than presuming responsibility for your own feelings: "You are a selfish, mean person" instead of "I feel very hurt," "You are 33 a lazy slob" instead of "I feel furious when you are so sloppy," "You are arrogant" instead of "I'm afraid you won't like me." 7. You may not be aware of the true nature of your emotions but they can still have an aftermath on your life. Sensational examples are people with numerous personalities; an unconscious personality may have feelings which are not known to the person until that personality becomes conscious and "in control" later. 8. You may honestly share your feelings with others. This involves many skills: self-acknowledgement, "I" statements, social skills, assertiveness, self-confidence etc. 9. You may use your feelings as a barometer of your relationships with others and your self-acceptance. Negative, unwanted feelings are a sign that something needs to be changed, that self-help is needed. Now we will look at ways to take control of your emotions.

2.4.3 Methods for Changing Your Emotions Comprehending your emotions-- behavior, feelings, physiology, and thoughts--will help you to layout ways to change them. First, don't forget that methods focusing on the behavior or changing the environment can also reduce an unpleasant emotion, e.g. curtail your fear by putting better locks on the doors or by avoiding someone you are mad at. Fears can also be reduced by carving someone who is less afraid than you are. You can develop other behaviours that will neutralize the undesirable emotions, e.g. activity counteracts depression, assertion counteracts anger, facing the fear counteracts it, relaxation counteracts the hyperactivity of the workaholic, etc. These feeling do decline ifwe repeatedly expose ourselves to the bothered situation or memory over and over again while relaxed or under less distressing conditions (yet, becoming very tormented while talking to friends about the "awful" situation doesn't usually help). However, changing the consequences of a behaviour can alter emotions also, e.g. ask your friends to praise your healthy decision and challenge your bashful allegiance. Second, don't forget that our thoughts strongly influence our emotions. And, since we can sometimes change our thoughts and since psychology is in a "cognitive" epoch, there is great prominence on cognitive means at this time. The methods here comprises with basic raw emotions: anxiety or fears, anger, and sadness. Of course, these same methods can be used on the emotional part (level II) of any other problem. Inactive dependent problems tend to be handled with cognitive-behavioural methods and new skills. Emotions are a crucial part of our lives and they are spellbinding. Several recent books will help you understand.

34 2.5 Growth to Autonomy Psychological autonomy is one of the classical concepts covering the exclusive human modes of living and behaving, which have been the objects of debates and arguments among philosophers and researchers for centuries (Augustine, 1968; Baer, Kaufman, & Baumeister, 2008; Erasmus-Luther, 1988; Murphy & Brown, 2007; Paul, Miller, & Paul, 2003; Schneewind, 1998). Are human autonomy and the psychological freedom that comes with it ever possible? What role do society and culture play in the emergence and functioning of psychological autonomy? How do autonomous individuals relate to other people and broader communities? These are only a few of the questions that scholars try to answer. The debates about the nature of human autonomy and its role in people's motivation, functioning, and well-being have arisen again in the recent decades because of the emergence of positive psychology and the economics of happiness, and because of the dissatisfaction scholars have with both behaviourist and cognitivist approaches to human behaviour and its motivation (Chirkov, 2011a; Chirkov, Ryan, & Sheldon, 2010; Jenkins, 2008; Pugno, 2010; Ryan & Deci, 2006). Why have people throughout history been willing to fight and even die for their freedom? From one perspective the answer is obvious: oppression causes suffering and we're all hardwired to flee suffering. But recent research suggests an additional reason: we also seem to be hardwired to desire autonomy. Autonomy can be defined as the ability to make choices according to one's own free will. (Whether or not that will is free isn't relevant here - only that it feels free.) If we feel coerced by even an internal pressure like guilt or shame - to say nothing of external pressures like other people - our feeling of autonomy vanishes.

2.5.1 Autonomy and Psychological Development

The connection between autonomy and the ideal of developing one's own individual self was adopted within the humanistic psychologies of Abraham Maslow and Carl Rogers, who saw the goal of human development as "self-actualization" and "becoming a person," respectively. For Maslow and Rogers, the most developed person is the most autonomous, and autonomy is explicitly associated with not being dependent on others. More recently Lawrence Kohlberg developed an account of moral psychological development, in which more developed agents display a greater amount of moral autonomy and independence in their judgments. The highest level bears a great resemblance to the Kantian moral ideal, in its reference to adopting universal values and standards as one's own. Kohlberg's work was criticized by Carol Gilligan, who argued that this pattern reflected male development, but not female. Instead of taking "steps toward autonomy and independence," in which "separation itself becomes the model and the measure of growth," "for women, identity has as much to do with intimacy as with separation" (Gilligan 1982, 98). The trajectory is thus less about individualization and independence than toward ultimately balancing and harmonizing an agent's interests with those of others. Gilligan does not entirely repudiate autonomy itself as a value, but she also does not suggest how it can be distinguished from the ideals of independence and separation from others. Her critiques have been widely influential and have played a major role in provoking work on feminist ethics and, despite her criticism of the ideal of autonomy, conceptions of "relational autonomy." The contemporary literature on personal autonomy within philosophy tends to avoid these psychological ideas of individual development and self-actualization. For the most part, it adopts a content-neutral approach that rejects any particular developmental criteria for autonomous action, and is more concerned with articulating the structure by which particular actions can be deemed autonomous (or, conversely, the structure by which an agent can be deemed autonomous with respect to particular actions).

2.5.2 Personal Autonomy

The contemporary discussion of personal autonomy can primarily be distinguished from Kantian moral autonomy through its commitment to metaphysical neutrality. Related to this is the adherence to at least a procedural individualism: within contemporary personal autonomy accounts, an action is not judged to be autonomous because of its rootedness in universal principles, but based on features of the action and decision-making process purely internal and particular to the individual agent. The main distinction within personal autonomy is that between content-neutral accounts, which do not specify any particular values or principles that must be endorsed by the autonomous agent, and substantive accounts which specify some particular value or values that must be included within autonomous decision-making.

2.6 Personality Development

Personality development is the relatively enduring pattern of thoughts, feelings, and behaviours that distinguish individuals from one another. The dominant view in the field of personality psychology today holds that personality emerges early and continues to change in meaningful ways throughout the lifespan.

36 Adult personality traits are believed to have a basis in infant temperament, meaning that individual differences in disposition and behaviour appear early in life, possibly even before language or conscious self-representation develop. The Five Factor Model of personality has been found to map onto dimensions of childhood temperament, suggesting that individual differences in levels of the "big five" personality traits (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) are present from young ages.

2.6.1 Evolutionary perspective To use an evolutionary perspective is to consider all behaviors (such as fears, prejudices, relationships, etc.) as the result of evolutionary processes. This perspective takes the stance that behaviors came into existence as a result of adaptations to living conditions. For example, humans naturally dislike and fear spiders and snakes. Using an evolutionary perspective, this is because our ancestors learned that these creatures are frequently poisonous and may be deadly. Likewise, humans have a natural fear of large carnivorous animals and know instinctively to stay away from them. The humans who developed a fear for these creatures were evolutionarily more successful because they avoided these harmful organisms and more of them survived than their counterparts who did not learn to fear harmful animals.

2.6.2 Lifespan perspectives Lifespan can be defined as the period that extends from conception to death. Thus, lifespan development is a process that begins at conception and continuous to death. Lifespan development can therefore be defined as a methodical, intra-individual transformation that is attributed to progressions corresponding to age. The development advances in a way that implicates the level of functioning. As a child grows he exhibits transformations that progresses with time. These may include physical growth, cognitive advancement, and psychological advancement that may entail emotional and social development.

2.6.3 Influencing Factors Personality traits demonstrate limited levels of continuity, smaller but still significant normative or mean-level changes, and individual differences in change, often late into the life course. This pattern or motif is influenced by ancestral, environmental, variable, and hypothetical factors.

37 2.6.4 Genetics Twin and adoption studies have manifested that the heritability of personality traits ranges from .3-.6, with a mean of .5. Heritability of .5 means that 50% of variation in observable personality traits is attributable to genetic influences. But a given genotype will lead to a certain phenotype only under the right environmental circumstances. In other words, the heritability of a trait may change depending on an individual's environment and/or life events.

2.6.5 Environmental With the effects of genetic similarity removed, children from the same family often appear no more alike than hapazardly selected strangers; yet identical twins raised apart are nearly as similar in personality as identical twins raised together. What these verdicts suggest is that shared family environment has practically no effect on personality development, and that similarity between relatives is almost entirely due to shared genetics. The weakness of shared environmental effects in assembling personality came as a wonder to many psychologists, and aroused research into non shared environment, or the environmental influences that make siblings different from one another instead of similar. Non shared environmental effects surround the variability in behavioral outcomes that is not elucidated by genetic and family environmental influences. Further effects of environment in adulthood are demonstrated by findings that different work, marital, and family experiences are conjoined with personality change, and by the collision of major positive and negative life events on personality.

2.6.6 Gene-environment interactions Three main types of gene-environment interactions are active (the process by which individuals with certain genotypes select and create environments that facilitate the expression of those genotypes), passive (the process by which genetic parents provide both the genes and the early environmental influences that contribute to the development of a characteristic in their children), and reactive (the process by which non-family individuals respond to the behavior produced by a genotype in characteristic ways).

38 2.7 Role of Teacher in Development Self- Esteem in Children Teachers play an important role in the nourishment a student's sense of excellence and self- estimation. Research about flexibility focusses the significant influence of even one adult to help children with learning and attention problems become progressively optimistic and prosperous. The late Julius Segal called that one person a "charismatic adult," noting this was an adult with whom children "identify and from whom they gather strength."

2.7.1 Positive, charismatic teachers How can teachers serve as appealing adults? Certainly they must use particular arbitrations to reinforce the self-esteem and resilience of students. However, if preparations are to be effective, the teachers using them must possess a positive disposition, or set of assumptions, about themselves and their students. Some of the main features of this mindset are:

- Every student has a thirst to learn and be successful in school. If they are not, we must contend to understand the nature of their learning problems.
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If students are displaying self-defeating behaviors, such as quitting, or not trying, or acting like the class clown or class bully, we must recognize these are fruitless coping strategies that often cover feelings of vulnerability, low self-esteem, and hopelessness. Rather than establish disciplinary consequences, we must ask how to underrate the dejection of these youngsters experience each and every day. • If we are to lower the use of these ineffective coping behaviors, we must teach these youngsters in ways they can learn best. This indicates that as educators we must first change our access and teaching style if students with learning problems are to adopt a more hopeful, positive approach. We must be comfortable in making accommodations when needed. • Each child or adolescent possesses "islands of competence," or areas of strength, that must be identified, reinforced, and displayed by educators. A strength-based model does not deny the child's problems but recognizes the importance of using the child's strengths as an important component of any intervention program. • We must actively invite and involve students in the process of their own education.

2.7.2 Nurture self-esteem and resilience at school

If one accepts the principle of this mindset, then it is easier for educators to trust upon acknowledgement theory for proposing signal for bolstering self-esteem and hope. This theory directs us to find ways for youngsters with learning problems to feel an increasing sense of ownership, control, and responsibility for their successes and to view mistakes as experiences from which to learn rather than feel defeated. What follows are several key strategies with examples of how teachers might accomplish this task. Each educator should use these strategies in a way that most successfully meets the particular needs of each student.

2.7.3 Demystifying the problems

A first step in aiding children with learning difficulties is for teachers and parents to acknowledge the nature of these problems, help children understand their exclusive learning strengths and weaknesses, and make appropriate accommodations in their school programs. When one conduct psychological/educational evaluations, she/he explore to recruit the children, as well as their parents and teachers, as active "partners" in the evaluation. He ask these youngsters what they see as their learning strengths and weaknesses. He is often very impressed with their ability to comprehend their learning profile. He describes the evaluation as an attempt to understand more clearly their strengths and weaknesses. So together we can figure out the best ways for them to learn.

2.7.4 Accommodations that maximize success

If all children learn individually, then it makes distinctive sense that we teach them in ways they learn best. The kinds of accommodations I typically recommend do not require major modifications in a student's program, nor do they claim that a teacher have different educational plans for each student in the classroom. What is required is that all parties - students, teachers, parents - understand a child's strengths and weaknesses, appear at common expectations and goals, and recognize what has to be done to reach these goals. However, the kinds of modifications it is typically advised do not crave for major changes. A teacher auditing several of these recommendations recently remarked, "These are all very reasonable." The following are a small selection of these accommodations: • Untimed tests should be provided. I have known students with learning problems whose scores have gone up significantly by taking tests untimed, and yet they only required a few extra minutes. Removing the pressure of time lessened their anxiety.

40 • A maximum time for homework can be defined. I believe that if most members of a class can do six math problems in 15 minutes, then, if possible, teachers should set that as a maximum time. If some students can do only three problems in that time span, the three should be accepted. To ask students with learning and attention problems to put in an inordinate amount of time for homework not only is counterproductive in terms of learning, but also increases tension at home. We should guarantee students know what the homework chores are. Many students with learning problems have difficulty copying homework assignments from the blackboard. Providing the child with a monthly "syllabus" of assignments can be very beneficial. Some teachers assign a "buddy" to ensure the child has an accurate picture of the homework required. • Children should be permitted to use computers for their assignments. Many students who have difficulty broadcasting their ideas on paper do much better with computers. Yet, I know of teachers who still feel "students have to learn to write." By this they mean writing with a pen or pencil. My feeling is if students try hard to write with a pen or pencil but find it effortless to precise their thoughts using a computer, they should be granted to do so.

2.7.5 Teach decision making, problem solving It is constantly stressed that an elementary factor of high self-esteem and resilience is the belief one has control over many areas of one's life and can flawlessly define these areas. This belief is firmed to a feeling of ownership, an integral infrastructure for motivation. If we intend our children to foster this sense of control, it is essential we provide them with conveniences from an early age to learn and apply inquisitive and administrative skills. When I consult with schools and have the opportunity to interview students, I often ask. "What choices or decisions have you made in the past month in school?" Choices and decisions must exist if we are to help students with learning problems yield a feeling of ownership and become self-advocates.

2.7.6 Teachers can provide choices in many ways. Examples include: • Teachers in one school gave a certain number of problems for homework but said to the students, "It's your choice. Look at all six problems, and then do the four you think will help you learn best." By offering the students the choice to "do less," they actually received more homework than in the past, especially since the students felt a greater sense of ownership.

41 • When children are having difficulty learning, it is convenient to discuss with them what they think might be most helpful and to attempt certain strategies. As Dr. Myrna Shure has found using her "I Can Problem-Solve" program, even young children are competent of coming up with different options to help them learn more effectively.

2.7.8 Have children contribute

Self-esteem and resilience are cared when children are provided favorable circumstances to commit to their world and to the well-being of others.

In my exploration, I initiate that when adults are asked, "What is one of your most positive memories of school when you were a student, a memory involving something an adult said or did that boosted your self-esteem and motivation?" the most frequent answer centered around being asked to help. For this reason, when I consult with educators, I request they make a list of their students and what each contributes to the school environment. I have found that when students feel they are making a positive difference in school, they are more motivated to do well and are more agreeable to take suitable possibilities in learning. These acts of nursing can easily be allied with academic tasks. There should not be one student in a school who does not feel he is contributing to a better school environment. A few examples: • Students with learning problems can be asked to read to younger children. • An educator I knew enlisted adolescents with learning problems to sponsor a bake sale and raffle, with the proceeds going to a needy family in the community. This educator noted the students' self-esteem improved as they performed the many academic skills involved in the charitable project. • Students can take care of plants in school, or paint landscapes on the wall, or hang up favorite drawings. • Some schools use unified learning groups so students gain experience work as composed groups and helping each other. For some youngsters with learning problems, it is the initial time they grasp they have something to contribute to the school. All students are bothered about making errors and looking foolish. However, youngsters with learning problems customarily experience more failure situations than peers who do not have these problems. Thus, they are even more vulnerable and fearful about vain. They feel especially "exposed or bare" in school since it is an environment in which their learning problems are very evident. If we are to keep students from losing hope and quitting, we must help them develop a more positive attitude toward mistakes.

42 One of the most effective means of compromising with the fear of making mistakes and failing is to discuss this fear directly with students even before any mistakes are made. This is best done during the "orientation or introduction" period cited earlier. One of my favorite approach for attaining this task is for teachers to ask at the beginning of the school year, "Who feels they are going to make a mistake and not understand something in class this year?" Before any of the students can counter, teachers can raise their own hands and discuss times when they were students and worried about making mistakes and how this interfered with their learning. They can then employ the class in a problem-solving discussion of what they can do as teachers and what the class can do to minimize the fear of failing and looking foolish. Rules can be set up about how to call on students and how the teacher and other students should respond when a student does not know an answer. Openly supporting the fear of failure renders it less powerful and less devastating. Binding this to a discussion of how we all learn differently and have different strengths (islands of competence) and weaknesses sets the foundation for a class environment filled with admiration and understanding. Such an environment is one in which students with learning problems will feel respected and their self-esteem, motivation, hope, and resilience will be nurtured. One of the most valued gifts we can provide children and teenagers with learning problems is to develop their self-dignity and resilience. I hope this series of articles has provided a helpful sketch of the world of these youngsters and what we can do to assist them to lead more satisfying, fulfilling, successful lives. A wonderful tradition we can leave these children and students is to be the charismatic adults in their lives, knowing they have truly "gathered strength" from us.

2.8 Let Us Sum Up Self-enhancement or augmentation is a type of motivation that works to make people feel good about themselves and to maintain self-esteem. This purpose becomes especially outstanding in situations of threat, failure or blows to one's self-esteem. Self-enhancement involves a first choice for positive over negative self-views. It is one of the four self-evaluation motives along with self-assessment (the drive for an accurate self-concept), self-verification (the drive for a self-concept congruent with one's identity) and self-improvement (the act of bettering one's self-concept). Self-evaluation motives drive the process of self-regulation, that is, how people control and direct their own actions.

43 There are a variety of strategies that people can use to enhance their sense of individual value. For example, they can devalue skills that they need or they can condemn others to seem superior by comparison. These artifices are successful, in that people tend to think of themselves as having more positive qualities and fewer negative qualities than others. Although self-enhancement is seen in people with low self-esteem as well as with high self-esteem, these two groups tend to use different strategies. People who already have high esteem enhance their self-concept directly, by processing new information in a partial way. People with low self-esteem adopt more indirect strategies, for example by avoiding situations in which their negative qualities will be apparent.

2.9 Check Your Progress

1. What is the concept of self as human?
2. Discuss about understanding of feeling and changes.
3. Write in brief of methods for changing your emotions.
4. Discuss about growth to autonomy.
5. Discuss about role of teacher in development self-esteem in children.
6. How to teach decision making and problem solving procedure?

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Unit 3 □□□□□ Guidance and Counselling in Inclusive Education Structure : 3.1 Introduction 3.2 Objective 3.3 Current Status with Reference to Indian School 3.4

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48 3.7 Challenges in Group Guidance 3.8 Let Us Sum Up 3.9 Check Your Progress 3.10 Reference 3.1 Introduction As a system, inclusive education should be flexible. As an ideology, comprehensive education should be flexible. Its doctrine should be education in the traditional classroom whenever possible. This need for adaptability must be reflected in the means and materials used to give these children the ample viable passage to the regular syllabus. When discussing the kind of service required, the starting point should always be what is superlative for the particular child. Giving priority to inclusive education does not reject special schools or centres. They would still be required to cater to children with abstruse and intricate difficulties in demand of more specialised and far-reaching help, including e.g. many deaf children. This substitute should, however, not be considered, unless classroom placement cannot meet their needs. In connection with the new policy of inclusive education, special schools are launched to function more and more as support systems. They involve in superior programmes, where they draw on their immense experience and knowledge. They bond their activities with those of the regular schools, the families, and the communities. Inclusive education services allow children with impairment to reside with their family and to go to the nearest school, alike all other children. This fact is of fundamental importance to their personal development. Hindering a disabled child's normal development may have far more harsh repercussion than the disability itself. In this framework, it is foremost to emphasize the role parents have. They deserves to be involved in all decision-making concerning their child. They should be seen as partners in the education process. Where there is such partnership, parents have been found to be very important resources for the teachers and the schools. There are a number of practical problems that have to be solved before a child with special educational needs can go to school or take part in school activities. The arrangements it takes are moderately easy, provided co-ordinated regional and atypical initiatives are provoked. One should also keep in mind that the child's schoolmates

49 represent a beneficial promising partner who is prepared and apt to help in conquering some of these problems. 3.2 Objective

After undergoing this unit the learners will be able to: • Define the concept of present status of Indian • Types of Counselling: child -centred, Supportive, Family • Explain the formal and informal situations. • Describe the group guidance. • Describe the challenges group guidance. 3.3 Current Status with Reference to Indian

School Education of children with disabilities in India, as all over the world, has moved from discrimination, special schools to integrated education. There is a national level central government sponsored scheme called Integrated Education of Disabled Children (IEDC). This project was started in 1980s and designed based on the experience gathered from a UNICEF assisted pilot project called PIED (project on integrated education of disabled children). In the mid-1980s many NGOs implemented this IEDC with allowance from Government of India. This project is implemented by the Ministry of Human Resource Development. This is fundamentally a nomadic resource teaching approach and one resource teacher was given to every 8 children with special needs. There are around 60,000 children with disabilities getting access to education under this course of action. As a whole the project is managed by the NGO sector. Although the aims and purposes of the IEDC program were admirable, the number of children with disabilities enrolled was woefully small. For example, in Karnataka State about 2% of all children with disabilities acquire education. About 1% of these children are enrolled in special schools and the balance 1% are in the integrated education system.

50 3.4 Types of Counselling : Child–Centred, Supportive, Family There are several types of counselling that follow similar lines to the various different types psychotherapy. Now we discuss: Child–Centred Counselling Supportive Counselling Family Counselling 3.4.1 Child Centered Counselling One-to-one therapy is available for all ages, from pre-school to children, and for all presenting problems. At times, parents may find that their child is experiencing road blocks in one or more of the following areas: depression, anxiety, mood-swings, past trauma, behavior problems; and major life changes (e.g., death of a loved one or divorce). We believe that no one knows their child more than the parents, and we embrace the opportunity to work closely with the parents to best support their child. The child-centered approach is based on accurate and empathic understanding and respect of the past and present personal experiences of parents and child. The child -centered approach is a positive approach where the focus on the constructive side of parents and child. One way of looking at this is by using the metaphor of how a seed, if provided with the appropriate conditions, will automatically grow in positive ways to a healthy mature plant. In the child -centered approach, is a growth- producing environment so that both parents and child are empowered to grow and make constructive changes in lives. 3.4.2 Supportive Counselling Supportive Counselling is a psychotherapeutic approach that integrates psychodynamic, cognitive-behavioral, and interpersonal conceptual models and techniques. The objective of the counselor to reinforce the patient's healthy and adaptive patterns of thought behaviors in order to reduce the intrapsychic conflicts that produce symptoms of mental disorders. Unlike in psychoanalysis, in which the analyst works to maintain a neutral demeanor as a "blank canvas" for transference, in supportive counselling therapy the therapist engages in a fully emotional, encouraging, and supportive relationship with the client as a method of furthering healthy defense mechanisms, especially in the context of interpersonal relationships.

51 Supportive counselling techniques are skills used to bring comfort and to guide the client. They are directed at reducing client-distress without specifically addressing the psychological or behaviour causes. Thus, supportive techniques are non-specific in nature. Supportive techniques can be used at any time during therapy, but are commonly used during the early phases of therapy. This is because during the later phases of therapy, more specific techniques may be required. The counsellor can provide brief counselling sessions using supportive techniques like: listening actively, giving advice, adding perspective, confirming the appropriateness of the patient's concerns, etc. While using the supportive counselling techniques the counsellor may focus on solutions by empathizing with the patient, while moving the dialogue toward the construction of clear, simple and specific plans for behavioural change. This change may be with regards to work, home, finances or health. S/he may focus on coping strategies which may be problem focused or emotion focused. The problem focused strategies are directed at situations that can be changed and emotion focused strategies are directed at situations that cannot be changed. While helping the client, the counsellor needs to recognize whether a situation can be changed or not and accordingly use some helpful coping strategies and supportive techniques. Some of the supportive techniques are presented here for the understanding and their application during the counselling sessions.

3.4.3 What is Family Counselling? Your family is more than just a group of individuals sharing a particular physical space or relational ties. Your family can be considered a system in itself, with its own rules, roles, and power structure. Family members collectively form a whole, or system, that can experience a wide range of difficulties. What affects one member of your family is likely to affect all others in the family. The relationships between members of your family are deep. Individuals in your family are tied to each other by powerful emotional attachments that will persist over the lifetime of your family. Family counselling focuses on the relationships and interactions between your family members.

3.4.5 Benefits of Family Counselling? • You and your family members can change unhealthy patterns of interacting and communicating with each other to more functional patterns of interaction. • You and your family members can strengthen relationships between each other.

52 • You will understand how your childhood family relationships and extended family relationships can impact your current family relationships. • You will learn how a healthy family structure contributes to healthy family relationships. • You will learn to encourage separateness of individual family members, while still maintaining and developing connectedness between family members.

3.5 Guidance in Formal and Informal Situations: Within and Outside Classroom, Vocational Guidance Difference between Formal vs. Informal guidance. Discuss differentiation of formal (professional) from informal (non-professional) guidance. Guidance comes in two zest: formal and informal, which are actually very different, each having advantages and disadvantages based on the situation and person.

3.5.1 Formal and Informal Guidance Formal guidance is professional or trained guidance. Informal guidance is defined in different ways. It consists of nothing more entering into conversation and listening to someone, such as being available or pulling someone aside for a quiet word about some problem they're having. However, in a workplace, for example, as a supervisor might enlist in informal guidance on the actuation of the moment about something that happened only a second ago. In fact, this is probably the best use of this type of guidance, according to some.

3.5.2 The Guidance Calendar The Guidance Calendar is a component of a school guidance programme. It takes care of the needs that cannot be met in a classroom, such as tours, career fairs, talent shows, seminars, visits, drama, etc. This Calendar shows all guidance activities that are projected in the school. It helps to allot time to school activities, and stay away from conflicts. It is for an organization to develop a monthly, quarterly, termly or yearly calendar. Like the Guidance Programme, a school Guidance Calendar is governed by the needs of the clients. It is meant to complement classroom activities. The Calendar confirms that relevant demands are addressed at convenient times and places, and succeed in doing certain activities in a series or order. For instance, after a career talk, a visit to a work place might be the most appropriate reciprocal activity, or

53 after a lesson on cleanliness, a nurse or health worker could be invited to address the pupils. This is an evidence that a calendar is in connection with recognised needs. A Guidance Calendar builds up good management, and developers will take into account the time of the year most advisable for certain activities. It also ensures the appropriate use of resources. The programme leadership should involve staff, parents and community members in creating the calendar, as not to do so might sceptically influence the programme. For instance, a nurse might not be able to address students if he/she was not told the date when needed to support the programme. In drawing up the calendar, there is an urgency to display the date, time, target group, guidance service activity, and human and material resources. 3.5.3 Guidance for School Children (Within and outside of Classroom) To Provide for the Realization of Student Potentialities To all students, the school offers an expanded choice of courses and co-curricular activities. A convincing function of education is to lay hand to students recognize and flourish their potentialities. The guider's role is to assist students to share their energies into the many learning opportunities available to them. Every student needs help in outlining his considerable course of study and diagram of co-curricular activities.

To Help Children with Developing Problems Even those students who have preferred an appropriate educational program for themselves may have problems that require help. A teacher may need to spend from one-fifth to one-third of his time with a few pupils who require a great deal of help, which expropriates the rest of the class from the teacher's full contemplation to their needs. The proficient, by helping these youngsters to resolve their difficulties, frees the classroom teacher to use his time more effortlessly. To

Contribute to the Development of the School's Curriculum Guider, in working with individual students, know their personal problems and inclinations, their capabilities and strengths, as well as the social strains defying them. Guider, therefore, can provide data that deliver as a basis for curriculum development, and they can help curriculum developers form courses of study that more precisely emulates the needs of students. Too often, guider is not comprehended in curriculum development endeavours.

54 To Provide Teachers with Technical Assistance Pre-service teacher training institutions usually provides very definite experience with the more methodological aspects of guidance work. Thus, a need prevails in most schools for assistance with guidance and counselling functions essential to the educational program. Categorically, the guidance counsellor is enough competent to assist teachers with selecting, administering, and interpreting tests; selecting and using collective, informal, and other types of documentations; providing help and suggestions relative to counselling techniques, which teachers can use in instructing their students; and providing leadership in boosting and handling professional development of teachers in guidance functions.

To Contribute to the Mutual Adjustment of Students and the School Guidance has an accountability for cultivating and preserving a cooperative relationship between students and the school. Teachers and guidance counsellors must be apprehensive of students' needs. Students also must make adjustments to the school. They have a duty to devotesomething to the school. A leading contribution of students is that of making relevant use of the school's resources and working toward accomplishments. Such shared adjustment of students and school is simplified by providing suggestions for program improvements, conducting research for educational improvements, contributing to students' adjustment through guidance counselling, and fostering wholesome school-home attitudes. 3.4.4 Guidance for Vocational Guidance helps people accomplish the following goals : • Identify own talents, strengths and weaknesses, family expectations and national requirements to sort out the personal relevance of the educational and vocational options available; • Understand the available education and training options and the requirements for admission and success, and select an appropriate field of study; • Understand the work options that are available, the qualifications required, the means of gaining entry, the life of the worker and the rewards of the jobs; • Translate information about self, educational opportunities and the world of work into short-range and long-range career goals;

55 • Learn effective job-search procedures; • Develop career adaptability to be able to take advantage of opportunities as they occur; • Overcome self-defeating behaviors, gain self-confidence and learn life skills; • Cope with the reactions to job loss of anger, depression, frustration and apathy, and learn to take continuing positive action to become employed again; • Identify alternative occupations when current employment is in jeopardy. Guidance is more than granting information. It is a synthesis of self-development and of the learning and absorption of career, providing educational and labour market information. The development of self-confidence is often a mandatory for taking action for one's career.

The intention of guidance may be achieved via individual counselling, self-preparation, career development courses, computer-assisted guidance and Internet-based guidance systems. 3.5 Group Guidance: Group Leadership Styles and Group Process 3.5.1 Group Guidance Certain definitions of group guidance are cited here to explain the meaning of group guidance clearly. Crow and Crow: "Guidance in group situations usually is thought

of as referring to those guidance services that are made available by school personnel to large or small groups of pupils." Jones: "

Group guidance is any group enterprise or activity in which the primary purpose is to assist each individual in the group to solve his problems and to make his

adjustments." 3.5.2

Characteristics To summarize these, the characteristics of group guidance are as follows:

56 (i) Group guidance is a relationship in which the guidance personnel attempt to help a number of students to overcome their personal problems and difficulties. (ii) Group guidance is a group activity process. (iii) It provides chance to explore a problem, its causes and solution to it as a result of which the individual student gains the ways and knowledge to overcome the difficulty. (iv) The students gain a lot of experiences related to the problem of life in a group situation. 3.5.3 Objectives Objectives of Group Guidance Service: The following are some of the principal objectives

which are to be achieved by group guidance programme: (i) The group guidance is useful for guidance crew to assist the members of the group to attain increased maturity in relation to realistic goals and adjustment. (ii) It empowers the members of group to manifest their individual problem before group and find out the ways for its solution from the group discussion and group judgment. (iii) It helps the members of group to understand and ascertain themselves as a result of which they may be able to achieve broader prospective of themselves and develop intuition in relation to others. (iv) It helps the individual to be aware of their personal needs, demands, strength, weaknesses and problems. (v) It is used to release, painful feelings, frustration and anxiety of the individual member of the group. (vi) It helps individual to explore the unknown problems of the members of the group with typical progress. 3.5.4 Principles of Group Guidance: The group guidance is based on the following principles:

57 (i) The group meant for the group guidance should be compatible in nature. (ii) The group guidance should be helpful and essential for everybody of the group. (iii) Individual problems should not be neglected in case of a group guidance problem. They are to be emphasized, discussed and found out certain solutions. (iv) Almost all members of the group should be initiated and encouraged to solve their individual problems with friendly climate and good relationship. (v) The members involved in the group guidance should not be selfish and in-humanitarian in nature. (vi) The group and the group guidance should be well managed by the needful action of the teachers and guidance workers. (vii) The members of the group should not hide the personal problems before group. 3.5.5 Scope of Group Guidance: The scope of group guidance includes the following issues and problems which are to be explored and solved: (i) Problems in regards to educational courses, educational plans and programmes. (ii) Various curricular issues and topics. (iii) Problems of career choices in the context of facilities gained. (iv) Various occupational issues and problems. (v) Personality problems and issues. (vi) Social problems and related situations. (vii) Job placement and adjustment in job and previous preparations for it. (viii) Economic set-up and problems. (ix) Problems of group life and group adjustment. (x) Solution to various life

problems and success over problematic issues. 3.5.6 Relevance of Group Guidance: In the ambience of school guidance programmes, the group guidance secures an important place carrying several advantages and relevance to individual student and his problems.

58 1. Chance for more contacts: As an integral part of guidance service, group guidance provides a chance for more contacts with friends having similar type of problems. It establishes a good rapport or bond and better relationship with other friends. In a friendly and co-operative situation all the members of the group come forward to expose their faced problems. Then individual problem gets different ways of solution from various minds. "Sink together and swim together" becomes motto of the all students to think over the individual problem which helps them to be closed each other like brothers and sisters of a family. It means the possibility of more contacts becomes possible through group guidance without any disputation and disorientation. 2. Encourages to normal individual student: The prime motive of group guidance is to help the individual students in a group. Generally, the group is designed including normal or average students to be supported by the group guidance services. Various useful information and ways to find out solutions are provided by group guidance to the individual student as a result of which individual student tries to manage himself in his own life situation after the group guidance service. 3. Favorable circumstances for discussion of common problems: The united efforts are chief element of group guidance programme. The group guidance service provides a good opportunity to discuss a common problem which arise in the life of different students. In group guidance programme, the common problems faced by maximum or total number of students are directly quoted and discussed within the group under expert leadership of teachers or guidance workers. Therefore, almost all students of the group work together towards common problems as a result of which they may be capable of solving the problems adequately and fluently. 4. Improvement of student's attitudes and behavior: Group guidance gives much emphasis on the discussion of common as well as individual problems. So, this process of discussion encourages free exchange of opinions and realistic analysis of attitudes. After discussion and analysis about the problems of students, the group members find a path to solve the faced problems which is achieved through balanced judgment and desirable behavior of the students. Therefore, it can be said rightly that group guidance helps the students to improve their attitudes and behavior.

59 5. Emphasis on collective judgment: Sometimes certain students are unwilling to express their personal important problems before interviewer as they feel ashamed of it. Even if some students do not like express their problems before interviewer not taking aim to expose their weaknesses. But in case of group guidance, students of this type like to express their hidden problems before the group as they are the birds of same feather. Then the group guidance service invites collective judgment on problems of individual students. Also collective judgment does not ignore the problems that are common to the group. 6. Opportunity for observation: In the group guidance service, the guidance worker gets chance to observe the student's reaction, behavior and feelings towards a particular problem or group life and situation as a result of which the guidance worker becomes able to know about the various traits of personality of the students. This observation helps guidance worker to understand the student's mental condition, his personality and himself also which are expected to be used in the guidance services. 7. Whole-some development of personality: The student from different family backgrounds, educational status, socioeconomic status participate in the group guidance which encourages better adjustment among students. Besides that, each and everybody gets privilege to express himself before others in a friendly atmosphere. Then all start on thinking on the problems and search for the solution of the problems. This type of co-operative atmosphere and adjustment helps students to develop their personality and its traits as a whole. 8. Awareness of unrecognized needs and problems: The group guidance service is highly required to search about the unrecognized needs and problems of students. The hidden and unrecognized needs and problems of students come out through group interaction, group intimacy and group freedom as a result of which the group guidance worker keeps them in the mind and provides group guidance accordingly. 9. Time saving: The group guidance service, no doubt is time saving as it deals with the large number of students at a time. Much time and attention is needed in case of individual guidance service. But in case of group guidance services, within a limited period of

60 time all students are provided guidance service through guidance worker or group of guidance workers which directly saves much of the valuable times. 10. Money saving: Besides time factor, individual guidance is an expensive process as it engages a separate guidance worker, employs separate techniques of data collection, and extra man power etc. But in a group guidance service large number of the students are provided similar type of guidance service. Therefore, group guidance service is less expensive and it carries much advantages over individual guidance. 3.5.7 Group Leadership Styles and Group Process A leadership style refers to a leader's characteristic behaviours when directing, motivating, guiding, and managing groups of people. Great leaders can inspire political movements and social change. They can also motivate others to perform, create, and innovate. As you start to consider some of the people who you think of as great leaders, you can immediately see that there are often vast differences in how each person leads. Fortunately, researchers have developed different theories and frameworks that allow us to better identify and understand these different leadership styles. The following are just a few of the most prominent leadership frameworks and styles that have been identified: Lewin's Leadership Styles Kurt Lewin recognized that one of the factors that determines a leader's choice of leadership style is the need to make decisions. In 1939 he and his co-workers identified three styles of leadership decision making, the autocratic, the democratic and the laissez- faire. Autocratic leaders make decisions themselves. They do not consult their followers, or involve them in the decision-making process. Having made a decision they impose it and expect obedience. Democratic leaders take an active role in the decision making process but they involve others too. Despite the term "democratic" they don't necessarily put decisions to the vote. Of course, they still carry the responsibility for seeing that decisions achieve the desired outcomes.

61 Laissez-faire leaders have very little involvement in decisions making themselves, pretty much leaving matters to their followers. This might be OK when the followers are capable and motivated but can create problems otherwise! Additional Leadership Styles and Models In addition to the three styles identified by Lewin and his colleagues, researchers have described numerous other characteristic patterns of leadership. The following are just a few of the best-known: The Transformational Leadership Style Transformational leadership is a style of leadership where a leader works with subordinates to identify needed change, creating a vision to guide the change through inspiration, and executing the change in tandem with committed members of a group. Transformational leadership serves to enhance the motivation, morale, and job performance of followers through a variety of mechanisms; these include connecting the follower's sense of identity and self to a project and to the collective identity of the organization; being a role model for followers in order to inspire them and to raise their interest in the project; challenging followers to take greater ownership for their work, and understanding the strengths and weaknesses of followers, allowing the leader to align followers with tasks that enhance their performance. The Transactional Leadership Style Transactional leadership, also known as managerial leadership, focuses on supervision, organization, and performance; transactional leadership is a style of leadership in which leaders promote compliance by followers through both rewards and punishments. Unlike transformational leaders, those using the transactional approach are not looking to change the future, they look to keep things the same. Leaders using transactional leadership as a model pay attention to followers' work in order to find faults and deviations. This type of leadership is effective in crisis and emergency situations, as well as for projects that need to be carried out in a specific way. Situational Leadership Styles Situational leadership is a leadership style that has been developed and studied by Kenneth Blanchard and Paul Hersey. Situational leadership refers to when the leader or manager of an organization must adjust his style to fit the development level of the

62 followers he is trying to influence. With situational leadership, it is up to the leader to change his style, not the follower to adapt to the leader's style. In situational leadership, the style may change continually to meet the needs of others in the organization based on the situation. Hershey and Blanchard's Leadership Styles Hershey and Blanchard's model is one of the best-known situational theories. First published in 1969, this model describes four primary styles of leadership. 1. The telling style is characterized by telling people what to do. 2. The selling style involves leaders convincing followers to buy into their ideas and messages. 3. The participating style is marked by allowing group members to take a more active role in the decision-making process. 4. Finally, the delegating style involves taking a hands-off approach to leadership and allowing group members to make the majority of decisions. Blanchard's SLII Leadership Styles Later, Blanchard expanded upon the original Hershey and Blanchard model to emphasize how the developmental and skill level of the learners influences the style that should be used by leaders. Blanchard also described four different learning styles. 1. The directing style involves giving orders and expecting obedience, but offers little in the way of guidance and assistance. 2. The coaching style means giving lots of orders, but leaders also lots of supportive behaviours. 3. The supporting style, on the other hand, is an approach that offers plenty of help, but very little direction. 4. Finally, the Delegating style is low in both direction and support. What's Your Learning Style? As you can see, there are different ways to conceive of leadership styles. You probably have also noticed that some of these leadership styles bear many similarities to the three core styles initially described by Lewin and his colleagues.

63 3.6 Challenges in Group Guidance The challenges of techniques and activities adopted and employed for group guidance are generally as follows: 1. Career Talk: The career talk is one of methods of providing career information to the students of the group through lectures, seminar's, talk by the professionals in the field and other symposiums related to guidance services. Various information collected by students from different printed materials, books and pamphlets do not serve the practical purposes of guidance services. So that the interaction made by the students with professionals who are in actually on the job provides effective and practical impressions on the students. Objectives: The followings are the objectives of career talk. (i) It helps the students to get information about careers directly from an experienced person in the concerning field. (ii) It provides opportunity to clarify the doubts of the students in relation to career through direct interaction with experts. Phases of Activities: The following are the phases of career talk: (i) Decide the topic which has received much importance. (ii) Prepare a brief note about what is expected from the expert visitor. (iii) Choice of suitable themes. (iv) Selection of the expert. (v) Decision's time and data (vi) Preparation of career brief. (vii) Co-ordination of entire programme. 2. Career Conference: Career conference is organized to invite certain experts and experienced persons from vocational setup to suggest about vocational plans, choices and careers to the students those who are involved in this activities.

64 Objectives: The following are the objectives of career conference: (i) It enables students to get opportunity to collect information about different careers of their choice from experts. (ii) It assists students to get the opportunity to have a direct interaction over a group of careers. (iii) It helps students to achieve broader perspective on various career opportunities. Phases of Activities: The following are the various phases of career conference: (i) Identification of speakers. (ii) Finalization of data, venue and time (iii) Monitoring the activities or programme. (iv) Evaluating the programme. (v) Framing an organizing committee. (vi) Preparation of a plan of activities. 3. Career Corner: Career corner is gathering center of various career books, pamphlets, posters and notices concerning career information. Objectives: The following are the objectives of career corner: (i) It helps students in providing various information about occupations from a variety of career literature of the country and abroad. (ii) It helps students to analyses their employment opportunities by as resulting career index. (iii) It helps students to provide latest information about different jobs. Phases of Career Corner: The following are the various phases of career corner:

65 (i) Selection of a place for career corner. (ii) Collection of career literature from own country and abroad. (iii) Preparation of career index. (iv) Display of career literature. (v) Periodical updating of literature displayed. 4. Case Conference: In the case conference, problems faced by majority of students presented before all. Each student is encouraged to present his way of dealing with problems. Then through discussion of individual cases, a line of action is initiated to solve the problems as a result of which each member of the group learns how to solve his own problems from other's experience, regarding it. Objectives: The following are the objectives of case conference: (i) It enables students to express his own problem before groups. (ii) It enables students to think and find out alternative ways to solve the problem. (iii) It enables students to find out a line of action from discussion. (iv) It enables students to solve own problems learning from others experiences. Phases of Activities: The following are the various phases of case conference: (i) Problem by majority of the group is detected. (ii) Discussion of problems. (iii) Previous experiences about problems of all are discussed. (iv) Finalization of solution of the problems. 5. Committee Reports: The students involved in group guidance are divided into various groups or committees to discuss the problem or various problems from different angles and visions. Then they are advised to prepare and present their reports in groups. Maximum freedom is given to the students to express their views and suggestions in the context of the problem. It helps students to gain knowledge and awareness about the problems and its solutions.

66 Objectives: The following are the objectives of the committee report: (i) It enables students to develop the capacities to adjust with other committee members. (ii) It enables students to understand a problem and think its solutions from different angles. (iii) It enables student to overcome the own problem by experience gained by committee reports.

Phases of Committee Reports: The following are the various phases of committee reports: 4. (i) Formation of various committees. (ii) Problems cited (iii) Solution of problems encouraged (iv) Writing committee reports. (v) Submission of committee reports. (vi) Co-ordination and finalization of committee reports to find out solutions to the problems. 6.

Group Visits: Sometimes the students are encouraged for group visit to particular significant work sites, or places having geographical importance or educational institution to gain direct experiences about the occupation or place or institution. Then they are immediately advised to meet for a conference to discuss and clarify what they observed or what doubts they are having about that visits. Objectives: The following are the objectives of the group visits: (i) It enables students to know about the visited place, occupation and institution. (ii) It enables students to observe the situation and adjust with the concerned person of that occupation, institution and places.

67 Phases of Activities: The following are the various phases of group visits: (i) Selection of spots. (ii) Information about visits should be given to the students. (iii) Organization of visits. (iv) Observation about interested place, person or occupation. (v) Immediate arrangement of conference for clarification of doubts and observations. 7. Audio-Visual-Aids: Audio visual aids like films, slides, film-strips, picture relating various occupations, posters and charts showing importance of curricular choice, and pamphlets regarding other courses and vocational information etc. can be prepared, organized and displayed in an exhibition to provide all the information which would be helpful to students to prepare for solving the problems of educational situation, vocational set up and personal life. Objectives: The following are the important objectives of audio-visual aids: (i) It enables students to know various information's of different educational courses, occupational opportunities and other facilities regarding educational courses and occupations. (ii) It enables students to take right decision after visiting the audio visual aids. (iii) It enables students to adjust in different social set up. Phases of Activities: The following are the various phases of audio-visual aids: (i) Selection of audio visual aids to be cited. (ii) Information of audio visual aids should be verified. (iii) Conduct of showing audio visual aids. (iv) Observation by the students. (v) Co-ordination of the programme.

68 8. Dramatics: Like other techniques, dramatics is an important technique at present. The students are provided good guidance through dramatization of a topic related to student's problem. It is not only meant for the purpose of entertainment, but also it is helpful for the students how to appear interview, how to prepare for an examination and how to achieve good marks in the examination through good notes etc. Keeping these in the mind the topic of drama should be selected and staged. Objectives: The following are the different objectives of dramatics: (i) It helps students to show his latent talents and innate abilities. (ii) It helps students to solve the problems relating to educational, occupational and personal life. Phases of Activities: The following are the different phases of dramatics: (i) Selection of the topic for drama. (ii) Selection and verification of themes of drama. (iii) Arrangement of drama. (iv) Stage of drama. (v) Observation of drama on the basis of topic relating to the student's problem. (vi) Evaluation, co-ordination and achievement of learning the means to solve the problems of life. 9. Question Box: In many cases, it is found that some of the students do not express their problems as they feel shy about their difficulties. Therefore, the need of the question box is highly felt. The students those who are shy in nature are subjects to put their questions in writing into the question box which is meant for the same purpose. After some times, the questions are kept in order for discussion. The students are benefited by the question box technique not being exposed before others by the guidance workers or teachers. Objectives: The following are the important objectives of the question box:

69 (i) It enables students to solve his own faced problems without any hesitation. (ii) It enables students to know the way of solution to the problems by experts not exposing their problems before others. Phase of Activities: The following are various phases of question box: Information for organization of question box is given to the students those who are shy in nature. (i) Question box is kept in a proper place. (ii) Questions are invited. (iii) Questions are sorted. (iv) Questions are left to discussion. (v) Inviting expert views. (vi) Finalization of questions of question box. 10. Informal Discussions: Informal discussion is an important technique which is used for the purpose of group guidance. Here the discussion with the skillful leader and expert is not formal in nature. But the discussion between expert and the group should center around desirable objectives as a result of which the students are benefited. Because the students become able to solve their educational and vocational problems through this informal discussion which is not systematic and formal but helpful for the students. Objectives: The following are the objectives of informal discussion: (i) It enables students to overcome their difficulties what they face without consuming much time for the assistance given by the expert. (ii) It enables students to express all their difficulties before expert to solve their own problems of life situation. Phases of Activities: The following are the various phases of informal discussions: (i) Gathering of students.

70 (ii) Meeting the expert. (iii) Problems are discussed informally. (iv) Finding out solutions to the problems. (v) Evaluation of the informal discussion. 3.7 Let us Sum-up Group guidance services have a much scope and function than merely that of assisting students in making educational and vocational choices in inclusive set up. The aims of guidance are both adjective and developments; its

help the student in making the best possible adjustments to the situations in the educational institution and home and at the

same time facilitates the development of all aspects of his /her personality. Group guidance, therefore should be regarded

as an integral part of education and not a special psychological or social service which is peripheral to

education purpose in inclusive set up. 3.8 Check Your Progress 1. Discuss about current status with reference to Indian School? 2. What is formal and informal guidance? 3. How to prepare a guidance programme for school children in inclusive set up? 4. What is Vocational Guidance? 5. What is Group Guidance? 6. Discuss about the principles of group guidance. 7. Discuss about Group leadership style 8. Discuss about challenges in group guidance How to differentiate between transformational and transactional leadership style. 3.9 Reference Bass, B. M., & Bass, R. (2008). The Bass Handbook of Leadership: Theory, Research, and Managerial Applications. New York: Free Press.

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3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) -available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

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E) MANAGEMENT OF LEARNING DISABILITY

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7 Netaji Subhas Open University B-11(

E) Management of Learning Disability B-11(E) □ □ □ □ □ MANAGEMENT OF LEARNING DISABILITY UNIT-1 : LEARNING DISABILITIES : TYPES 9-22 UNIT-2 :

ASSESSMENT OF BASIC CURRICULAR SKILLS 23-38 UNIT-3 : INTERVENTION STRATEGIES IN BASIC SKILLS OF LEARNING 39-56

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9

Unit -

1 q Learning Disability : Types Structure 1.1 Introduction 1.2 Objectives 1.3 Verbal Learning Disabilities : Dyslexia, Dysgraphia, Dyscalculia 1.4 Nonverbal Learning Disabilities 1.5 Language Disorders 1.6 Associated Conditions: ADHD & ADD 1.7 Emotional & Behavioural Problems 1.8

Check your progress 1.9 Let us Sum up 1.10References 1.1 Introduction The latest challenging sub area of the broader field of special education

is learning Disabilities. This term was proposed by Samuel Kirk at a parents meeting in New York city in the early 1960s.

The idea behind this was to clear the confusing variety of levels that were used to describe the child with relatively normal intelligence who are having learning problems. (Reddy, G. L., Ramar, R., & Kusuma, A., 2014) "Learning Disability" is a term used to describe a specific group of people having learning problems. They generally face problems in the area of reading, writing, spelling and mathematics. Some of these people excel in many areas other than the problem areas. Others are merely slow in acquiring skills. Levels such as dyslexics, learning disabled, slow learners, minimally brain damaged and educationally handicapped are being used to describe such type of people. (Santhanam, T., Babu, B. P., & Sugandhi, S., 2014)

1.2 Objectives After completing this unit, the learners will be able to:

- know the concept of learning disability

10 • be familiar with the types of learning disability • understand the meaning of Nonverbal Learning Disabilities • identify the problems of Language Disorders • perceive the learning disabilities with ADHD & ADD and • comprehend what types of Emotional & Behavioural Problems in learning disabilities

1.3 Verbal Learning Disabilities: Dyslexia, Dysgraphia, Dyscalculia

Learning disabilities, or learning disorders, are an umbrella term for a wide variety of learning problems. Children with Learning disabilities do not face problem with intelligence, motivation, laziness or dumbness. Most of them are just smart as other children. Their brains work differently. It affects how they receive and process information.

Disorder

in one or more of the basic psychological processes involved in understanding or

in using spoken or written

language

is noticed in the children with learning disabilities. The disorder

may occur in various forms such as reading disability, writing disability, Communication and comprehension disability

and numerical disability etc. Learning disabilities are classified into various types. Such as: Dyslexia (Reading Disabilities):

(Sharma, A.R. 2012) Reading plays an important role in education and day to day life. Children with dyslexia show

problems with reading task. They are unable to read. There are two forms of this disability- mild form and severe form.

Mild form dyslexic child has difficulty in reading, but in severe form they are having total loss of reading ability which is

sometimes also known as "Word Blindness". If timely identified and properly guided, mild form of dyslexic children can be

integrated easily with their peers. Intensive remedial exercises are required for severely affected children. Types of reading

problems (Santhanam, T., Babu, B. P. & Sugandhi, S. 2014) (i) Visual dyslexia Difficulties are faced by the children with visual

dyslexia in translating written letters into sounds. Confusion is caused by them with similar configuration of letters such

as bad-bed, fan-fun etc.

11 (ii) Auditory Dyslexia Auditory discrimination problem is the main characteristics of the children having auditory

dyslexia. They face some problems to discriminate between nearest phoneme and nearest words like m & n, p & q, mat

and man, beg & bag etc. Some of them face difficulties with certain words e.g. b, t, s, sh, c while others have problems

with only initial or final consonants sounds. (iii) Sound Blending Sound blending is the ability to synthesize sounds into a

complete word. Children with this difficulty are unable, to blend m-a-t into word mat. The three phonemes of this word

remain as separate sounds, (iv) Memory skills Memory disturbed Children face problem in recalling information

associated with various visual or auditory process. (v) Letter and Word Reversals A common problem of children with

reading disability is to read some letters and words backwards, rotated or inverted. Single letters such as b,d,p,q,n,u,m

and w are often read upside down and backwards. LD children are also observed reversing those words, e.g. saw for was,

parts of words, e.g. tow for two and initial letters, e.g., big for dig. (vi) Critical Reading Skills Comprehension is the base of

Critical Reading which involves critical value judgements based on attitudes and experience of the reader. Judging

accuracy, drawing conclusions, evaluating the author's intention, etc. are the factors of critical reading. Dysgraphia

(Writing disabilities) : (Sharma, A. R. 2012) Children who have writing disabilities may have trouble in writing and spelling.

Children with dysgraphia show problems with spontaneous writing. Mild and severe are the two types of this disability.

When the children face problems to write legibly is called mild dysgraphia. Mild dysgraphic children can read in general

school and severe form of dysgraphic children can copy writing without distortion but cannot write spontaneously.

Remedial exercises are required for the severe dysgraphic children and are thus hard to integrate in the academic areas.

Writing requires muscular control, eye-hand coordination and visual discrimination. It also requires smooth control of

arms, hands and finger muscles. It needs adequate perception of the letter and word formation. Poor motor skills, faulty

visual perception

12 of letters and words, poor muscular coordination and poor memory are some of the problems of LD children. (Santhanam, T., Babu, B. P. & Sugandhi, S. 2014) Types of Writing Disabilities (Santhanam, T., Babu, B. P. & Sugandhi, S. 2014) Handwriting, Spelling and Written Expression are the three types of writing disabilities. (i) Handwriting Handwriting is the important part of all the academic skills. Some children with handwriting deficits are unable to hold a pencil while others have problem in writing certain letters. Some of the more common hand writing disturbances are as following: ● Prewriting Skills ● Letter Formation ● Manuscript Writing ● Cursive Writing (ii) Spelling Spelling is a major hurdle of learning disabilities than other problems. Addition of unneeded letters, omission of needed letters, reversals of whole words, reversals of vowels, reversals of consonants and wrong association of sound, etc. are some common spelling errors. ● Phonetic Ability The ability to transpose sounds to letters accurately is called spelling skills which is not there in many children with learning disabilities. These children have difficulties in auditory memory and auditory discrimination skills, e.g., they spell cat as cad, etc. ● Visual Memory The visual memory is nothing but to retain the memory of either individual letter or the sequential order of letters in words and this is not available in some children with learning disabilities. ● Motor memory Remembering ability is missing with the children with learning disability due to which during movement of hand in writing, certain words are totally forgotten by them. (iii) Written Expression Learning Disabled children are facing some problems in following areas: -

13 ● Expression of Ideas The children with learning disabilities cannot express their ideas properly in written form. ● Syntax and Grammar Some of the children with learning disabilities can expressed their thoughts in writing but many syntax and grammatical errors are observed in their writing. ● Inadequate Vocabulary Lacks of various experiences, the children with learning disabilities have poor vocabularies. Dyscalculia (arithmetic disabilities) Children who have arithmetic disabilities may have problems in calculations, even simple arithmetic, because of an inability to manipulate number relationships. It has also two types- Mild and Severe. Simple mathematical problems have been difficult to them. Children with mild form can read in general school. When difficulties are severe then child cannot understand or not be able to learn number symbols and their relationship. So in severe cases intensive remedial exercises are required. Types of Arithmetic disabilities The most commonly observed difficulties in children with this disorder are: (i) Shape Discrimination In this case it is shows that child cannot understand the shapes. For this it is affect later recognition of specific numbers. Such as 6 as 9. (ii) Size Discrimination Concrete geometric concepts such as big, small, long and short, and abstract numerical concepts such as more and less, cannot be understood by these children. (iii) Classification For mastering math., it is a very important concept to categorize objects into sets. If it is done then problems may arise even in simple operation like counting. (iv) One-to-one Correspondence In this case children with learning disabilities cannot understand ordinal numbers for lack of understanding. (v) Sets and Numbers

14 A well-defined collection or group of objects is called a set and every part of a set is an element of that set. Concept of set is not understood by many learning disabled children. It is difficult for them to recognize the commonalities that distinguish a box of crayons, a bowl of apples or a group of boys as three sets. (vi) Counting In arithmetic training, counting is an important and first step. Basic computational skills of addition and subtraction become a big problem for the children who are unable to count properly and with this difficulty often skip numbers when counting, e.g. 1,2,3,5,6,8,9, 11. Others count correctly, without understanding that each number corresponds to a particular element in a set. (vii) Auditory-visual Association Difficulties are there with these group of children in relating what they see visually with what they know auditorily. They face problem in associating the spoken word 'six' with the written symbol '6' or even written word 'six'. (viii) Place Value The basic to many mathematical functions is the concept of place value. Many learning disabled children do not understand that the same digit may create different value according to its place in numeral (e.g.; 27, 12 or 255). The child with place value difficulty cannot follow the meaning involved in reversing 15 into 51. Some children are not able to complete sums requiring carrying or borrowing (e. g.; add 63 and 18 as 711). (ix) Computational Skills Many of the computational problems are due to difficulties with the fundamental skills of one to one interaction, counting and set notification. (x) Problem Solving Difficulties in solving word problems arise due to problems in language, lack of analysis and reasoning. (xi) Spatial Concept Problems in making measurements of time, distance etc. (xii) Measurement One of the very first principles of measurement is that some objects are taller, shorter, larger or smaller than other objects which might prove confusing to some children.

15 (xiii) Quantitative Language Sometimes an early indicator of later mathematical disabilities are difficulties in understanding such quantitative concepts as more, less, before, after, big, little, larger, fewer, more than, as many as, etc. Some children cannot distinguish a+ from a-, others face problems in perceiving particular symbols as a whole. The equal sign(=)is perceived by some children as two subtraction signs.

1.4 Nonverbal Learning Disabilities

A learning disorder characterized by verbal strengths as well as visual-spatial, motor, and social skills difficulties is called Nonverbal Learning Disorder (also known as nonverbal learning disability, NLD or NVLD). Comprehension of nonverbal clues such as facial expression or tone of voice becomes difficult for the people with this disorder some times. Mathematics and handwriting are the common challenges. Though various nonverbal impairments were recognized since early studies in child neurology, still there is ongoing debate whether the existing ideas of NLD provide a valid diagnostic framework or not. The brain gets information from the eyes and ears and the process is called "input". Learning may suffer if anyone them does not function properly. Auditory processing disorder- According to Professionals, "auditory processing skills" or "receptive language" is the ability to hear properly. The ability to read, write and spell greatly depends on the ability to hear things correctly. If anyone is unable to distinguish subtle differences in sound, or hearing sounds at the wrong speed then it will be difficult to sound out words and understand the basic concepts of reading and writing. Visual processing disorder- Missing subtle differences in shapes, reversing letters or numbers, skipping words, skipping lines, misperceiving depth or distance, or having problems with eye-hand coordination are the symptoms of Problems in Visual Perception."Visual Processing" is referred by the Professionals as the work of eyes." Gross and fine motor skills, reading comprehension, and maths are affected by visual perception. (Sharma, R. 2012)

Motor disorder- People with motor problems might walk with a clumsy gait or have difficulty in throwing or catching a ball, skipping or hopping. Others face fine motor problems when cutting with scissors, buttoning, zipping or even tying a shoe lace. Coordinating perception with motor functions is the problem with the people suffering with the visual motor integration problems. A child suffering with this problem will face problem in tracing, cutting, clipping, throwing, catching and paper -pencil activities. (Santhanam, T., Prasad, B.B. and Sungandhi, S. 2014) In the motor areas, the child faces difficulty in executing: (i) Gross-motor skills (running, jumping, skipping etc.) (ii) Fine motor skills (writing, drawing, pasting etc.) and (iii) Body image and awareness skills (solving puzzles, reading, facial expressions pointing to body parts).

1.5 Language Disorders

The disorders that involve the processing of linguistic information are called Language disorders or language impairments. Grammatical (syntax and/or morphology), semantics (meaning) or other aspects of language may be affected due to this problem. Receptive (involving impaired language comprehension), expressive (involving language production), or a combination of both maybe noticed in this case. All forms of language such as spoken, written and sign language also may occur for the same. According to preliminary research it is observed that biological components, such as low-birth weight, prematurity, general birth complications, and male gender, as well as family history and low parental education may result the chance of developing language disorders. Receptive language disorders (where one cannot properly comprehend language) and expressive language disorders (where one cannot properly communicate their intended message) are the two different indicators of language disorder. (Wikipedia,2018)

Receptive Language Disorders

There are two types of receptive language disorders- acquired or developmental (most often the latter). Due to developmental disorder difficulties in spoken language tend to occur before three years of age. Facing problems to understand meanings of words and sentences, put words in proper order, and inability to follow verbal instruction are the unique symptoms and signs of a receptive language disorder. Language therapy, special education classes for children at school, and a psychologist(if

17 accompanying behavioral problems are present) are the remedy to overcome this problem. Expressive Language Disorders Problems with expressive disorder occur with voice and articulation and also with mental formation of language. Expressive language disorder may take place during the development of child or it can be acquired. A normal neurological development is the result of this acquisition and is brought by a number of causes such as head trauma or irradiation. Certain common features of expressive disorder are limited vocabulary, inability to produce complex grammar and more lexical errors though it may vary. The child may face difficulty in acquiring new words and grammatical structures due to this disorder. Starting to talk later than his/ her peers and progressing at a slower rate linguistically may happen due to this. Struggling with academics and socializing with peers may also occur due to the very nature. Such disorders are commonly treated by the experts like Speech Pathologists and Audiologists. Disorder of spoken language Any short come in the area of listening generally affect spoken language. The following characteristics are noticed in the most learning disabled persons: (Santhanam, T., Prasad, B.B. and Sungandhi, S. 2014) a) Reliance on simple sentence constructions b) Incorrect use of word given in its context. c) Problems with tense, pronouns, possessives, and negatives. d) Omission of words and endings. e) Insertion of extra words or word parts in their sentences. f) Fragmentation of thoughts expressed. g) Awkward organization of spoken language. h) Articulation difficulties. i) Difficulty retrieving words during conversation, often with attempted cover -up through stalling or insertions. The speech of learning Disabled children appears to be very limited in structure and usually contains "filters."

18 Comprehension / Verbal \emptyset Has difficulty following oral directions \emptyset Has difficulty responding to and formulating questions \emptyset May have difficulty expressing self in conversation e.g., incorrect word order, grammatical errors, etc. \emptyset May have word finding problems \emptyset May be slow in responding verbally \emptyset Does not gain information from lectures. 1.6 Associated Conditions: ADHD & ADD ADD and ADHD is the word more or less same. ADD means Attention Deficit Disorder. When attention span is not so normal then called ADD. Every child has some attention problem. But when this problem crossing the limit then suggests it is under ADD. Very young children have short attention spans and act impulsively, but this usually improves with age. If these problems are severe or persistent, they may be due to Attention Deficit Hyperactivity Disorder (ADHD). Children affected by ADHD often have problems paying attention to instructions, finishing tasks, relating to others and staying settled. If the following signs are present in the child for more than six months, professional advice should be sought: \emptyset Easily distracted by their surroundings or other thoughts. \emptyset Inability to focus on any activity for long. \emptyset Overactivity, unable to keep still or stop talking, or \emptyset Impulsively acting without thought to the consequences. These type of children may have difficulty in making friends, have problems at school as a result they are wrongly labeled 'bad child'. If it is noticed that the child needs help the professional advice should be suggested. There are some type of competent of challenging behaviours which is described 'difficult' or 'problematic' behavior. Each individual varies from each other in the frequency and intensity of these behaviours

19 Emerson (1995) define challenging behavior as "culturally abnormal behavior(s) of such intensity, frequency, duration that the physical safety of the person or others is likely to be put in jeopardy, or behavior which is likely to limit the use of, or result in the person being denied access to ordinary community facilities." Challenging behavior can also be learned behavior - if behavior produces a pleasant or desired outcome, it is more likely to happen again. These type of behaviour do not have serious consequences but could be disruptive, stressful or upsetting. In this reference challenging behavior is followed to children with a learning disability or neurological impairment but it is not exclusive. (Sharma, R. 2012) Attention is the ability to concentrate on a task long enough to grasp its essential features. Learning disabled children with attention problems are unable to avoid extraneous stimuli and are attracted by irrelevant stimuli. This also includes inability to focus on one activity for even a reasonable period of time. LD children are always on the move switching from one activity to another fast without completing anyone of them. Depression, anxiety, emotional problems or stress can lead to problems of concentration. The LD persons are considerably inferior in selective attention (cannot select the relevant details), and that they cannot sustain attention or maintain attention till the task is completed. They might exhibit short attention span, distractibility, impulsivity and hyperactivity. 1.7 Emotional & Behavioural Problems

Children with learning disabilities (LD) often have problems that go far beyond those experienced in reading, writing, math, memory, or organization. For many, strong feelings of frustration, anger, sadness, or shame can lead to psychological difficulties such as anxiety, depression, or low self-esteem, as well as behavioural problems such as substance abuse or juvenile delinquency. "Unfortunately," says Dr. Marshall Raskind, an expert in the field of learning disabilities, "these problems can be far more devastating than the academic challenges themselves. Although the severity and duration of a child's psychological difficulties may vary as she grows up, such issues can find their way into and through adulthood." On the basis of several researches in the field of LD some suggestions can be provided to parents for helping them protect their children from developing such problems.

Some explanations for psychological difficulties in kids with LD

It is not difficult to see why children with LD are at greater risk for developing 20 psychological difficulties

Despite the child's efforts and adult promptings to "try harder," children with LD may receive little positive feedback. Their academic struggles and failures are often met with disapproval by teachers, peers, and parents. Such disapproval can take the form of negative labeling of a child as "slow," "lazy," or "dumb." Rather than developing a sense of pride in their accomplishments, children with LD may end up in frustration and shame. Such feeling never helps the child having learning disability develop

positive self concept. In fact, as a result of constant struggle and failure, a negative self-image may develop. Low self-esteem and a lack of confidence only serve to further interfere with learning and academic success and reinforce a cycle of failure and negativity.

The second frequently offered reason as to why kids with LD may develop psychological problems is the social difficulties they often experience

have social difficulties in making and keeping friends.

Psychological problems can have a negative effect on social interaction. Research has shown that children with learning disabilities are less accepted

by the society,

and often rejected by their peers. Teachers and other adults also may tend to have negative views of children with learning disabilities." Such social rejection can result in loss of self-esteem and negative views of oneself. In addition, social rejection can result in feelings of loneliness, which, in turn, may lead to psychological difficulties such as anxiety and depression. There are several psychological, emotional, and behavioural difficulties experienced by children with learning disabilities.

Ø

Research has shown that individuals with learning disabilities may experience increased levels of anxiety. Ø individuals with learning disabilities may be at greater risk for depression. Ø individuals with learning disabilities experience higher levels of loneliness. Ø individuals with learning disabilities may have a lower self-concept (self-esteem). Ø individuals with learning disabilities are at greater risk for substance abuse. Ø individuals with learning disabilities may be at greater risk for juvenile delinquency (there is some debate here).

Kids with LD shows the following

self defeating coping strategies like Ø Quitting, when tasks become difficult or frustrating;

Ø Avoiding a task or activity for fear of failing;

21 Ø

Clowning, to hide lack of confidence or to relieve pressure; Ø Controlling, to counteract a sense of helplessness;

Ø

Being aggressive and bullying, to fend off feelings of vulnerability;

Ø

Denying, in order to manage the pain they would feel if insecurities were acknowledged; Ø Being impulsive, finishing tasks as quickly as possible "just to get it over with." Occasional and short-term use of these unproductive coping strategies is probably not a cause for concern. But when they become the habitual way a child approaches daily tasks, interfering with learning, growing, and enjoying life, it's time to look at the feelings behind the behavior. Some kids with learning difficulties may become either anxious or depressed as a result of ongoing academic and non-academic struggles related to their LD. According

to the

Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV),

which is used by physicians to diagnose psychological problems, a child who is anxious may seem worried most of the time; may act nervous in certain settings, such as in crowds of people, at school, or when expected to perform; or may fear being separated from home or from parents or other adults to whom he's attached. A child who is depressed, according to DSM-IV criteria, seems sad or irritable most of the time; loses interest and pleasure in many activities she used to enjoy; over-eats or loses her appetite; feels inappropriate guilt; has trouble thinking, concentrating, and making decisions; feels worthless or hopeless

The parents should

begin to support the LD kid to regain self esteem, motivation and the pleasure with friends, families and daily activities as soon as they identify or notice unusual attitude among the child's behaviour. 1.8 Check your progress 1. What do you mean by Learning Disability? 2. Discuss briefly the types of Reading Problems. 3. Write a short note on Written Expression. 4. Describe in detail about Arithmetic Disabilities. 5. What do you mean by Non-verbal Learning Disability? 6. Narrate briefly the Emotional and Behavioural Problems related with Learning Disabilities

22 1.9 Let us Sum up In this unit students have the idea of learning disability and which component are involved with the learning disabilities. They have understood the difference between dyslexia, dysgraphia and dyscalculia. After reading this unit, students are familiar with the non-verbal learning disabilities and also identify the language disorder. They have been know the biological components, such as low-birth weight, prematurity, general birth complications, and male gender, as well as family history and low parental education may result the chance of developing language disorders. It is also known that receptive and expressive language disorders are the two different indicators of language disorder. Student can know in this unit Learning disabled children with attention problems are unable to avoid extraneous stimuli and are attracted by irrelevant stimuli. This also includes inability to focus on one activity for even a reasonable period of time. LD children are always on the move switching from one activity to another fast without completing anyone of them. It is clear that Emotional and behavioural problems plays most important role in LD. parents should

begin to support the LD kid to regain self- esteem, motivation and the pleasure with friends, families and daily activities as soon as they identify or notice unusual attitude among the child's behaviour. 1.10 References Reddy, G.L., Ramar, R. & Kusuma, A. (2014), Learning Disabilities (A Practical Guide to Practitioners), New Delhi: Discovery Publishing House Pvt. Ltd. ISBN-978-81- 7141-538-0, p 2 Santhanam, T., Babu, B. P. & Sugandhi, S. (2014), Learning Disabilities and Remedial Programmes, New Delhi: Discovery Publishing House Pvt. Ltd. ISBN-978-81- 8356-257-7, Sharma, R. A. (2012), Fundamentals of Special Education, New Delhi: Sonali Publication. ISBN-978-93-81466-58-2 Sharma, R. (2012), Learning Disabilities and Challenging Behaviours, New Delhi: Sonali Publication. ISBN-978-81-8411-421-8, p 68-69 Wikipedia, (2018) Retrieved from https://en.wikipedia.org/wiki/Nonverbal_learning_disorder

23 Unit - 2 q

Assessment of Basic Curricular Skills Structure 2.1 Introduction 2.2 Objectives 2.3 Assessment of Readiness Skills 2.4 Assessment 2.4.1

Gathering Information from the Teachers/School 2.4.2 Interview with the Child 2.4.3 Testing 2.4.4 Co-Morbidity with ADHD 2.4.5 Other Assessment Procedures 2.4.6 Assessments in India 2.4.7 Reading Assessment Techniques 2.4.8 Writing Assessment 2.4.9 Assessment of Maths Skills 2.5 Teacher Made Test 2.5.1 Construction of Teacher Made Test 2.6 Standardized Test 2.6.1 Needs of Standardized Test 2.6.2 Purpose of Standardized Test 2.7 Interpretation of Test Report 2.8 Let Us Sum Up 2.9 Check Your Progress 2.10 Reference

24 2.1 Introduction The National Information Center for Children and Youths with Disabilities (NICHCY, 1999) listed five purposes of assessment: (1) screening; (2) evaluation; (3) eligibility and diagnosis; (4) IEP development; and (5) instructional planning. Screening is concerned with identifying students who are suspected of having a disability. In the area of Learning Disability assessors would be evaluating children who are exhibiting learning difficulties or delays in acquiring academic skills. Data from the screening would point out the degree to which these students with suspected Learning Disability are approximating average academic growth patterns. Students with extremely deficient skills would be recommended for a full evaluation. This evaluation would delineate the student's strengths and weaknesses, and overall academic progress across the curriculum. Evaluation would encompass three areas, namely, pre-academic, academic, and learning style assessment. Pre-academic assessment provides information related to a student's status on prerequisite behaviors (e.g. attention to task) that need to be acquired before instruction in an academic domain (e.g. math) occurs. Academic assessment allows educators to: pinpoint deficit academic readiness skills; describe a student's overall skill performance level; identify academic skills necessary for learning a domain area; and delineate the steps of a learning task a student has mastered. Learning style assessment involves the identification of a student's individual learning pattern that she has acquired based on her learning and behavior assets and weaknesses (Anthony, et. al. 2005).

2.2 Objectives After going through the unit the learners will be able to: -

- Concept of assessment of readiness skills.
- Explain the assessment of reading writing and maths skills.
- Describe the teacher made test
- Describe the standardized test
- Establish the interpretation of test report

2.3 Assessment of Readiness Skills Young children cultivate swiftly, repeatedly enduring overwhelming alteration and progress substantially,

cognitively, linguistically and culturally. Youngsters, for

25 example, seem to relay from one breakthrough to the next. Still, the ratio of growth and development among young children differs greatly. Undeniably, as a consequence of this immense changeability during early childhood that can be seen in nearly any environment with preschoolers and kindergartners, many professionals hesitate at labeling children as learning handicapped. Studies signify that early arbitration can make a convincing difference in a child's development and many other professionals demand to acknowledge hastily when they figure regenerative delays or see that certain children are not gathering conventional expectations. When this is the case, a convenient appraisal

is essential to regulate whether or not a child will benefit from early intervention and, if so, what kind of intervention. A distinctive all-inclusive judgement will analyze at-risk indicators, make identifications, and approve services needed. This is exceptionally true for children with questionable learning disabilities who display widely-varying differences in cognitive tasks that can complicated overall abilities. Children presenting evidences of developmental delay will profit from efficient, thorough appraisal in some or all of the following areas:

- Upbringing clue about family, early development, health, language, literacy and educational experiences. A document of early developmental turning points will supply information about rate of learning, and note should be made of the age at which parents or teachers first observed "problems."
- Audition and Perception. Some anatomical accounts influence developmental delays. For example, a hearing deterioration can intervene with language procurement; a child with a visual impairment may be impotent to construe and communicate with his or her environment suitably.
- Perception, memory, language, thinking skills, and problem solving. Valuation of these competences and inclinations can boost in differentiating between children deferred in all manners of development and those slow in a few areas, who otherwise perform as well or better than their age peers.
- Listening apperception and expressive language. Observation of the child as he or she broadcasts with parents, teachers and peers validates his or her capability to assimilate single words, sentences, questions and short stories. A child should be able to use words antecedently learned, express ideas in a systematized way, employ the sounds that make words, and play rhyming games, as relevant. Pressures concurred with ceremonial testing may be less apparent during observation, disclosing more of what a child knows or can precise. This is a

26 meaningful area of observation because other representative systems, such as reading, writing, and mathematics are station largely on lingual language. • Alertness and direction of sounds in words, letter names, and picture names. These are good predictors of early reading. • Writing logistics and early content. A child's pencil clamp during the writing process, fragment of drawings, fictitious spellings, and falsify messages can adequately additive the results of more awkward orderly testing. • Mathematics. Testing apparatus assess a child's oral, ocular and cognitive skills by his or her ability to admit numerals and notice determinative and subjective characteristics (more, less, bigger, similar, different). Supplementary intimate scrutiny is also priceless. • Interpretation. A child's ability to sort, group, classify objects and attributes, solve problems, and discern cause and effect can be purposeful by the accomplishment of various assignments and by painstaking detection. • Social and self-help skills and use of non-verbal communication. Children should show the aptitude to put on articles of clothing in the legitimate order, tie shoes, button buttons, select clothes that are appropriate for contrasting activities and weather conditions, and feed themselves. A child should learn to take turns, as play progresses from sensory exploration to a blend of survey and representational play. Penetrating the child perform tasks that require careful surveillance and other visual-spatial skills can be profitable. • Attention. Younger children may be familiar to lack uninterrupted consideration and be uncontrollable, while kindergartners should evolve the ability to stay on- task for a sustained period. Estimation can confess problems in this area. • Maturation. Parents can lend information about a child's ability to concern for himself or herself and for others. From this information, along with observation, a child's level of acceptedliberty can be driven. Finally, periods of indicative testing should reveal a child's rate and pattern of learning and intuitiveness into favorable forms of apprenticeship by affording treasured data on his or her execution over time and across frameworks. 2.4

Assessment Before a specific interpretation of a student is attended, pre-referral consultations by teachers respecting the temperament of the problem, and what available adaptations to

27 instructions in the classroom might be made are significant. The child must be evaluated in all areas accompanying to the doubtful

disability such as health, vision, hearing, social and emotional status, general intelligence, academic performance, communicative status, and motor abilities. (

National Information Centre for Children and Youth with Disabilities, 2000). An ideal assessment for LD is anexpanded system requiring assorted sessions with a qualified educational psychologist. Afar from carrying out a battery of tests, the psychologist also accumulates pertinent information about the child from the teachers and school records. The assessment procedure for LD embraces the following steps: Parental Consent and Parent Interview o Parents' assent must be received before evaluating the child.

The academic, developmental and medical history along with the grammatical usage and communications patterns of the child must be obtained from the parents. The

parent must be involved in the planning of the

intervention program such as attending a resource room, groundwork of compromise and modifications to the child.

2.4.1 Gathering Information from the Teachers/School The psychologist must also notice the child in his/her school setting to know about the child's administration and behaviour in the class, and gain insights from the teacher.

Oversight of previous grades will splash the pattern of academic advancement. These may deliver light into the problem areas of the child. A student's contemporary classroom performance can be compared to Test scores.A number of paths being used freshly include curriculum-based assessment, task analysis, dynamic assessment, and assessment of learning style. These approaches yield rich information about students and are specially important when assessing students from culturally or linguistically diverse backgrounds, and therefore, are critical methods in the over all approach to assessment. (National Information Centre for Children and Youth with Disabilities, 2000).

2.4.2 Interview with the Child "An Interview should be a conversation with a purpose" (Wallace, Larsen, &Elksnin, 1992, p.16), with questions designed to collect information that "relates to the observed or suspected disability of the child". (National Information Centre for Children and Youth with Disabilities, 2000). A careful review of the student's school records or work samples help the assessment team identify patterns or areas of specific concern which may be focused on at the time of interview. The student too, may have much to say to

28 illuminate the problem (Hoy & Gregg, 1994, p. 44). (National Information Centre for Children and Youth with Disabilities, 2000). 2.4.3 Testing Though increasingly controversial, most assessments for LD include standardized tests. There are two types of tests. (i) Criterion-referenced tests are chalked up according to a standard, or benchmark assured by the teacher, the school, or the test publisher. An example of a criterion referenced test might be a teacher-made spelling test where there are 20 words to be spelled and where the teacher has defined an "acceptable level of mastery" as 16 correct (or 80%). (National Information Centre for Children and Youth with Disabilities, 2000). (ii) Norm-referenced tests: Points on these tests are not elucidated according to an infinite standard or criterion (i.e., 8 out of 10 correct, etc.) but, on how the student's performance in contrast with that of the norm group (a large number of representatives of that age group). This helps analysts determine whether the child is performing at a typical level, below, or above that is expected of a given ethnicity, socio-economic status, age, or grade. (

National Information Centre for Children and Youth with Disabilities, 2000). The hindrance of this type of test is that the norms in different regions of a country will vary and too, the norms of the same region will change over a period of time. Hence, in a country like India, each area would have to develop its own barometer which would need to be reviewed annually. Virtually,

the checks for LD have two leading components: 1. Testing for Potential: Performance Discrepancy. 2. Testing Processing Abilities. A two-year conflict between potential and performance is an indicator

of a possible LD. Validity of a significant discrepancy will be evaluated on a case by case basis (Hirisave U, et al., 2002).

The recommended Psycho-educational tests are discussed below

under various heads: 1. Intellectual Assessment: Weschler Adult Intelligence Scale Third Edition (WAISIII),

Woodcock Johnson Tests of Cognitive Ability. 2. Achievement: Recommended tests include: Woodcock Johnson

Psycho Educational Battery-Revised, Nelson Denny Reading Test, SATA.

29 3. Cognitive Processing Abilities:

Woodcock Johnson Psycho-Educational Battery- Revised (Part 1 - Tests of Cognitive Ability), Weschler Memory Scales-Revised, Benton Visual Retention Test, Berry Visuo-Motor Integration Test, Raven Colored Progressive Matrices, Rex Auditory-Verbal Learning Test, Bender Visual Motor Gestalt Test, Halstead-Reitan Neuropsychological Test Battery, Memory-For-Designs Test, Nimhans Index (Hirisave U, et al., 2002).

These tests would have to be altered and norms constituted

for children who come from

divergent backgrounds. Segregation of other disabilities as the primary cause of learning difficulties is vital. Such disabilities include: • Mental retardation. • Sensory deficits. Example: Visual and/ or hearing impairment. • Physical impairment. • History of multiple education settings. • Poor educational background or lack of prior learning. • Cultural differences or lack of experience with the English language (Office of Disability Services).

However, a learning disability may co-exist with the above.

SLD being a language based disorder, it is compulsory that tests for both approachable and expressive language be comprehended in the assessment procedures. 2.4.4 Co-Morbidity with ADHD Many children with LD prosper subordinate

negligence and behavioural complications, Attention Deficit Hyperactivity Disorder (ADHD), which is characterized by developmentally- inappropriate inattention, hyperactivity and/or impulsivity, is often co-morbid with dyslexia (Kadesjö&Gillberg, 2001). The two disorders crop up concurrently in 12% to 24% of individuals with dyslexia (Shaywitz, 2003). However, they do not materialize to divide a common cause (Doyle, 2001; Shaywitz, 2003). Under these precedences, it becomes troublesome to extricate LD from a Primary ADHD (National Information Centre for Children and Youth with Disabilities, 2000). 2.4.5 Other Assessment Procedures Curriculum Based Assessment

30 Straight assessment of academic skills (Curriculum Based Assessment) is one alternative that has lately attained acceptance. "Tests" of performance in this case come directly from the curriculum. For example, a child may be inquired to read from his or her reading book for one minute. Facts or news on the veracity and the velocity of reading can then be correlated with other students in the class. CBA is quick and offers specific information about how a student may vary from his peers. (National Information Centre for Children and Youth with Disabilities, 2000). On account of the assessment is clinched to curriculum content, it grants the teacher to bout guidance to a student's current strengths and diagnose areas where curriculum transformations or adjustments are desired. CBA caters information that is right away compatible to instructional programming. (

National Information Centre for Children and Youth with Disabilities, 2000). The benefits of a

CBA are off-track in a system with a strict curriculum based principally on consciousness as is real in India where CBA may not be the appropriate preference. Dynamic Assessment The aim "is to analyze the character of learning, with the objective of accumulating information to bring about emotional change and to upgrade instruction" (Sewell, 1987, p. 436) (National Information Centre for Children and Youth with Disabilities, 2000). Dynamic assessment comprises a conference or communication between the examiner and the student. This interaction may include designing the chore for the student, giving the student hint or cues as he/she tries to resolve a given problem, asking what a student is deliberating while running on the problem and giving adoration or assistance (Hoy & Gregg, 1994). The interaction allows the examiner to draw terminations about the student's thinking processes and his/her feedback to a learning situation. The "teaching" aspect is followed by a retesting of the student with an identical task but without backing from the examiner (National Information Centre for Children and Youth with Disabilities, 2000). Dynamic Assessment Tools (LPAD) have been advanced by Prof. Reuven Feurenstein at the International Centre for Enhancement of Learning Potential (ICELP), Jerusalem. By all means, dynamic assessment is not without its restraints or critics. One distinct affair is the bulk of training required by the examiner to plan both the assessment and decipher results. Another is a deficiency of operational procedures or "instruments" for appraising a student's achievement or competence in the contrasting satisfied areas (Jitendra & Kameenui, 1993).

31 Alike with these constraints, it is an auspicious extension to current estimation techniques because it merges a teaching component into the assessment process. (National Information Centre for Children and Youth with Disabilities, 2000). Inclined to the difficulties in diagnosis due to environmental destitution evolving understandable dynamic assessment tools would notably profit children with learning difficulties. 2.4.6

Assessments in India

The National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore has developed the index to assess children with LD (Hirisave, U. et. al., 2006).

There are two levels of this index. They are: Level I for children 5-7 years and Level II for 8-12 years. The index comprises of the following tests: a. Attention test (Number cancellation). b. Visuo-motor skills (the Bender Gestalt test and the Developmental test of Visuo- Motor integration). c. Auditory and Visual Processing (discrimination and memory). d. Reading, writing, spelling and comprehension. e. Speech and Language including Auditory behaviour (Receptive Language) and Verbal expression. f. Arithmetic (Addition, subtraction, multiplication, division and fraction) (Hirisave U, et al., 2006). At the Lokamanya Tilak M.G. Hospital, Sion, Mumbai, the procedure for assessment of Specific Learning Disability involves the following: a. Neurological assessment. b. Vision and Hearing tests. c. Analysis of school progress report. d. I.Q. test. e. Educational assessment. f. Psychiatric assessment. g. Case conference. h. Counselling.

32 Most private institutions in India pursue some, if not all of these procedures.

In our country where numbers usually decide procedures, it would be advantageous to support elementary cases for assessments within the educational ambience. The reasons are astounding: Children encountering interruptions or learning problems may be secluded at the first level, provided with favorable help and only those demanding additional assessment would wish to bear further testing. • Ideal assessment procedures being very intricate, cannot be done in a single session. •

Attending clinics and hospitals would be strenuous for the parents from an inferior socioeconomic framework. Information can be comfortably harvested from within the school. Surveillance of the child in the educational setting would be desirable to those made in a clinic. • The

assessment team could involve a psychologist, special teacher/educator, class teacher which, with recommendation from the parent and child, would expedite an all-embracing assessment of the child. • Assessment procedures would include instructional planning, installation and growth of an Individualized Education Program (IEP) appropriate to the child's special needs or demands with a follow up estimation of student proficiency. • Eligibility for special education services/ classroom and accommodations/ modifications is finest determined by a knowledgeable school team. 2.4.7 Reading Assessment Techniques The unlike types of assessment that can be used for calculating development in reading skills in the aspirations that teachers will better understand how distinct accomplishments can be assessed by diversified measures. This characterization of the various assessment techniques may also help teachers to sketch their own classroom assessments, and may help teachers to better understand the district or campus assessments that are already being used with their students. These are: Reading Comprehension Language Comprehension Decoding Linguistic Knowledge Phonology etc

33 2.4.8 Writing Assessment Hughes (2003: 83) suggests that assessing writing involves three issues: 1. Writing tasks should be set that are properly representative of the range of tasks we would expect students to be able to perform. 2. The tasks should elicit writing that is truly representative of the students' writing ability. 3. The samples of writing can be appropriately scored. Many different writing tasks can be used to elicit examples of students' writing ability. The length of text that students produce should be specified. For example: • Writing a letter. • Writing a description of something from a diagram or picture. • Writing a summary of text. • Writing on a topic to a specified length in words or paragraphs. • Completing a partially written text. • Writing a paragraph using a given topic sentence. • Completing a paragraph. • Writing a criticism or a response to a piece of writing. • Writing a story, based on an outline provided. 2.4.9 Assessment of Maths Skills This circumstantial type of learning in which students are learning lessons on how to solve real-life problems can be employed in mathematics. These ideas are bestowed as follows: • Thinking and reasoning: Generating students to communicate in such activities that include gathering evidence, inspection, inquisition, comprehension, generalization, carving, plotting, analyzing, formation of hypotheses, use of trial and error, abstraction and solution-checking. • Settings: Admitting the students to work individually or in smaller groups. • Mathematical tools: The students enroll to use symbols, tables, graphs, drawings, calculators and computers.

34 • Attitudes and dispositions: Students in this class of learning environment learn doggedness, self-managing conducts and contemplation, cooperation and a distinctive keen interest for learning various kinds of situations. 2.5 Teacher Made Test: Cautiously assembled teacher-made tests and patterned tests are akin in many ways. Both are fabricated on the basis of attentively projected table of stipulations, both have the carbon type of test items, and both provide fair directions to the students. Still the two diversify. They differ in the attribute of test items, the dependability of test measures, the agendas for superintending and scoring and the interpretation of scores. No doubt, uniform tests are fine and exceptional in quality, more trustworthy and genuine.

Features of Teacher -Made Test: 1. The items of the tests are organized in order of difficulty. 2.

The test is inclined by the teacher. 3.

The test covers the whole content area. 4. The groundwork of the items harmonizes to the master plan. 5. Test

construction is not a single man's livelihood, rather it is a co-operative venture. 6. A teacher made test

is not a standardized test. 7. Teacher made test

may also be engaged as a tool for impressionable appraisal. 8. The test is advanced by the teacher to double-check the student's achievement. 2.5.1

Construction of Teacher Made Test Teacher made test does not lack a well - planned preparation.

The following steps may be followed for the test: 1. Planning When the teacher prepared a teacher made test, teacher should have programmed for the test. In this connection teacher should include such types of planning like a) Objective of the test

35 b) Syllabus should be covered c) Deciding the objective in behavioral terms

d) Deciding the number and forms of items e) Having a clear knowledge 2. Preparation of the

Test: Outlining is a philosophical facet and preparation is the realistic aspect of test construction. It craves much thinking, rethinking and reading before construction of the test.

After construction of the test items should be aligned in a simple to complex order.

Direction or Command

is an important part of a test construction. Without offering a proper direction or instruction there will be a possibility of defeating the accuracy of the test reliability. It may constitute a misconception in the students also.

Formal assessments give teachers a technique to evaluate knowledge and plan future instruction, but standardized exams or commercially prepared tests don't always correctly assess that information. The excess time required to prepare exams enhance with the promising for more accurate assessments, and with the welfares in mind, teachers can more accurately oversees student learning and progress.

2.6 Standardized Test

The denotation of a standardized test has somewhat replaced over time. In 1960, standardized tests were defined as those tests in which the conditions and content were equal for everyone taking the test, regardless of when, where, or by whom the test was disposed or sorted. The intention of this standardization is to make sure that the scores dependably signify the abilities or skills being measured, and no other things, such as different instructions about what to do if the test taker does not know the answer to a question (Olson, Amy M.; Sabers, Darrell, 2008) By the beginning of the 21st century, the point of convergence switched away from a harsh similarity of conditions towards balanced fairness of conditions. For example, a test taker with a broken wrist might write more slowly because of the injury, and it would be more fair, and produce a more reliable understanding of the test taker's actual knowledge, if that person was given a few more minutes to write down the answers to a most test. However, if the aim of the test is to see how rapidly the student could write, then this would become an alteration of the content, and no longer a standardized test (Olson, Amy M.; Sabers, Darrell, 2008).

3.6 Standardized tests are frequently assigned to as assessments.

An assessment is customarily defined as the accumulation and breakdown of information about one or more students. When tests are standardized, this means that a specific group of students will take the same test that will be scored and analyzed the same way. The Score result for each student is then distinguished to the rest of the group to see how well the students performed. The federal law is noted as No Child Left Behind, or NCLB, was constructed so that schools were held answerable for what students learned all over the school year. States were prescribed to set ambitions and aspirations for students commencing in grade three and, at the end of the year, assess whether students met the required goals and objectives. These standardized, or high stakes, tests not solely provide schools, districts, and states with information about student achievement (or lack of), the tests can also resolve whether or not students are advanced to the next grade level. Furthermore, teachers and/or schools with high numbers of students who do not carry out well on the end-of-year tests could cast unfavorable consequences as a conclusion.

2.6.1 Needs of Standardized Test

A standarlized test is needed (a) to study an individual from different aspects. (b) to study the specific qualities and disqualifications of a person, (c) to study a society or a community from different angles, (d) to compare the different aspects of an individual or a society with another individual or another society.

2.6.2 Purpose of Standardized Test

Through a standarized test we can study any type of behaviour, beliefs, attitude, knowledge, abilities, skill, competency of an individual which are visible and measurable and test able.

2.7 Interpretation of Test Report

During interpretation of test results a taster concentrate himself/herself in the following aspects : (a) Have the hypotheses been adequately tested; (b) is the analysis of rate relationship is logical and perceptive; (c) is it significance of statistical results tested properly; and (d) one the statistical results interpreted and presented without any bias.

3.7 2.8 Let Us Sum Up Learning disability assessment and curriculum Assessment Type of Test Curriculum

in very much important for the students. To obtain a comprehensive set of quantitative and qualitative data, accurate and useful information about an individual student's status and needs must be derived from a variety of assessment instruments and procedures including Response- to-Intervention (RTI) data, if available. A comprehensive assessment and evaluation should use a valid and the most current version of any standardized assessment. curriculum-based assessments, task and error pattern analysis portfolios, diagnostic teaching, and other non-standardized approaches continuous progress monitoring repeated during instruction. Non- standardized and alternative assessments is the traditional form of Assessment, where teachers construct questions, evaluate student responses, assign and check homework, and informally assess student progress every day. Types of tests for reading, writing and math - scholastic reading inventory (SRI) is important test for the students. Woodcock reading mastery test (WRMT-III) is also essential reading skills test. Any other test is gray oral reading test (GORT-5), comprehensive test of phonological processing, test of word reading efficiency (TOWRE-2), rapid automatized naming tasks, test of early reading ability (TERA-3), wide range achievement test. WECHSLER INDIVIDUAL ACHIEVEMENT TEST is measures: Reading, writing and oral language, as well as math skills (depending on which subtests are used) and subtests used, the test can take from 45 minutes to two hours to complete. What the scores mean: Results for this test, like other tests, give a sense of how your child is doing in various academic areas. In this unit is also discuss teacher made test standardized test and test interpretation

2.9 Check Your Progress 1.

Brief discuss about Assessment of Readiness skill 2. What is procedure of Reading Assessment 3. Discuss about the assessment procedure of Writing skill 4. How can assess the maths skill 5. What is Teacher Made test?

38 6. What is Standardized Test 7. Discuss about interpretation of test report 2.10 Reference Anthony F. Rotatori, , Tim Wahlberg, (2005), Comprehensive Assessment of Students with Learning Disabilities, in Sandra Burkhardt, Festus Obiakor, Anthony F. Rotatori (ed.) Current Perspectives on Learning Disabilities (Advances in Special Education, Volume 16) Emerald Group Publishing Limited, pp.133 - 155

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39 Unit 3 q

Intervention Strategies in Basic Skills of Learning 3.1 Introduction 3.2 Objectives 3.3 Language Skills 3.4 Reading 3.5

Writing 3.6 Math Skills 3.7 Study Skills 3.8 Check Your Progress 3.9 Let Us Sum Up 3.10

References 3.1 Introduction

The term "

Specific

Learning Disability" (SLD)

means

a

disorder

in one or more of the psychological processes involved in understanding or

in

using language, spoken or written,

which may manifest itself

in

an imperfect ability to listen, speak, read, write, spell, or

to do mathematical calculations.

Sample Test papers of student with Specific Learning Disabilities are shown below :

40 Source: www.rehabcouncil.nic.in/writereaddata/ld.pdf Learners

with

Specific Learning Disabilities (SLD)

exhibit

a

disorder

in one or more of the basic, psychological processes involved in understanding or

in using spoken or written

languages. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic.

They include conditions which have been referred to

as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia,

etc. 3.2

Objectives After completing this unit, you will be able to:

- explain how to use specific intervention strategies to meet the needs of children with language based learning disabilities (LBD);
- explain how to use specific intervention strategies to meet the needs of children with reading difficulties;
- explain how to use specific intervention strategies to meet the needs of children with writing difficulties;
- explain how to use specific intervention strategies to meet the needs of children with difficulties in basic skills of mathematics and
- explain how to use specific intervention strategies to meet the needs of children with difficulties in study skills.

41 3.3 Language Skills

Language-based learning disabilities are problems with age-appropriate reading, spelling, and/or writing. This disorder is not about how smart a person is. Most people diagnosed with learning disabilities have average to superior intelligence. Many children with reading problems may have spoken language problems too.

The child who has dyslexia as part of a larger language learning disability has trouble with both the spoken and the written word. These problems may include difficulty with the following (

American Speech- Language- Hearing Association, n.d):

-

Expressing ideas clearly, as if the words needed are on the tip of the tongue but won't come out.

What the child says can be vague and difficult to understand (e.g., using unspecific vocabulary, such as "thing" or "stuff" to replace words that cannot be remembered). Filler words like "um" may be used to take up time while the child tries to remember a word.

- Learning new vocabulary that the child hears (e.g., taught in lectures/lessons) and/ or sees (e.g., in books)
- Understanding questions and following directions that are heard and/or read
- Recalling numbers in sequence (e.g., telephone numbers and addresses)
-

Understanding and retaining the details of a story's plot or a classroom lecture

-

Reading and comprehending material

-

Learning words to songs and rhymes

- Telling left from right,

making it hard to read and write since both skills require this directionality

- Letters and numbers
- Learning the alphabet
-

Identifying the sounds that correspond to letters, making learning to read difficult

-

Mixing up the order of letters in words while writing

-

Mixing up the order of numbers that are a part of math calculations

- Spelling
- Memorizing the times tables
- Telling time

42

Intervention Strategies: Special education classes are the place of primary treatment. These classes focus on activities that sustain growth in language skills. The foundation of this treatment is repetition of oral, reading and writing activities. Usually the

Speech Language Pathologist (

SLP), psychologist and the teacher work together with the children in small groups in the class room. Another treatment is looking at a child's needs through the Individual Education Plan (IEP). In this program teachers and parents work together to monitor the progress of the child's comprehensive, verbal, written, social, and motor skills in school and in the home. Then the child goes through different assessments to determine his/her level. The level that the child is placed in will determine the class size, number of teachers, and the need for therapy.

The

goals of speech and language intervention for the child with a reading problem target the specific aspects of reading and writing that the student is missing. For example, if the student is able to read words but is unable to understand the details of what has been read, comprehension is addressed. If a younger student has difficulty distinguishing the different sounds that make up words, treatment will focus on activities that support growth in this skill area (rhyming, tapping out syllables, etc.). Individualized programs always relate to the school work. Therefore, materials for treatment are taken from or are directly related to content from classes (e.g., textbooks for reading activities, assigned papers for writing activities, practice of oral reports for English class).

The student is

taught to apply newly learned language strategies to classroom activities and assignments. To assist the child best, the SLP may work side- by-side with the child in

his or her classroom(s). Intervention with spoken language (speaking and listening) can also be

designed to support the development of written language. For example, after listening to a story, the student may be asked to state and write answers to questions. He or she may be asked to give a verbal and then a written summary of the story. Articulation (pronunciation)

needs are also

treated in a way that supports written language. For example, if the child is practicing saying words to improve pronunciation of a certain sound, he or she may be asked to read these words from a printed list. The SLP consults and collaborates with teachers to develop the use of strategies and techniques in the classroom. For example, the SLP may help the teacher modify how new material is presented in lessons to accommodate the child's comprehension needs. The SLP may also demonstrate what planning strategies the student uses to organize

43 and focus written assignments (

American Speech- Language- Hearing Association, n.d).

Landmark's Six Teaching Principles Landmark's Six Teaching Principles create the conditions for learning that students with learning disabilities need to succeed. Students with language-based learning disabilities(LBLD) make stunning progress with targeted, intensive, skills-based instruction under these conditions. Essentially, these principles are(Newhall Patricia, 2012): ●

Provide opportunities for success to foster a sense of self-efficacy. ● Use multisensory approaches so that all content is conveyed in visual, auditory, and tactile modes (see it, hear it, say it, do something with it). ● Micro-unit and structure tasks to form step-by-step processes, which facilitate learning and provide incremental opportunities for success that help students persist in the face of longer, more complex tasks. ● Ensure automatization through practice and review, as consistency and repetition develop skill. ● Provide models to give students samples of successful work and set clear standards, which helps students begin assignments and self-assess as they work. ● Include students in the learning process, because increasing students' self- awareness as learners helps them engage and invest in the classroom. 3.4

Reading

Over the past 30 years, a great deal of research has been done to identify the most effective reading interventions for students with learning disabilities who struggle with word recognition and/or reading comprehension skills.

Martin, Martin and Carvalho (2008) reviewed a study by the U.S. Department of Education which reported in 2002 that the majority of the approximately 2,887,217 children receiving special education services were identified with a learning disability in reading. The number of children identified as having a reading disability has grown considerably. The preferred methodology for teaching reading fluctuates because of on-going debates as to which methods are most effective. For a reading program to be effective, the program must combine various methodologies based on each child's needs while at the same time implementing the principal techniques of the program.

44 Intervention Strategies:

Following suggestion and strategies may help children who have language problems i.e problems with decoding, comprehension, or reading retention (

NSOU, B.Ed. Special Education SLM, 2016): ●

Play word games. Word games and puzzles are fun and also

build vocabulary and word understanding. Try crossword puzzles, word bingo, etc. ● Read every day. Encourage children to read directions, labels and signs in the classroom, at home,in the car, and at stores or shops, and have them take turns reading aloud

with a classmate, parent, or sibling. Discuss in class or at home what you are reading. ● Model reading as an enjoyable activity. You might

informally discuss what you are reading with your child or let himor her see family members or teachers enjoying reading. Have DEAR time several times a week where everyone "Drops Everything And Reads" for 20 minutes. ●

Put learning to use. Help children remember by having them explain, discuss, or apply information they have just read, letting them "teach" you facts or ideas they have learned from their reading, or encouraging them to act out characters from their reading selections. ●

Listen to books. Child may benefit from listening to his or her textbooks and trade books on tape or by using assistive technologies like screen readers.

- Read to child every night. Read novel above his or her reading level to stimulate and enrich language, creativity, and interest. Ask structured questions and encourage the child to predict multiple endings to each chapter.
- Engage children's senses while learning. Children with learning disabilities learn best when they use many of their senses to get information. Multisensory instruction allows the child to see, hear, touch, and act out words. For example, to learn letters children may read the printed letter, say the letter

45 name, shape the letter out of clay, trace the letter onto paper, and form their bodies into the shape of the letter. Beyond phonics, there are key intervention strategies that do not necessarily isolate students from one another by sorting them into levelled groups. A few highlights include (Lexia, 2016):

1. Peer-Assisted Learning Strategies (PALS) exercises pair strong and weak readers who take turns reading, rereading, and retelling.
2. Teacher Read-Aloud This activity, says Julie Adams of Adams Educational Consulting, is "perhaps one of the most effective methods for improving student fluency and comprehension, as the teacher is the expert in reading the text and models how a skilled reader reads using appropriate pacing and prosody (inflection)." Playing an audiobook achieves similar results.
3. Shared Reading/Modeling By reading aloud while students follow along in their own books, the instructor models fluency, pausing occasionally to demonstrate comprehension strategies.
4. The Crazy Professor Reading Game According to the article, to bring the text to life, students will:
 - Read orally with hysterical enthusiasm
 - Reread with dramatic hand gestures
 - Partner up with a super-stoked question-asker and -answerer
 - Play "crazy professor" and "eager student" in a hyped-up overview of the text
 - With Fluency-Oriented Reading Instruction (FORI), primary students read the same section of a text many times over the course of a week. Here are the steps:
 - The teacher reads aloud while students follow along in their books.
 - Students echo-read.
 - Students choral-read.

46 | Students partner-read. | The text is taken home if more practice is required, and extension activities can be integrated during the week.

3.5 Writing "There is nothing to writing. All you do is sit down at a typewriter and bleed." ? Ernest Hemingway

Writing is one of the most important tools for learning and showing what someone has learned (Harris & Graham, 2013). It requires the ability to plan, produce text, revise, and self motivate (Santangelo, 2014) which can be a difficult academic skill for many students. It is even more difficult for students with a learning disability (LD) who have executive functioning deficits that affect how they "receive, store, process, retrieve, express, or manipulate information" (Cortelle & Horowitz, 2014, p. 3). Executive functioning helps people manage time, pay attention, switch focus, plan and organize, remember details, and do things based upon personal experiences (Bhandari, 2015). Poor executive functioning skills make it difficult to plan how much time should be dedicated to the writing process, plan ideas during prewriting, organize topics within the paper, and use memory to relate text-to-self ideas. Dysgraphia is the term associated with a specific learning disability in writing. Cortelle and Horowitz (2014) described characteristics of dysgraphia as "a tight, awkward pencil grip and body position, tiring quickly while writing, avoiding writing or drawing tasks, trouble forming letter shapes as well as inconsistent spacing between letters or words, difficulty writing or drawing on a line or within margins, trouble organizing thoughts on paper, trouble keeping track of thoughts already written down, difficulty with syntax structure and grammar, large gap between written ideas and understanding demonstrated through speech."

INTERVENTION STRATEGIES:

Some of the following writing strategies and suggestions may help children who are experiencing problems with writing. Many of those listed are accommodations

designed to

work around a child's differences by offering alternate approaches at home and school.

Choose the strategies that you think might be helpful to your child. (PBS Parents, n.d)

47 | Create a safe environment for writing. Balance feedback between what is good about the writing and what needs improvement, always highlighting whatever is positive in a child's writing and avoiding direct comparison to other children's work. | Make your expectations explicit. Clarify your expectations when presenting an assignment or giving directions to children by telling them the process you want them to use to write a report and by modeling that process for them. | Evaluate content and mechanics separately. Help a child to see that he or she may have good ideas and still need to work on a particular writing sub-skill. Always correct any grammatical or other speech errors in private and do so in a respectful way. | Encourage a variety of writing activities. Keeping a daily journal can be motivating and can provide needed writing practice. Consider other fun writing assignments such as writing to pen pals or suggest that your child compose songs or record family trips. | Encourage free writing. Set a time each day during which children can write about anything that interests them. Stress that no one else will read or evaluate what he or she writes. | | | | | Separate the creative aspects of writing from the motor aspects. Some children who struggle with the physical process of recording their own ideas benefit from dictating assignments to a parent or someone else. | Allow enough time for each assignment. Help children estimate how long a given task will take to complete. Consider giving them additional time to complete a written assignment or test rather than have something due at the end of the class period. | Provide time for revision and proofreading. Encourage children to revise and proofread their drafts, and provide time for them to do so. Explain to them that writing is a process and that it is easier to proofread what they have written several days -rather than immediately- after writing it. Introduce your child to one of a variety of simple graphic organizers.

48 Investigate computer programs including word webs, story maps, and venn diagrams, to help him or her approach writing in a systematic way. The Education Place Web site has a number of useful tools you can download. Provide access to programs or tutors that can help your child improve his or her word processing skills. Many children who struggle with motor output (handwriting) benefit from using a computer for their written work. Summer time is optimal for acquiring these skills. 3.6 Math Skills Many students face difficulty in learning the basic skills of mathematics and in their efforts to mathematical problem solving in daily life. Mathematics based tasks like handling money, measurement, telling time, recognize bus number etc. are essential part of our daily life. In the absence of intensive instruction and intervention, students with mathematics difficulties and disabilities lag significantly behind their peers (Jitendra et al. 2013). INTERVENTION STRATEGIES:

Some of the following math strategies and suggestions may help children who are experiencing problems with mathematics. Identify strategies that you think will help your child and, if appropriate,

talk to your child's teacher about using some of

the strategies in school (

PBS Parents, n. d). | | | | |

Maintain consistency and communication across school and home settings. Parents, tutors, and classroom teachers should coordinate and use the same instructional approach.

| | | | |

Teach basic concepts using concrete objects. For example, let children explore number concepts by counting the legs of a chair to find the number four or by subtracting crayons from a box. The progression from understanding concrete materials, pictorial representations, and abstract number representations may take some children longer than others.

| | | | | Provide specialized materials. To help children

organize their calculations, have them use graph paper (or lined paper turned sideways) to keep numbers in columns.

Encourage the use of scrap paper to keep

49 work neat, highlighters to underline key words and numbers, and manipulatives such as base-ten blocks or fraction bars.

| | | | |

Make your expectations explicit. Tell children the procedures you would like them to use when solving a problem, model each procedure for them, then have them tell you what they are expected to do. Some students benefit by having a math notebook filled with examples of completed problems to which they can refer if they become overwhelmed or confused.

| | | | |

Provide time for checking work. Emphasizing that completing math assignments is a process, encourage children to become comfortable reviewing their work, making changes, or asking questions when they are unsure of their answers. | | | | |

Give children opportunities to connect mathematical concepts to familiar situations. For example, when introducing measurement concepts, have children estimate their measurements before measuring classmates' and family members' heights or weighing their book bags' when empty and when full.

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Help children apply math concepts to new situations. For example, show them how to use percentages to understand the price of a pair of shoes on sale at the mall or the amount of their allowance they spend on snacks. Provide access to programs or tutors that can help a child improve his or her math skills. Tutors can assist children with weak math sub-skills, such as multiplication and division. Provide tutors during summer months or after school to boost performance and ensure that the child retains his or her skills.

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Help children keep track of problematic areas. When doing math homework, children may benefit from having their most common errors listed on flashcards. They can then refer to the cards while completing their assignments.

l

Play math games. To encourage automaticity with math facts, students may benefit from playing math games (i.e. dice, playing cards) and listening to commercially available audiotapes that provide a fun way of learning math facts.

50 3.7

Study Skills Study skills refer to the method or strategies, a student adopts to learn the content of his course materials effectively and independently and reproduce contextually. All of us have different study habits. Success of the student is largely dependent on the study habits one adapts. As there is a wide variation in study skills, there is no single foolproof method. However, there are a few strategies, which will certainly help in improving the study habits and developing good study skills. Good study skills involve listening to what is being taught, taking notes, storing in memory the subject matter, systematic organization of the learnt subject matter and responding correctly when asked to answer questions in the subject- orally or in writing (NIMH, 2003). INTERVENTION STRATEGIES: The following method of reading, called the SQ3R Method, was developed to help people read faster and study better (Mayland Community College, 2002). SQ3R Method of Reading SURVEY—QUESTION—READ—RECITE—REVIEW Survey: This step takes only a few minutes. Go through the chapter quickly. Glance at the chapter title, the introduction, headings, and summary paragraphs, if any. Notice any pictures, diagrams, graphs, tables, etc. Read any bold print. Previewing your text gives you some background about topics you may have never encountered before. You pick up general information. You know where to find information. You gain a better idea of how the information is organized and presented. It opens up a place in your brain where the new information will be stored. It saves time by reducing the amount of time it takes to read the chapter. Another advantage is that it creates an interest in what is coming up. It motivates you to read less interesting material to get to the "good stuff." Question: Before you begin reading a section, turn the heading into a question. For example, if the heading is Basic Causes of Stress, your question would be "What are the basic causes of stress?" This arouses your curiosity and increases your comprehension. It also brings to mind information you already know. The questions you ask help make important points stand out as you read. This forces you to think about what you are reading. Read: Read the material under the heading with the purpose of getting the answer to your question. Read with concentration. Identify the main ideas and highlight or

51 underline them. Read sections at a time and stop to ask questions. Jot down notes and ask yourself what you just read. If you can answer your question, read on. If not, look it over again. A good practice for more difficult reading is to do an outline of chapter in your notes. By leaving extra space you can fill in details during the class lecture. Make note of new vocabulary and write definitions in your notes. Recite: This step requires that you recite out loud the answer to the question you asked prior to reading a section of the text. Say it in your own words. If you find you cannot answer your question, go back and look for the answer, then try again. This way you will know if you have understood the material. Besides answering your questions, look away from the book and try to state in your own words what the reading is about. You may jot down brief notes about what you read. When you are done, go back and make an outline of the chapter. Review: After you have read the entire chapter, look over the notes you made to familiarize yourself with the important information. Check your memory by reciting the main points out loud. Then review the main points in your notes, making sure you understand them. Add to your notes from the text, if necessary. Always do a review of the chapter after completing your reading. Then do quick reviews before and after each class. Do longer, more in-depth reviews before exams. Don't wait until exam time to review your textbook. Review once a week all the readings from that week. Be sure you can summarize the key points. Write them down to further reinforce learning. Finally, make up test questions from what you have read. Be sure to write them. The SQ3R Method of reading sets the stage for interacting with your text material. As you go through the five steps you are gaining information, formulating questions, thinking about what you are reading, and trying to find answers to your questions. You are also reciting information out loud. All of these steps require the use of your auditory, visual and kinaesthetic senses. When more senses are involved, more effective learning takes place. Memory Strategies(NIMH, 2003). Poor memory is very common characteristic among children with learning problems. Memory strategies are designed to help students retrieve information quickly. Some common memory strategies are discussed below:

52 Mnemonic devices or memory tricks help you remember factual information like names, dates, formulas, or other information that requires rote memorization. Some sample mnemonic devices are: I Rhymes: "Thirty days hath September, April, June, and November..." I Creative Sentences: "My very eager mother just served us nine potatoes." (the planets in order from the sun) I Acronyms: NASA (National Aeronautics and Space Administration) VIBGYOR (the colors of the rainbow: red, orange, yellow, green, blue, indigo, and violet) IPMAT (stages of cell division: interphase, prophase, metaphase, anaphase and telephase) Creating visual images of the content. Rehearsing by repeating the content. Classifying, grouping and clustering information for easy recall. Semantic/ Concept Mapping: Content to be presented in an order to recall information when needed. One way of semantic mapping is associating the content to a clock dial. Learning Preferences(Mayland Community College, 2002). We all use all three learning channels. In fact, we use all our senses in learning about the world around us, but each of us has a tendency to lean more heavily on one of the three learning channels - visual, auditory, or hands on. You can improve your study habits by developing all three learning channels. TO IMPROVE AS A VISUAL LEARNER... I visualize what you are studying I use color in your notes (colored pens, highlighters, etc.) I visualize what the instructor is lecturing about I draw pictures and diagrams

53 I use mind maps in your notes I use picture and graphics to reinforce learning I learn from videos TO IMPROVE AS AN AUDITORY LEARNER... I listen to tapes of recorded assignments I tape record your own textbook reading I read out loud I talk over ideas from class and what you are studying with other students I participate in class discussions I listen to audiotapes on the subject TO IMPROVE AS HANDS ON LEARNER... I stand up and move around while you are studying I take frequent breaks while studying I make use of your hands and write things down as you study I use the computer to reinforce learning I be physically active; experiment with objects I memorize or drill while walking or exercising 3.8 Check Your Progress 1. How is the term specific learning disability different from term dyslexia? 2. What is SQ3R? 3. Explain "Study Skills". 4. Discuss Landmark's Six Teaching Principles. 3.9 Let Us Sum Up Students with language-based learning disabilities (LBLD) make stunning progress with targeted, intensive, skills-based instruction under Landmark's Six Teaching Principles.

54 Some strategies that may help children who have reading problems i.e problems with decoding, comprehension, or reading retention are play word games, read every day, model reading as an enjoyable activity, put learning to use, listen to books, read to child every night, engage children's senses while learning. Writing intervention strategies involved a safe environment for writing, encourage a variety of writing activities and free writing. Some strategies that may help children who have math problems may include teaching basic concepts using concrete objects, providing specialized materials, applying mathematical concepts to day to day situation, playing math game etc. Study skills intervention strategies follow methods viz. SQ3R Method of Reading, Memory Strategies and Learning Preferences. 3.10 Refereces American Speech-Language- Hearing Association (ASHA). (n.d). Language-Based Learning Disabilities (Reading, Spelling, and Writing). Retrieved from [https:// www.asha.org/public/speech/disorders/LBLD.htm](https://www.asha.org/public/speech/disorders/LBLD.htm) Bhandari, S. (2015). WebMD: What is executive functioning? Retrieved from <http://www.webmd.com/add-adhd/guide/executive-function>. Cortielle, C., & Horowitz, S. (2014).

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56 Notes













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mission? Any system of education which ignores Indian conditions, requirements, history and sociology is too unscientific to commend itself to any rational support. — Subhas Chandra Bose

1 B.

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Dr. Ashit Baran Aich Registrar(Actg.)

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA - C C-12 : ASSESSMENT AND IDENTIFICATION OF NEEDS [HEARING IMPAIRMENT]

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7 Netaji Subhas Open University AREA - C C-12 : ASSESSMENT AND IDENTIFICATION OF NEEDS C-12 □ □ □ □ □

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Assessment and Identification of Needs UNIT - 1 : EARLY IDENTIFICATION OF HEARING LOSS : NEED & STRATEGIES 9-40 UNIT - 2 : ASSESSMENT AND IDENTIFICATION OF NEEDS 41-81 UNIT - 3 : ASSESSMENT OF LANGUAGE & COMMUNICATION 82-119 UNIT - 4 : ASSESSMENT OF SPEECH 120-146 UNIT - 5 : EDUCATIONAL ASSESSMENT AND IDENTIFICATION OF NEEDS 147-176 8 9 1.1

Needs for Early Intervention Hearing loss is a silent, hidden handicap in children. Children especially infants and toddlers cannot tell us what they are not hearing well, hence it's hidden. If undetected and untreated, this can lead to delayed in speech and language development, social and emotional problems and academic failure, therefore it's called a handicap. Detection of hearing loss as early as possible and as young as the new-born period can be applied for effective treatment which significantly reduces the handicap of hearing loss. However, since parents are unaware that an accurate hearing test can be received by any child even a new born infant, identification of a child's hearing loss is delayed. During 1989 the United States federal government accepted a new commitment aimed at the reduction of the harmful effects of childhood hearing loss. Research studies have demonstrated that early intervention with hearing impaired children results in improved language development, increased academic success and increased lifetime earnings. Since hearing impaired children who received early intervention require less costly special education services later, hence it is also economically beneficial. Fitch et al (1982) state that the greater value of such programs may lie in the identification of increased numbers of children with mild to moderate conductive losses that are amenable to treatment. Communication is learned in early infancy (Bloom & Lahey, 1978) which is essential for growth and language but the child's need for language and communication should not pressure parents into making hasty choices between program options. In 1969 National Committee was formed of representatives from the Academy of Paediatrics, the Academy of Ophthalmology and Otolaryngology and the American Speech and Hearing Association charged with making recommendations for new born infant hearing screening. The committee at that time addressed itself to the use of behavioural observation hearing screening tests that had been developed and described by Downs and Sterritt (1964) and Downs and Hemenway (1969). Unit - 1 □ Early Identification of Hearing Loss : Needs & Strategies

10 More importance was given by the committee for the development of a high risk register for deafness. Richards and Robert (1967) stated that a high risk register to be efficient should identify a disease that is 14 times more prevalent in the register than in the general population. Concept of high risk assumes identification of a small group of children who have a history of physical condition and identifies them as possessing a high chance of having the target handicap. The high risk register were further recommended for a buttressed by a National Maternal and Child Health Conference that delineated Guidelines for Early Screening (Conference of Hearing Screening Services for Preschool Children, 1977). The conference reaffirmed the Joint Committee program and some supplementary suggestions were made. They are: a) Audiological follow ups of the high risk infants shall be made as soon as possible but certainly by 7 months. b) The mother child relationship shall be safeguarded by education and careful information in the first 4 months. c) Informed consent shall be obtained. d) Information shall be provided on what to look for in later infancy. e) The development and implementation of adequate identification and diagnostic procedures related to hearing impairment be undertaken by public health agencies. The Joint Committee on Infant Hearing met again in 1982 and in 1990 to propose new position statements relevant to practices of identifying the hearing impaired neonate and infant. The Joint Committee on Infant

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Hearing (1990) represented the American Speech Language Hearing Association (ASHA), American Academy of

Paediatrics, the American Academy of Otolaryngology Head and Neck Surgery, the Council on Education of the Deaf and the directors of Speech and Hearing Programs in state Health and welfare agencies. Recent research and new legislation suggest the need for expansion and clarification of the 1982 criteria. The 1990 statement expands the risk criteria and makes recommendations for the identification and management of hearing impaired neonates and infants. It has been recognized by the committee that the recommended protocols may not be appropriate for all institutions so modifications in screening approaches

11 may be necessary for accommodation of specific needs of a given facility. In the development" of a screening program, factors such as cost and availability of equipment, personnel and follow up services are important for considerations. Risk Criteria : Neonates (birth-28 days) The risk factors for the identification of those neonates who are at risk for sensorineural hearing impairment include the following: 1. Family history of congenital or delayed onset childhood sensorineural impairment. 2. Congenital infection known or suspected to be associated with sensorineural hearing impairment such as toxoplasmosis, syphilis, rubella, cytomegalovirus and herpes. 3. Craniofacial anomalies including morphologic abnormalities of the pinna and ear canal. 4. Birth weight less than 1500 grams 5. Hyperbilirubinemia at a level exceeding indication for exchange transfusion. 6. Ototoxic medication including but not limited to the aminoglycosides used for more than 5 days and loop diuretics used in combination with aminoglycosides. 7. Bacterial meningitis 8. Severe depression at birth may include infants with Apgar scores of 0-3 at 5 minutes or those who fail to initiate spontaneous respiration by 10 minutes of those with hypotonia persisting to 2 hours of age. 9. Prolonged mechanical ventilation for a duration equal to or greater than 10 days. 10. Stigmata or other findings associated with a syndrome known to include sensorineural hearing loss. Risk Criteria- Infants (29 days-2 years): The factors that identify those infants who are at risk for sensorineural hearing impairment include the following: 1. Parent /caregiver concern regarding hearing speech language and /or developmental delay.

12 2. Bacterial meningitis 3. Neonatal risk factors that may be associated with progressive sensorineural hearing loss (e.g. cytomegalovirus prolonged mechanical ventilation and inherited disorders) 4. Head trauma especially with either longitudinal or transverse fracture of the temporal bone. 5. Stigmata of other findings associated with syndromes known to include sensorineural hearing loss 6. Ototoxic medications including but not limited to the aminoglycosides used for more than 5 days (e.g. gentamicin, tobramycin, kanamycin, streptomycin) and loop diuretics used in combination with aminoglycosides. 7. Children with neurodegenerative disorders such as neurofibromatosis myoclonic epilepsy, Friedrich's ataxia, Huntington chorea, Werdnig-Hoffmann disease, 8. Childhood infectious diseases known to be associated with sensorineural hearing loss (e.g., mumps, measles). JCIH met again in 1994, 2000, 2007 to propose new position statements. According to JCIH (2007) families of infants with all degrees of hearing loss should be offered early intervention. EHDI should be linked to the recognised point of entry for infants with a confirmed hearing loss, and be intervened by professionals with expertise in hearing loss including educators of the deaf and speech language professionals. Appropriate interventions offered include both home based and centre based options. A comprehensive guidelines for early hearing detection and intervention programs has been stated by recent JCIH 2013 to meet the needs of children who are deaf or hard of hearing for establishing strong early intervention systems with appropriate expertise Three groups of people must work together. a) Parents are in the best position to identify their child's hearing difficulties. Our job can be improvised by making the parents aware of the danger signals and of the available sources that are applicable for them. b) Physicians are needed to be more responsive regarding the parent's concerns about their child's hearing. c) Initiation of high risk screening programs can help state agencies. Research indicates that up to 75% of infants born deaf or with hearing impairments can be identified by such programs.

13 References: ●●●● Fitch JL, Williams TF, Etienne JE: A community based high risk register for hearing loss. Journal of Speech & Hearing Disorder 47:373-375, 1982. ●●●● Bloom L, Lahey M: Language development and language disorders. New York: John Wiley & Sons, 1978. ●●●● Downs MP, Sterritt GM: Identification audiometry for neonates: a preliminary report. Journal of Auditory Research 4:69-80, 1964 ●●●● Downs MP, Hemenway WG: Report on the hearing screening of 17000 neonates. International Journal of Audiology 8:72-76, 1969 ●●●● Richards IDG, Robert CJ: The at risk infant. Lancet 2:711-714, 1967

14 1.2 Overview to Behavioural and Objective Techniques in Screening Hearing Loss Hearing loss is not a visible disability, and even normal hearing children may not begin talking upto 2 years of age. Thus if hearing loss is not detected through newborn hearing screening programs, it often goes undetected after 18 months of age, especially in children who have no medical ailments and/or other disabilities. In concert with recommendations of the Joint Committee of Infant Hearing (JCIH- 2000) and the National Institute of Deafness and other Communication Disorder (NIDCD-1997) early hearing detection and intervention programs must use screening measures that demonstrate certain response and measurement characteristics. These are as follows:- 1) The response should be capable of being measured reliably under a wide variety of conditions. 2) The response should have predictive value i.e it should be present in nearly all normal -hearing infants and abnormal in nearly all infants with hearing loss. 3) A screening procedure should use objective criteria to define both the method for a technically correct screening test and the guideline for a "pass versus refer" outcome. 4) The procedure should achieve a low referral rate for follow-up, prevent unnecessary costs and parental anxiety. Types of hearing screening procedures A variety of procedures are presently used in hearing screening programs for children from infancy through high school. Not a single procedure is effective by itself in identifying all hearing losses. 1) Developmental checklist :- It has been used to obtain information from parents or other caregivers regarding the auditory behaviours of children. It is useful to obtain functional information regarding auditory and oral development, especially for very young children or children who are difficult to assess.

15 Northern and Downs (1974) At 0 to 4 months - When he was sleeping quiet, did sudden noise awaken him momentarily ? did he cry at very loud noise? At 4 to 7 months - Did he begin to turn towards sound that was out of his sight? Did he keep on making babbling noises of a large variety at 5 and 6 months? At 7 to 9 months - Did he turn to find the source of sounds out of his vision? Did he gurgle or coo to voices or sounds that he could not see? Did he make sounds with rising and falling inflections? At 9 to 13 months - Did he turn and find a sound anywhere behind him? Did he begin to imitate some sounds what specific sounds did he say ? At 13 to 24 months- Did he hear you when you called from another room? Did his voice sound normal? 2 HIGH RISK RESISTER: - Professional leadership in infant hearing and early detection has been largely provided by the Joint Committee infant hearing (JCIH) They provided historical risk factors for hearing loss as follows 1972 1. Family history 2. Hyper bilirubinemia requiring exchange. 3. Congenital infection (TORCH -toxoplasmosis. Other includes syphilis, rubella, cytomegalovirus, herpes simplex) 4. Craniofacial anomalies (Defects) 5. Birth weight less than 1500 gm 1982 6. Bacterial meningitis 7. Apgar score of ≤ 3 at 5 minutes 1990 8. Ototoxic medications including, but not limited to the amino glycosides used for more than 5 days. 9. Prolonged mechanical ventilation for 10 days or more 10. Associated with syndrome 1994 a change to Apgar score of 0 to 4 at 5 minutes

16 1994 b ototoxic medication, including but not limited to , the amino glycosides, used in multiple courses 1994 c mechanical ventilation lasting 5 days or longer JCIH 2000 indicators for use in neonates (birth through age 28 days) where universal hearing screen is not yet available . 1. An illness or condition requiring admission of 48 hours or longer to NICU 2. Stigmata or other findings associated with a syndrome known to include a sensory- neural and or conductive hearing loss 3. Family history or permanent childhood sensory- neural hearing loss 4. 4. Craniofacial abnormalities ,including those with morphologic abnormalities of pinna and ear canal 5. In utero infection such as cytomegalovirus ,herpes,toxoplasmosis , or rubella 3) AUDITORY BRAINSTEM RESPONSE ABR and Automated auditory brainstem response (AABR ex ALGO -1 plus) are electrophysiological procedures used for hearing screening , based upon brainstem response to sound. When used as a screening procedure ABR primarily detect hearing losses that are greater than 30dB in the frequency range 1000 to 4000 Hz with a sensitivity 100% and specificity 96 to 98%. ABR may be used to detect auditory neuropathy or neural condition disorders in newborns. Because ABR are reflective of auditory nerve and brainstem function, these infants can have an abnormal ABR screening result even when peripheral hearing is normal. ABR MEASUREMENT PARAMETERS - Guidelines for stimulus and acquisition parameters in newborn auditory screening with ABR are summarized below - Parameter Automated ABR System Conventional ABR system (screening) ALGO-1 device Stimulus

17 Transducer Special design Infants tube phone Type Filtered click Click /frequency specific tone burst stimuli Duration 0.1 msec 0.1 msec Rate 37/sec 37. l/sec Polarity Alternating Rarefaction Intensity 35dBnHL 35dBnHL Ear Monaural ,each Monaural ,each ACQUISITION Gain 100,000 Artifact reject Yes yes Analysis time 20sec 15sec Filter settings High pass 50Hz ^5!15 Low pass 1400Hz ISO 60Hz notch no Number of sweeps 500 to 1500 Variable 2000 /4000/upto 6000 Electrode placement Inverting Fz Fz Noninverting Back to the neck Back to the neck Ground Fpz Fpz International test protocol for screening using ABR The first component of test protocol is the method of determining which infants will be screened. A primary objective of chart review is to identify which infants are at risk by careful inspection of available medical records. The frequency with which chart reviews should be done depends on the volume of births and admission to the ICU and intermediate nursery for the hospital.

18 4) Otoacoustic emissions-Otoacoustic emissions are sounds that originate from the cochlea more precisely it generated by electromotile vibration (prestin) of the OHCs and propagate

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through the middle ear and into the ear canal, where they can be

measured using a sensitive microphone. Use of otoacoustic emissions (OAEs), a relatively recent technology for screening, involves measuring the integrity of the outer hair cells of the cochlea. Transient evoked otoacoustic emission (TEOAE) and distortion product otoacoustic emission (DPOAE) both are used as effective measures in NICU and well-baby population but the DPOAEs has lower fail rates than TEOAEs (Rhodes et al 1999). Both types of measurement are frequency specific; TEOAEs in the frequency range of 500 to 5000Hz and DPOAEs in the 1000 to 8000Hz range. (Gorge et al 1993, Probest et al 1987) TEOAEs generally detect hearing loss at levels of 30dBHL or above, while DPOAEs are reported to detect hearing loss of 40dBHL or above (Gorge et al 1993, Probest et al 1987). Abnormal middle ear conditions usually results in absent of OAEs.

5) Acoustic Immittance Guidelines for screening were adopted by the American-Speech-Language-Hearing Association in 1997 that detailed Immittance procedural recommendation. In addition, the American Academy of Audiology wrote a position statement in 1992, "Audiologic Guidelines for the diagnosis and treatment of Otitis Media in children," which was submitted as the academy's formal recommendation for the development of the clinical practice guideline "Otitis Media with effusion in young children" (U.S. department of health and human service 1994) Acoustic Immittance measurements have historically consisted of three procedures: tympanometric peak pressure, static admittance, and the acoustic reflex. Current screening for middle ear disorders consist primarily of the gradient (i.e. tympanometric width) and static admittance (tympanogram peak). Consideration should also be given to canal volume in the interpretation. Pass and referral criteria must be established with consideration of the age and risk factors of the target population and with consideration of local medical treatment philosophies. Referral criteria from the most recent ASHA guidelines (1997) are summarized in table-

Age	Ear canal volume	Referral criteria
1 to 7 yrs	0.3-0.9 cm ³	90% range for ears with and without tubes
5 th percentile	1.0-5.5 cm ³	95 th percentile

percentile referral criteria Ear canal volume $< 1.0 \text{ cm}^3$ and accompanied by flat tympanogram; do not refer if tube is in place or if TM perforation is under management of a physician Recommended initial tympanometric screening test criteria

Age	Ytm (peak admittance)	TW (daps)
Infants	$> 0.2 \text{ mmho}$	< 235
1 year to school age	$> 0.3 \text{ mmho}$	< 200
6 years and older	$> 0.4 \text{ mmho}$ (when using +400 daps)	

6) Visual reinforcement audiometry Liden and kankkonen (1961) first coined the term "Visual reinforcement audiometry" (VRA). This procedure as currently used employes lighted transparent toys which are flashed on simultaneously with the presentation of the auditory signal during a conditioning period. During the testing phase the light is flashed immediately following a response. Matkin (1974) reported that VRA is successful with 90% of both normal-hearing and hearing impaired children between the ages of 12 and 36 months. In sound field, the loudspeakers on each side of the child produces the signals and the lights for localization.

7) Behavioral observation audiometry Behavioral observation as a screening technique may be considered more of a functional measure of hearing ability because it requires the infant or child to respond to a variety of noise stimuli. In BOA, an infant's response is observed to a variety of moderate to high intensity stimuli, such as calibrated noisemakers, to observe startle, eye-widening, localization, or cessation of activity. As a screening tool, this procedure would likely have a high false-negative rate. Potentially missing many children with significant hearing loss. Therefore, this procedure can no longer be recommended as a solitary screening tool.

8) Conditioned play audiometry (CPA) In CPA, children learn to engage in an activity-putting rings on a spindle, dropping or stacking blocks, putting together simple puzzles-each time hear the test signals. These activities are assumed to be interesting to children, are within their motor capability, and represent a specific behavior that is used to denote a response to a stimulus. The challenge in play audiometry is teaching the child to wait, listen and only respond with the play activity when the auditory signal is presented. Audiologic literature suggests that CPA is widely accepted among clinician who practice pediatric audiology (Thomson et al 1989).

PROCEDURE	TARGET	ADVANTAGES	DISADVANTAGES	POPULATION
Developmental	Birth - 3 years	Quick and easy to administer	Does not correlate difficulty to assess actual hearing	Population
High risk register	Birth - 2 years	Quick and easy to administer	Does not correlate difficulty to assess actual hearing	Population
Identifies infants to hearing loss		Quick and easy to administer	Does not correlate difficulty to assess actual hearing	Population
Identifies medical, Cannot be used to determine hearing		Quick and easy to administer	Does not correlate difficulty to assess actual hearing	Population

21 developmental sensitivity. information that may affect hearing ability Visual inspection All ages Identifies structural Cannot be used to of the ear abnormalities, ear canal determine hearing drainage sensitivity ABR All ages -Requires minimal - Expensive training -May require sedation -identifies high- for children who cannot frequency losses above sit still for long periods. 30dBHL -Not frequency specific. -predicts hearing -Difficult to interpret if threshold central nervous system pathology present. OAEs Newborns, infants and -identifies loses greater -Expensive toddlers, difficult to than 30dBHL (TEOA) -Measure only to assess population Or 40dBHL(DPOAE) cochlea -minimal cooperation -Cannot predict hearing required threshold. -does not require sedation Frequency specific. Pure tone 2.5years to adult Identifies children who Not useful with children screening require further who have assessment, developmental -results are generally problems. reliable. Require very quiet environment. Acoustic 6months or older Valid indicator of -Does not assess hearing immittance middle ear function, sensitivity, -automated units are -follow up protocols are quick and easy controversial. administer, -minimal cooperation required Behavioral 3months to 2 years; -provides reasonably Requires child observation special population valid response to low cooperation may need level stimuli. repeated test session to -provides functional obtain to sufficient data data about child's use of to estimate hearing hearing. sensitivity.

22 References 1. American Speech and Hearing Association guidelines. 2. Joint Committee In Infant (2000) 3. Katz, J. Burkard, R &Medwetsky, L (2000) Handbook of Clinical Audiology, New York 4. Me Cormic, B.(1994) Paediatric Audiology 0-5yrs, Delhi 5.

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Northern, J.L. and Downs, M.P. (1978) Hearing in children, Baltimore, Williams and

Williams.

23 1.3 Team Members Involved in Hearing Screening and Their Role Hearing loss is a hidden disability. It is hidden because children are not able to tell whether they are hearing or not. Some adults also do not want people to know about their hearing loss so they hide their problems. Hearing loss should be detected and identified as early as possible so that small children should not go undetected and miss their critical age. Critical age is considered 0-5years .During this period all aspects of development occurs like physical,motor,speech and language development, social and psychological development. This critical age has to be taken into account and has to be maximally used for the child's adequate development. By detecting hearing loss as early as possible, even as young as newborn infants effective rehabilitation can be undergone. Hearing Loss in children is a serious concern as it interferes with the development of language. Language is a unique gift of nature for humans. The longer it takes for a hearing loss to go undetected the outcome becomes worse. Adequate speech and language therapy should be provided after amplification so as to develop proper speech and language skills. Our primary goal is that the child should develop communication skills. Many research studies have demonstrated that early intervention with hearing impairment children results in improved language development, increased academic success and increased quality of life. Early Identification and Intervention of hearing loss is a team work and requires a group of professionals who should work rigorously towards the rehabilitation of the client. Reduced or defective hearing sensitivity causes a lot of communication problems. The effects of hearing loss is devastating as it causes many problems in the individual which includes total lack of communication leading to a variety of social and emotional discrepancies. The rehabilitation team should include the following members who should work hand in hand for the successful intervention of the hearing impaired indivisual.The team includes : Ø The health professional on whom parents depend for the general health care of the child, it is probably a pediatrician, who treats only children, or a family 24 practice physician, who treats adults as well as children in the family. This professional will not be able to help parents with the hearing loss itself. However he/she may treat inflammations and infections of the ear and upper respiratory system that can affect hearing, as well as other conditions that children may encounter. Ø The audiologist must have a license to practice audiology. He/She specializes in the study of hearing disorders. An audiologist identifies the hearing loss, measures it, and aids in the habilitation of the deaf and/or hard of hearing person, by recommending appropriate hearing aids.

Periodic hearing screening during the early childhood years increases the likelihood that children lost to follow-up from newborn screening, along with children presenting with post neonatal hearing loss, will receive the timely diagnostic and intervention services needed during the critical language learning years. Ø An ENT surgeon or otorhinolaryngologist is a physician who specializes in diseases of the ear, nose, and throat.

An E.N.T surgeon

must examine a child to rule out any medical complications before parents purchase a hearing aid. An ENT should check every child periodically. Ø The service coordinator is responsible for coordinating all services for the child and will serve as the person for parents to contact when seeking to obtain necessary services and assistance. The service coordinator is also required to assist parents in identifying and locating available services and service providers, and to inform parents (and families) of the availability of rehabilitation services. Ø A speech and language pathologist specializes in the diagnosis and habilitation of speech and language problems. This team member may meet with a child on a regular basis to work on the fine points of speech and language development and speech correction. He/She will explain how parents can help with the child's speech and language development. Ø The teacher of the deaf or hard of hearing should be certified by the State Department of Education to teach students who are deaf or hard of hearing. Parents should begin talking to these special teachers, from programs in their area, even if the child is only an infant. This person can help parents get started immediately with communication and language development, even if the hearing 25 aids have not yet arrived. Most areas have programs for infants and toddlers and their parents. Teachers in these programs will become one of the most valuable members of the team, providing home visits and one-on-one early intervention for parents and children

Ø PARENTS are the most important team members as because they will stay with the child throughout even if the professionals would leave. They are the most important people who will decide on the child's rehabilitation procedures. Parents are the best people who will identify a child's hearing difficulties. Some parents do not accept that their child has hearing loss. They have emotions like shock and denial. It is the professional's role to counsel these parents to overcome this problem. Parents together with help from the professionals will help decide the child's rehabilitation procedures and the hearing impaired child's future. Thus parents play very important role in the rehabilitation process.

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Use of Checklist and Behavioral Observation in Early Identification of Hearing Loss by School Teacher (Congenital

and Acquired) Structure 1.6.1-Identifying Hearing Loss 1.6.2-Behavior Observation 1.6.3-Checklists 1.6.4-Check list of School Teachers Students Behaviour Observation Hearing Loss. (Congenital and Acquired) 1.6.4-1-STEP-A Observe Auditory Behaviours. • Additional information • Appearance of the ears and • Auditory and hearing behaviours of the Student's 1.6.4-2-STEP-B Reviewing Medical and Educational Records. B.1-Congenital factors B.2-Acquired factors. 1.6.4-3-STEP-C: Interviewing the Family 1.6.4-4-STEP-D; Meeting with Family. 1.6.5-5-STEP-E: Referral for Medical Follow- Up 1.6.6-6-STEP-F-: Follow-Up Meeting to Discuss Medical Findings 1.6.1-Identifying Hearing Loss Children with hearing impairments that can be challenging to educate and serve. Most learning comes through auditory channels and when these avenues are impaired incidental and direct learning is reduced. While the impact of the hearing impairment may not always be the primary impediment to learning it is a factor that has significant impact on a child's ability to learn by affecting their access to the physical, social, and

27 instructional environment. Use of appropriate modifications and instructional strategies can significantly increase access and ultimately development and achievement. Hearing help us our listening capacity of the sound knowledge in around of the world. Because our hearing mechanism is known as an auditory sensory pathway with the help of sensory pathway we receive and perceive the sound knowledge of the world. If affects that path way its call auditory impairment's. Children with auditory impairments may be having difficulty in hearing in both and one ear. Our hearing is a main sensory pathway through which speech and verbal communication develop. If child cannot hear perfectly so therefore he/she cannot speak individual and speak to others perfectly. So early detection of hearing impairment is important to child's overall development. Hearing loss is one of the most commonly unidentified and misdiagnosed conditions in early childhood because hearing impairment is a hidden problem and even when it is present in a child at birth, it cannot be suspected immediately as it is not seen overly. Only when the child grows up and fails to start speaking do the parents/caregivers realize that the child has a problem in hearing. That's why checklist is an essential part parents, caregivers and school teachers. Because Hearing screening checklists have been used to obtain the report of the parents, caregivers and school teachers to know about the auditory behavior pattern of their children. So therefore checklist most important tools of parents, caregivers and school teachers. Behavior observation or auditory behavior of children is being classified in different age level regard hearing status. 1.6.2-Behavior Observation Human development in the first 3 years of life occurs with rapid changes in cognitive development, language, motor skills, and social/emotional skills. This foundation is so important that infant's caregivers must be aware of each child's developmental progress. In a child care setting, knowledge of a child's development is accomplished through the key processes of auditory behavior observation, developmental screening, and ongoing assessment. The child care consultant can play an important role in helping infant caregivers understand the definitions, key concepts, and processes that can support understanding the developmental progress of infants. For behaviour observation to be meaningful and useful it must be objective and factual. The objective is Consultants can help caregivers understand they must document 28 only what they see and hear when recording information about a child. So actual behavior observations should include actions, language, gestures, facial expressions and creations. Behavioral Observation Technique continues to be used even though they do not provide ear specific results for screening but is hearing screening checklists have been used to obtain the report of the school teachers, parents and caregivers regarding the auditory behavior of their children. The principle of this procedure change child's behavior after presentation of sound stimulus in different sound knowledge in around of the world. 1.6.3-Checklists Checklists can be a great tool to monitor a child's hearing, speech, and language development. The different variety of checklist used for documenting children's development are beyond the scope of this module and the following checklist is basic standardized methods can be implemented with instruction to parents, caregivers and school teachers is behaviour observation or auditory behaviour checklist of children. 1.6.4 Check List of School Teacher's Student's Behavioural Observation Hearing Loss. (Congenital and Acquired) 1.6.4-1-STEP-A observe auditory behaviors If you suspect that your student has hearing loss you should document those behaviors that lead you to believe that this is true. Below is a list of behaviors or characteristics typical of children who hearing loss. Check off those behaviors that are suspect, describe them if you think further explanation is needed and add any information you think pertinent to their sensory functioning and behaviors. So check lists of schools teacher's of student's behavioral observation hearing loss can be classified in 1) Additional information 2) Appearance of the ears and 3) Auditory and hearing behaviors of the Student's • Additional information: If you think further explanation is needed and add any information you think pertinent to their sensory functioning and behaviors. Write your information..... • Appearance of the Ears

29 SLNO 2) Appearance of the Ears Yes No 1 Cleft lip or palate 2 Malformations of head and neck 3 Malformations of ears 4 Frequent ear aches or infection 5 Discharge from ears ●●●● Auditory and hearing behaviors of the Student's SLNO 3) Auditory and hearing behaviors of the Student's Yes No 1 Makes few or inconsistent responses to sound 2 Does not look at visual materials when asked to by someone 3 Does not startle or react to unexpected or new sounds 4 Does not respond to caregiver's calling name/not soothed by caregiver's voice 5 Shows a preference for certain types of sound (high or low frequency, louder or softer sounds) 6 Has limited vocalizations does not try to imitate 7 Has difficulty attending to auditory stimuli for a reasonable length of time 8 Does not turn to or localize voices or sounds 9 Abnormalities in voice, intonation, articulation 10 Pulls on or covers ears 11 Breathes through mouth 12 Angles head to one side so as to favor one ear

1.6.4-2-STEP-B Reviewing Medical and Educational Records In reviewing a student's records you should be looking main sources of information about the medical. The information about the medical records is B.1 Congenital factors B.2 Acquired factors. Congenital factors Acquired factors ●●●● Heredity ●●●● Excessive earwax ●●●● Viral infection during pregnancy, e.g. ●●●● Eardrum perforation rubella infection ●●●● Middle ear effusion or infection ●●●● Congenital defects such as anomalies ●●●● Otosclerosis or ear ossicle dislocation ●●●● of the ear, nose or throat ●●●● Sequelae of childhood diseases such as

30 ●●●● Pre mature birth, birth asphyxia, measles and meningitis excessive bilirubin etc ●●●● Head or ear trauma ●●●● Prolonged exposure to loud noise ●●●● Medication that may lead to hearing damage Now the details discuss about the congenital factors and acquired factors. Congenital means born with the hearing loss and acquired means hearing loss means could hear when he or she was born but developed hearing loss later in life. Acquired hearing loss also can be described by the age at which it starts. If hearing loss starts before the age when children usually begin talking, it is called "p/-e-lingual", which means "before speaking". If hearing loss starts after the age when children begin talking; it is called post lingual which means after speaking. So congenital factors and acquired factors depend upon some criteria these are: 1) Hereditary Syndromes and disorders(Syndrome/Condition) 2) Prenatal History(History of maternal infection/exposure during pregnancy) 3) Natal History(Prematurity) 4) Post Natal History(Prematurity) 5) "Red" Flag Terms(Medical Terms associated with Hearing Loss) 1) Hereditary Syndromes and disorders(Syndrome/Condition) 1 CHARGE Syndrome/Association YES NO 2 Down Syndrome 3 Trisomy 13 4 Usher Syndrome 5 Alstrom Syndrome 6 Goldenhar, Hurler, Norrie, Waardenburg Syndromes 7 Other genetic syndromes or defects

31 2) Prenatal History(History of maternal infection/exposure during pregnancy) 1 Rubella Yes NO 2 CMV (cytomegalovirus) 3 Toxoplasmosis 4 Herpes 5 Syphilis 6 Prenatal infant exposure to drugs or alcohol 7 Cleft Lip or Palate 3) Natal History(Prematurity) 1 Birth weight > than 1500 grams (3.31lbs) YES NO 2 Prematurity 3 Preterm birth, exposed to oxygen 4 On ventilator longer than 5 days 5 Elevated bilirubin requiring transfusion 6 Low Apgar scores (1-4 at 1 minute or 0-6 at 5 minutes) 4) Post Natal History(Prematurity) 1 Meningitis or encephalitis YES NO 2 Hydrocephalus/hydrocephaly 3 Cerebral palsy or other neurological disorders 4 Brain disorders, brain tumours or malformations of the brain. 5 Loss of oxygen to the brain 6 Severe head trauma 7 Prolonged fever 8 Child received "mycin" or other known ototoxic medications

32 5) "Red" Flag Terms (Medical Terms associated with Hearing Loss) 1 Anoxia, asphyxia, hypoxia YES NO 2 Atresia 3 Cerebral hemorrhage 4 Cerebral palsy 5 Ischemia 6 Meningitis 7 Peri ventricular damage 8 Fetal Alcohol Syndrome

1.6.4-3-STEP-C: Interviewing the Family Families who have children with hearing impairment usually accurate reports of their child's use of hearing. They have more opportunities to see their child as well as a more diverse set of circumstances in which to see them. They also have the history of their child over the years in which to observe change. Interviewing parents with a set of discrete and open-ended questions will give a much broader view of the child and help to identify any issues with hearing. A checklist about questions to ask parents about their child's hearing. These questions are best asked face to face but, if not possible, then a telephone interview will suffice. These questions should not be treated as a form to send home as the impersonal nature of this approach will not yield useful information. SL

QUESTIONS TO ASK THE FAMILY NO ABOUT THE CHILD'S HEARING 1 What have you been told by medical professionals (such as the paediatrician or family care physician) about your child's hearing? 2 Has your child had ear infections, if so how often? 3 Is your child frequently congested? Do they have frequent colds? 4 What is your impression of your child's hearing? 5 What sounds get your child's attention? Comments/Observations

33 6 What does \ our child do when you call their name? 7 How does your child react to sudden loud noises? (telephone, car, vacuum) 8 What kinds of things do you think your child sees, and in what activities does he/she use their vision? 9 Does your child seem to respond differently when the television or radio is on? 10 Does your child appear to enjoy toys with sound/ noise? 11 Does your child enjoy you talking or singing to them? 12 What words does your child seem to understand? Additional Comments: 1.6.4-4-STEP-D: Meeting with the family If through the first three steps of the identification process it becomes likely that your student may have a hearing impairment a meeting with the family should be requested to discuss the results of your observations and investigation. There is no cut and dry threshold of determination but if both the educational team and the parent have suspicions, and the student's behaviour and medical history support this, then a referral to the appropriate medical professional should be made. The meeting to review this tool should include a discussion of your findings and thoughts as well as helping the parents find medical professionals they can access to have their child tested and. if appropriate, diagnosed. For students suspected of having a hearing loss, a referral to an Audiologist is in order below given the checklist SL QUESTIONS TO ASK THE FAMILY NO ABOUT TH E1R CHILD'S HEARING 1 What kinds of hearing tests were conducted? 2 What did the test results measure and what were the results? 3 How did the tests go? How did my child react? How confident are you in the results (reliability)?

Comments/Observations

34 4 When should my child be retested? 5 What do the results mean for my child's ability to discriminate sounds and understand speech? 6 Would my child benefit from amplification (hearing aids, FM unit, etc.)? 7 What would be the best way to get more information my child's hearing and what are m\ next steps? 8 Is my child's hearing equivalent in both ears? Is there a "better ear" that will assist him/her in accessing speech or environmental sounds better? 9 Do you suspect that my child has a progressive loss? Will his hearing be worse in the future? 10 Is it possible for us to listen to the sounds that my child hears? 11 If my child gets hearing aids what type is recommended? Why is that style better for him/her than others? 12 With hearing aids, when will he/she need to get new molds? 13 Is my child a candidate for a cochlear implant? Why or why not? 14 When should my child be retested? 15 How does ihe information from the test results help my child's educational team? Additional Comments: 1.6.5-5- STEP-E: Referral for Medical Follow - Up Medical appointments are not always an easy experience for parents and helping them to prepare for the appointment will make it more productive for them and ultimately for the educational team, as there is a better chance of getting information that is useful in diagnosing and serving the child. Giving the parents questions to ask the doctor can

35 be extremely helpful in preparing the parcnis and questions for audiologists. These, as well as specific questions the parents or team ha\e, should be formulated beforehand so the parent has them on hand for the medical appointment.

1.6.6-G-S i EP-F: Follow-Up Meeting to Discuss Medical Findings After the child has gone to their medical appointment for hearing a follow-up meeting should be scheduled lo assist the parents in understanding the results. If hearing impairment has been identified the next step is to make a referral for an evaluation by a teacher of the deaf. These individuals will evaluate the child and make a recommendation for services that will be put on the IEP with appropriate goals and accommodations.

36 1.5 Referral Based on Signs and Symptoms of Hearing Loss Hearing impairment is the inability of an individual to hear sounds adequately. This may be due to improper development, damage or disease to any part of the hearing mechanism. Since deafness is an invisible impairment, often signs and symptoms of hearing loss might help in diagnosis and adequate referral. The various professionals working as a team in management of hearing loss is as follows: Roles and Responsibilities of Audiologists

Audiologists play a central role in the identification, assessment, diagnosis, and re/habilitation of patients with permanent/sudden hearing loss. Professional roles and activities in audiology include clinical/education services, prevention and advocacy, and education, administration, and research. Appropriate roles for audiologists include: ●●●● providing prevention information, promoting hearing wellness, and monitoring the acoustic environment; ●●●● educating other professionals on the needs of children with permanent childhood hearing loss and the role of audiologists in diagnosing and managing permanent childhood hearing loss; ●●●● identifying permanent childhood hearing loss, including early detection and screening program development, management, quality assessment, and service coordination: ●●●● conducting a comprehensive assessment, using behavioral, electroacoustic and/ or electrophysiologic methods to assess hearing, auditory function, balance, and related systems; ●●●● referring the patient to other professionals as needed to facilitate access to comprehensive services SPEECH LANGUAGE PATHOLOGIST The speech-language pathologist (SLP) is defined as the professional who engages in professional practice in the areas of communication and swallowing across the life span.

Speech-language pathologists (SLPs) play a role in the screening, assessment, 37 and re/habilitation of children with permanent childhood hearing loss. Professional roles and activities in speech-language pathology include clinical/educational services, prevention and advocacy, education, administration, and research. OTOLARYNGOLOGIST Medical specialist who deals with diagnosis and treatment of diseases of the ear, larynx, and upper respiratory tract are called Otolaryngologist. Individuals with history of sudden hearing loss, ear pain or other medical conditions are treated with medicine and surgical intervention. Individuals with profound sensorineural hearing loss and restricted gain from hearing aids might undertake cochlear implantation. ROLES AND RESPONSIBILITIES OF PSYCHOLOGIST A psychologist and psychiatrist, helps to address some of the potential psychological effects of hearing loss. They help to rule out any intellectual deficits associated with or without hearing loss. Hearing loss can induce observable psychological effects at various points in development. The potential psychological effects of hearing loss are different for children and adults, which leads to difficult inter and intra personal conflicts leading to psychosomatic disorders. Hence proper guidance and counseling is often pertinent. SPECIAL EDUCATORS Rehabilitation council of India aims to promote and facilitate full and equal enjoyment of rights of children who have hearing impairment. The special educators specializing in HEARING Impairment helps to develop knowledge, skills and desirable attitudes to facilitate the differently abled children to blossom to their fullest by providing a barrier free environment. The national goal of Universalization of Elementary Education (UEE) and Education for All (SARVA Shikshya Abhayan) is designed for contributing towards achievement of Millennium Development Goals (MDG) by way of preparing the teacher trainees to meet the challenges of all round development of these children. VOCATIONAL GUIDANCE AND COUNSELLING Career guidance for persons with disabilities is an important step in habilitating the persons with disability. The trained and educated social worker professionals identify the potentials of the individuals. With comprehensive assessments and understanding of the persons abilities they help them to pursue their chosen occupational opportunities.

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41 Unit - 2 Assessment and Identification of Needs Structure 2.1 Introduction 2.2 Objectives 2.3 Orientation 2.3.1 Sound 2.3.2 Physical Correlates of Sound 2.3.3 Psychological Correlates of Sound 2.3.4. Basic Attributes of Sound 2.3.5 Decibels 2.3.6 Auditory Milestones in Typical Children (0-2 Years) 2.4 Assessment and Methods of Assessment 2.4.1 Test Battery Approach 2.4.2 Subjective Tests 2.4.3 Orientation to Subjective Tests 2.4.4 Behavioural Observation Audiometry 2.4.5 Reinforcement Audiometry 2.4.6 Conditioned Play Audiometry 2.4.7 Pure Tone Audiometry 2.4.8 Speech Audiometry 2.4.9 Objective Tests 2.4.10 Immitance Audiometry 2.4.11 Brainstem Evoked Response Audiometry 2.4.12 Otoacoustic Emmisions 2.4.13 Auditory Steady State Response 2.5 Audiometer 2.5.1 Block Diagram 2.5.2 Parts And Their Use 42 2.5.3 Type of Audiometry 2.5.4

85%	MATCHING BLOCK 8/28	SA	SEHI-31 - FINAL 23.08.2021.docx (D122369686)
Role of Special Educator in Conditioning for Pure Tone Audiometry 2.6 Audiogram 2.6.1 Understanding of Audiogram 2.6.2			

Audiogram Interpretation 2.6. Audiogram Interpretation and Educational Implication 2.7

100%	MATCHING BLOCK 6/28	SA	SEHI-31 - FINAL 23.08.2021.docx (D122369686)
Concept of Unaided, Aided Audiograms, Speech Spectrum and its applications 2.7.1			

Unaided Vs Aided Audiogram 2.7.2 Concept of Speech Spectrum 2.7.3 Clinical Applications of Speech Spectrum 2.8 Let us sum up 2.9 "Check your Progress" 2.10 References 2.1 Introduction The hearing mechanism in humans is an interesting and intricate process. An intact hearing system helps to acquire adequate speech, language and communication skills. This further helps in educational, psychological and social development of an individual. Any deficit in the hearing mechanism causes varied amount of effect on an individual depending on the extent of deficit. The most important of these are hearing impairment that is inability to hear. The deficit can be by birth or can be acquired due to any ailment, accident etc. The deficit can take place in the external ear, middle ear or inner ear. For e.g, there can be wax accumulation in the external ear, there can be infection in the middle ear or there can be a permanent damage of hair cells in the inner ear. Moreover there can be a combination of these conditions. The resulting hearing impairment can range from minimal loss to total loss of hearing. An individual with hearing impairment needs early identification, accurate diagnosis and timely rehabilitation in order to lead a healthy life. For this purpose, correct identification and assessment of hearing loss is necessary. There are a number of tests in the field of audiology, which help to assess the hearing capacity of an individual.

43 Correct selection and administration of these test(S) helps to find the degree of hearing loss and also the site of deficit/damage. Audiology is very closely related to education. The role of special educators in assessment and rehabilitation of hearing disorders is well established. Moreover the results of audiological assessment have important implications for educational assessment and planning the educational management of a hearing impaired child. In this chapter we will discuss about the various tests, their procedures, their importance, the instruments used, the interpretation of results and their implication on educational assessment and management. 2.2 Objectives At the end of this chapter students will learn about ●●●●● Concept of sound, its parameters and units. ●●●●● Auditory development in humans ●●●●● Various audiological tests- Subjective and Objective used for children ●●●●● The audiometer ●●●●● Interpretation of results from the tests ●●●●● Implications of results and application in educational management of the hearing impaired child 2.3 Audiological Assessment Orientation Audiology refers to the study of hearing and hearing disorders. Audiology is concerned with the human's response to auditory stimuli which is basically "sound". In order to gain knowledge about the various assessment procedures used in audiology, the basic understanding of "sound" and its properties is essential. As measurement of hearing loss requires accurate and dependable instrumentation, so the knowledge of instrumentation, tests performed with the help of these instruments and the various response patterns is crucial. 2.3.1 Sound Sound is a form of energy which is generated in the form of vibrations and is perceived by the hearing mechanism. It can propagate in any medium like air or water.

44 Sound has two aspects namely physical and psychological. Because hearing disorders represent an inability to respond normally to acoustic stimulation or "sound", it is very important to learn briefly about the physical and psychological aspects of sound. 2.3.2 Physical Correlates of Sound Sound is produced when a force sets an object into vibration that in turn disturbs the molecular movement of the medium surrounding the object. The disturbance is propagated as a sound wave is heard by the human ear. So the chain is Source ►►►►► Medium ►►►►► Object that will vibrate ►►►►► Hearing mechanism. 2.3.3 Psychological Correlates of Sound The act of hearing something that is sound is an auditory experience. There are certain psychological attributes attached to the physical properties of sound namely pitch, loudness and timbre. Pitch corresponds to frequency, loudness corresponds to intensity and timbre corresponds to quality of sound. 2.3.4. Basic Attributes of Sound Physical attributes of sound are frequency, amplitude and phase which are psychologically correlated with pitch, intensity and time. Sound can be a simple single frequency pure tone or a combination of many frequencies called a complex tone. Frequency The frequency of a sound refers to the number of vibrations that occur in one second and is expressed in Hertz(Hz). Each vibration consists of one cycle of compression and rarefaction. So a pure tone of 1000 Hz means 1000 cycles per second. The period of a sound T, is the reciprocal of frequency. $T = 1/f$ The range of human hearing is 20 Hz-20 000 Hz. However in basic Puretone Audiometry we test from 250 Hz to 8000 Hz. The length of one cycle called the wavelength decide the frequency of a sound wave. Low frequency sounds have longer wavelengths and high frequencies have shorter wavelength. All the sounds heard by human ear including speech can be categorised as low, mid or high frequency sound. E.g a sound from a Drum is a low frequency sound whereas a bird's chirp or a whistle are categorised as high frequency sounds. Amplitude The amplitude of a sound refers to how far an object moves back and forth and the amount of maximum and minimum air pressure created. The larger the movement or

45 pressure variation the greater the amplitude for any given frequency. The sounds in human environment are categorised as soft, moderate and loud. E.g Rustling of leaves is a soft sound and sound of a cracker is a loud sound. However a term called intensity is used to express amplitude whether to describe sound energy per area or sound pressure. Logarithmic units are used to express amplitude. Phase refers to amplitude of a sound at a particular time during the cycle. Phase can be expressed in units of time such as seconds or can be expressed as an angle. Phase can also be used to describe the time relationship between two or more tones occurring simultaneously. Fig 1. A simple pure tone waveform showing intensity, frequency and time Fig 2: frequency, intensity and phase

46 Fig 3: Loud and soft sound 2.3.5 Decibels Decibel is one-tenth of Bel, which is a relative unit in logarithm. It is the unit of measurement of intensity used in audiology. Linear scales of intensity or pressure ranges require working with large numbers or scientific notations. To simplify our work, a decibel scale is used. The decibel scale is a logarithmic ratio scale where any measured value is relative to some specified reference value. It can also be stated as a unit for expressing the ratio between two sound pressures or two sound powers. $dB = 10 \log(X_{meas}/X_{ref})$, Where X_{meas} is the sound that is being measured and X_{ref} is the reference sound to which X_{meas} is to be compared. Sound can be measured in sound pressure or sound intensity where Intensity(I) and pressure(P) are related as $I = P^2$ $dBIL = 10 \log(I_{meas}/I_{ref})$ $dB SPL = 20 \log(P_{meas}/P_{ref})$ CONCEPT OF dBHL VS dB SPL dBHL The conventional audiometers used today are set to a standard that the lowest sound intensity that stimulates normal hearing has been variously called 0 hearing loss and 0 hearing level (HL). This was also called audiometric zero. The minimum amount of Sound Pressure Level needed to generate 0 HL is variable across frequencies, due to

47 sensitivity of ears. E.g 7 dB SPL produces a sensation of 0 dB HL at 1 KHz, whereas 13 dB SPL is needed to produce 0 dB HL at 8 KHz. Therefore the hearing dial or the intensity dial of all audiometers was calibrated with reference to normal hearing (audiometric zero) dB SPL Sound Pressure Level is an expression of the pressure of a sound. When in the measurement of decibel the reference value (X_{ref}) is the lowest pressure needed to hear (20 μ Pa), it is called dB Sound Pressure Level. This value is universally accepted standard reference value (20 μ Pa). 2.3.6 Auditory Milestones in Typical Children (0-2 Years) Prenatal Hearing The human hearing organ that is the cochlea has normal adult function after the 20 th week of gestation. There is ample research which shows prenatal hearing. The developmental response to sound in the foetus is primarily reflexive in nature, including startle, generalised body movement, possible cessation of activity and the involuntary eye blink. NEONATAL HEARING At birth or soon after birth the infant is able to discriminate his/her's mother's voice. They are also able to discriminate the various segmental and suprasegmental aspects of speech. The Auditory development can be understood in the following stages Birth to 4 weeks: Startle response: the infant may startle or jump to loud sounds. Eyes may widen or blink, arms and legs may fling out. Infants may awaken from sleep. 3 to 6 months: Searching Response: Baby will turn head and eyes to look for an interesting sound e.g name call. He or she enjoys sound making toys and music. Begins to coo and gurgle, repeats sounds like bababa 6-10 months: Localisation; baby will start to turn towards the source. He or she can move head towards the side and indirectly below. Responds to familiar voices and familiar sounds e.g mobile ring, name call, doorbell. Makes many different babbling sounds, even when alone. Understands common words such as "no" and "bye bye". 10- 15 months: Response to speech; the infant directly locates the sound source to the side and below. Also starts to localise indirectly above. They start to understand simple speech, play with own voice, imitate simple words and start using meaningful words. 15-18 months: Direct Localisation; can identify the source of all sounds, localises on

48 the sides, below and above. By 18 months the infant correctly responds to simple speech, follows simple commands, uses more words in expression, may initiate to join two words. 24 months: the child locates directly a sound at all angles, starts to use phrases and simple sentences. Understands more of adult speech and talking. 2.4 Assessment and Methods of Assessment 2.4.1 Test Battery Approach Children with hearing loss, acquired or congenital will not demonstrate the typical auditory skills described earlier. Audiological assessment is necessary to correctly identify, diagnose and remediate hearing loss in children. Audiological assessment in children should be characterised by TEST BATTERY APPROACH that is more than one test should be carried out to confirm the detection and diagnosis of hearing loss. The test results should be cross-checked and validated. Parents may need to be advised that the paediatric hearing examination is an ongoing, age-specific activity, so that as the child grows older, more accurate hearing results may be obtained. The various tests used for audiological assessment in children can be classified as

49 FORMAL HEARING TESTS All the formal tests make use of instruments which can vary from simple to most sophisticated ones. The tests are characterised by presentation of a sound stimulus such as pure tones, speech, warble tones, noise and elicitation of a time locked response from the child to be tested. The tests are performed by an audiologist (Tester) on subjects with or without hearing loss. The tests give a result, which is again interpreted by the tester. The ultimate goal of each test is to establish the auditory/hearing threshold, which is the minimum stimulus level that elicits a response consistently. It is always advocated to use the cross-check principle in paediatric audiometry. According to this principle the results of subjective tests such as BOA (Behavioural Observation Audiometry) should be cross-checked with objective tests such as ABR. All these tests are carried out in sound treated rooms (usually double room set up) which prevent external noise to enter that may interfere with the testing procedure. The instrument used for basic tests are audiometer, immittance audiometer, instrument for electrophysiological tests such as ABR (with software and other accessories), and OAE instrument. The sound stimulus is presented in sound field condition that is via loudspeakers or under closed field condition that is via headphones. These tests can be used for both screening and diagnostic purposes. These tests can be used for school screening programs also. The tests are carried out by an audiologist and an assistant tester is employed if needed. Prerequisites for Formal Test 1. Case History/Parental Interview 2. Otoscopic examination of ears- to ensure clean ears, no infection/discharge, no ear anomaly Fig 4: Otoscopic Examination 3. Tuning Fork Test – can be performed by using tuning forks in older and cooperative children to get an idea about probable site of pathology (middle ear or inner ear) 50 Fig 5: Tuning fork test 4. Selecting and deciding on the tests to be administered- Usually it is important to use a test battery approach in case of infants and children. This is because, it is often difficult to obtain reliable and complete results from any one particular test. So more than one test should be administered depending on the child's age, hearing status, cognitive status and economic status. e.g For a child aged one year, BOA, IMMITTANCE AUDIOMETRY AND ABR/ASSR can be administered for correct threshold estimation. 2.4.2 Subjective Tests As the name suggests these tests need participation of the subject. The participation can be active or passive. In these tests the response is recorded after the presentation of a stimulus. The response can be a predefined active one, e.g. raising hand in response to a sound stimulus, or it can be a change in behaviour of the child, e.g. searching for the sound stimulus or startle response which can be noted by the tester. 2.4.3 Orientation to Subjective Tests These tests can be classified into two major divisions; 1) Techniques used without reinforcement 2) Procedures based on reinforcement of the infant or child's responses The techniques utilized that do not incorporate reinforcement principles are known as Behavioural Observation Audiometry (BOA). Procedures that use reinforcement to develop repeatable responses are known as conditioned audiometry, such as Visual

51 Reinforcement Audiometry(VRA) The first type of techniques are carried out for younger children (upto 12 months), however can be used till 24 months. Conditioning techniques are carried out for older infants and children,between 12-48 months.However the use of behavioural and conditioning procedures with infants and young childrenmay lack sufficient precision to establish valid auditory sensitivity thresholds. An improvement in response behaviour should always be anticipated as the child matures.Auditory evaluation of hearing in children should be considered as completed when earphone thresholds can be obtained for frequencies 250 Hz to 8000 Hz in a test called puretone audiometry. Let us briefly learn about these tests 2.4.4 Behavioural Observation Audiometry It is an important clinical test in day to day clinical use. This is mostly used for children upto 6months, but can be used for older children as well, especially those who cannot be conditioned. The use of noisemakers and sound field signals from an audiometer as acoustic stimuli is done in BOA.The major advantages of BOA are efficiency in time required and the lack of need for specialised equipment. The disadvantages of BOA include the fact that it is difficult to eliminate tester bias, the responses of infants quickly reach saturation and a wide variance of responses are noted in infants.Moreover the test does not yields ear specific responses and only gives an idea about degree of hearing loss.This test should ideally be carried out in a quiet background, and sound field condition. The stimulus should be presented in an ascending manner (soft to loud). During the test one audiologist makes a sound, making sure that the child cannot see them, while a second audiologist watches for any change in the child's behaviour (e.g., a "startle" or sudden reflexive movement, eye blinks or cessation of activities). The type of sound is recorded together with its intensity and the nature of the behaviour change. The infant or child can exhibit reflexive response such as startle (younger children/infants below 3 months)or attentive behaviour (above 3 months)such as quieting responses.Children quickly grow accustomed to sounds and may stop showing a response if they hear the same sound often enough. For this reason, it is recommended that repeated "testing" at home is avoided prior to formal BOA testing with the audiologist. The intensity and frequency of noisemakers can be premeasured for estimation of hearing levels. Puretones,warble tones,speech andnarrow band noise can be used for sound field testing via an audiometer.Handheld paediatric audiometers with intensity and frequency dials/interrupters can also be used.This test can be used for both screening and diagnostic purposes.

52 Fig 6: BOA Importance of BOA 1. This test is a true test of hearing unlike electrophysiological tests or objective tests, which are not actual tests of hearing. Moreover there are very less chances of the response being affected by instrumental errors or recording artifacts.This test gives information about degree of hearing loss across frequencies. 2. This test can be carried out with passive participation of the child. The child/ infant is the best person to inform about his/her hearing status,that is,it is always very helpful when we can observe the child's actual response to sound stimuli instead of relying on parents' reporting. 3. This test can be carried out in a state of light sleep,as passive participation of the infant/child is needed. 4. This test can also be carried out for difficult to test(for conditioned audiometry)population. E.g children with multiple disability or non-co-operative child. 5. This test is cost effective as not much sophisticated instruments are needed,it is very important to save expenses of the parents. 6. This test can also be performed with the help of noisemakers, if proper instruments are not available. 7. It is an important screening tool.

53 2.4.5 Reinforcement Audiometry These tests involve the use of conditioning techniques.The response of the infant or child is conditioned with use of reinforcers.This procedure has been called as operant conditioning. Reinforcer is any entity-verbal praise, an object, food, that increases the likelihood that response will occur again. If a stimulus is given, then a response is obtained and then reinforced, it is likely that the response will occur for many more stimuluspresentations. With more responses available it is possible to obtain thresholds. Visual Reinforcement Audiometry It is the use of visual reinforcer in the process of obtaining auditory thresholds. A variety of visual reinforcers can be used. It can be used for children aged 6 months to 2 years. The reinforcers can be video- based or made up of animated toys placed in dark Plexiglas boxes located at an angle to each side of the child. The reinforcers should be located approximately level with the child's head at a distance of 1-2 m. Close proximity between speaker and reinforcer is preferred in order to help conditioning when using soundfield stimuli; so in practice adjacent positioning of loudspeaker and reinforcers is recommended. At first, the audiologist lights up the boxes in conjunction with the sound. This "trains" the child to respond by shifting her eyes or turning her head toward the sound source. Once a child understands what to do, the audiologist can "reward" the child by briefly delaying the visual stimuli. The boxes are lit to elicit a head turn associated with a sound source.During the testing phase the light is flashed immediately following the response of the child looking toward the light. Importance of VRA 1. It is an important test for children between 6 months to 2 years and gives accurate findings as the child gets motivated for the reinforcement used 2. It is an important test for developmentally delayed children, who cannot cooperate for puretone audiometry. Fig 7: VRA

54 2.4.6 Conditioned Play Audiometry As the name suggests use of games or play techniques is done in this procedure to obtain hearing thresholds of the child. This procedure can be used for children from 2 years till 5 years. However for younger children, behavioural observation and parental interview should always guide the threshold estimation. The child is conditioned to a sound stimulus through some play activity such as to place a ring on a stand, put a block in a box upon hearing the sound (either in sound field or through headphones). Initially the tester might demonstrate the activity and the try to engage the child. If interesting toys are used the child can be kept interested for long enough to get lots of testing accomplished. Blocks, puzzles, chips, pebbles, all of which can be dropped into a bucket are good. It is important to have many toys available so when the child becomes tired of a toy, it can be changed quickly. It should be kept in mind that the child may not be cooperative through the total testing time, may need breaks or might need a follow up. However it is always wise to test the speech frequencies first, some testers might do the bone conduction testing first or might use speech signals to generate interest of the child. The child will begin by using both visual and auditory cues. When he can do the task by himself using both visual and auditory cues, visual cue can be removed and auditory alone can be tried. The parents can be instructed to teach conditioning to the child at home with use of noisemakers so that the child can give better responses in the next session. Fig 8: Conditioned Play Audiometry

55 Importance of Conditioned Play Audiometry 1. This test prepares the child for puretone audiometry. 2. Frequency wise information on hearing can be obtained. This test gives information about both degree and type of hearing loss. 3. Hearing in both ears can be tested. 2.4.7 Pure Tone Audiometry Pure tone audiometry is a routine audiometric test used to measure auditory threshold of an individual in a sound proof test room. The instrument used in this measurement is known as the audiometer. This is a subjective investigation, the accuracy of which is dependent on the response of the patient. It can be used for children 5 years and above. Pure tone audiometry provides information about the type of hearing loss and also helps in quantifying frequency specific threshold. This test is generally performed with headphones (FIG 9) for air conduction testing (AC) and bone conduction vibrator (Fig 10) for bone conduction testing (BC). Simple pure tones varying in frequency from 250 Hz to 8000 Hz; and varying in intensity from 0 dBHL to 120 dBHL are used for testing. However the frequency and intensity range depends on the test. For example, in case of BC testing, the measurement is done from 250 Hz to 4000 Hz. The intensity range is also maximum up to 85 dBHL. With the help of a particular pattern/sequence of presenting the puretones, the ear specific threshold across all the test frequencies is established and plotted on an audiogram. The tester should be aware of false responses made by the child and should know how to minimize them. Younger children might need reinforcements, breaks in between testing and often repeated sessions for establishment of reliable thresholds across all the frequencies. The better ear is always tested first, and also masked if required. The AC testing gives information about external, middle and inner ear, whereas the BC testing gives information about inner ear. In case of children, the ultimate goal of assessment should be to obtain puretone audiometry results. The response pattern of the child can be any conditioned response from simple hand raising to keeping blocks in a box.

56 Fig 9:A) Air conduction testing B) PTA in double room setup Fig.10: Bone Conduction Testing

57 Importance of Puretone audiometry 1. The ultimate goal in paediatric evaluation is to obtain puretone thresholds because they give accurate information on type and degree of hearing loss. The

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information about type of hearing loss is very important for otologists to take decisions about medical treatment.

Audiologists can use this information to plan the other tests to be administered. The information about degree of hearing loss is very important for selection of amplification devices, planning speech-language therapy goals and educational placement 2. It gives independent information about hearing in both ears and the full audiometric frequency range. 3.

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Regular or periodic assessment of hearing sensitivity by puretone audiometry helps in identifying the changes in hearing sensitivity of subject at regular intervals. This helps

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early detection of progressive hearing loss. 4. It helps in determining the amount of benefit from medical and surgical treatment. 5. The

pure tone audiometry also helps the audiologist in selection of suitable amplification device and accurate adjustment of the same. The results of pure tone audiometry also help to decide about ear to be fitted and also about monoaural vs binaural fitting. 6. The results of pure tone audiometry also help to decide in selection of assistive listening devices, e.g. classroom amplification solutions and their adjustment. 7. It provides direction for further management and suggests direction for further investigations. 8. The results of this test help the child to get a handicap certificate, which further helps to get benefits from State and Central Government in job reservations, exemption in tax, travel reservations

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etc. 9. The results of this test are accepted by agencies to ascertain auditory fitness for certain jobs like pilots, policemen,

corporate sector etc. 2.4.8 Speech Audiometry As the name suggests, the stimulus or signal used for this test is speech. Speech audiometry is an additional test, which is done to confirm the results of pure tone audiometry. Moreover, it gives an idea about difficulty in real life situation where the most important stimulus to be heard is human speech. A pure tone audiometer is used

58 for this testing, when the speech is presented live, the tester speaks in the microphone attached to the audiometer which can be heard by the child wearing headphones, or through loudspeakers in the test room. The speech signal can also be recorded and presented using a CD player which can be connected with the audiometer. The speech stimulus can be monosyllables or PB words like /pa/, /cha/, /sha/, word pairs called spondee like /ma-baap//aaj-kaal/ the child has to repeat the stimulus upon hearing, or they can write it down. Younger children can also point out picture cards corresponding to the stimulus words or sentences. However, the child's receptive vocabulary and cognitive level should be considered while selecting the speech material. There are basically some subtests done under speech audiometry: a) Speech recognition threshold (SRT) - gives us the threshold at which the child can just hear speech clearly and repeat. This is measured in dBHL. It can be correlated with the pure tone audiometric threshold. If there is any discrepancy between the two thresholds, then it can be suspected that either the testing procedure was faulty or the child's response is doubtful. b) Speech discrimination score/word recognition score (SDS/WRS) - gives us an idea about the amount of speech the child can understand or find intelligible in percentage. e.g. WRS is 60% that means out of 100 words, the child can correctly hear 60 words. c) Ling Six-Sound Test - this test can be carried out without or with the audiometer. Six sounds /a/, /u/, /e/, /i/, /m/, /s/ which represent most of the human speech frequencies are used for this test. Detection, identification and discrimination of these sounds is tested. Importance of Speech Audiometry 1. It validates the result of pure tone audiograms. 2. In case of difficult to test population, the child may respond to speech stimulus better than pure tones. 3. Speech discrimination test can be used to differentially diagnose pathologies beyond cochlea, e.g. central deafness, where a discrepancy between PTA and SRT/ SDS 2.4.9 Objective Tests These tests need no active participation from the child. The child's state of arousal, cognitive level or vocabulary do not affect the results of these tests. These tests are time effective and also provide an important tool in the test battery approach. They

59 also help to cross check the results obtained from subjective tests. The use of these tests give information about functioning of the hearing structures, beyond cochlea. These tests give information about type and degree of hearing loss and the probable site of lesion. However these tests are at an extra expense to the routine hearing tests, so the selection of these should be rightly justified. Many of these are also used for screening purposes in neonatal stage. Moreover these tests are very important for difficult to test population e.g. children with intellectual impairment, non-cooperative child.

2.4.10 Immittance Audiometry Also known as impedance audiometry, it is an automatic and objective means of assessing the integrity and function of the peripheral hearing mechanism. The impedance audiometer helps to determine tympanic membrane mobility, middle ear pressure, Eustachian tube functioning, continuity and mobility of middle ear ossicles, acoustic reflex threshold (8th and 7th cranial nerve function) and non-organic hearing loss. This test is routinely performed along with puretone audiometry. This test can be carried out in neonates, in sleeping children. However this test cannot be performed if the child is moving, crying or speaking. As a prerequisite it needs clean ear canals and no active infections, pain or discharge from ears. In this test a small probe is inserted into the external auditory canal of the child. The probe has three small holes. One emits a probe tone, the second is an outlet of air pressure system, and the third leads to a pick up microphone that measures the SPL of probe tone in the ear canal cavity. **Fig 11: Impedance Audiometry**

60 There are two subtests of Immittance audiometry a) Tympanometry—the mobility of tympanic membrane as a function of mechanically varied air pressure in the external ear canal is measured. The introduction of air pressure in the ear canal leads to mobility of the tympanic membrane, this can be recorded as a tympanogram. The movement of the TM depends on the functional status of middle ear. Any abnormality in the middle ear, effects the normal movement of the tympanic membrane. Along with tympanic membrane mobility (compliance), middle ear pressure and ear canal volume are also measured in tympanometry. The tympanogram can be of following types 1) Type A – normal middle ear function 2) Type As – Restricted mobility of tympanic membrane (otosclerosis) 3) Type B – No mobility of tympanic membrane (fluid in middle ear) 4) Type Ad- Abnormal or excessive mobility of tympanic membrane (ossicular chain discontinuity) 5) Type C- normal mobility of tympanic membrane with negative middle ear pressure. **Fig 12: Types of tympanogram**

61 b) Acoustic Reflex Threshold- the acoustic reflex test in the immittance battery is the determination of the signal threshold level at which the stapedial muscle contracts. The lowest signal intensity capable of eliciting the acoustic reflex is the acoustic reflex threshold for the stimulated ear. In normal hearing ears, it is usually between 70 and 100 dBHL. This means an individual with a puretone threshold of 20 dB, is likely to have ART between 90 and 120 dB (20 + 70). The measurement is made both ipsilateral (stimulated ear) and contralaterally (opposite ear) simultaneously. Importance of Immittance Audiometry

1. It helps to determine the type of hearing loss. Also helps to detect the presence of middle ear pathology and probably the type and stage of disease. This further helps otologists to provide medical treatment.
2. It provides as a useful tool to assess pre-treatment and post treatment condition. E.g a child with Eustachian tube dysfunction will have C type tympanogram, after treatment it becomes A type.
3. It is a quick test and can be used for screening.
4. It is a very important test used to cross-check the results of puretone audiometry.
5. It can provide useful information about hearing in difficult to test population who do not cooperate for conditioned responses.
6. It can be carried out when the child is asleep, needs no active participation.

2.4.11 Brainstem Evoked Response Audiometry Also known as Auditory Brainstem Evoked response measurements provide information about functioning of peripheral hearing system and hearing upto brainstem level. This objective test helps in hearing assessment and also helps to locate the site of a particular lesion along the auditory pathway. A stimulus called click or tone burst is given through headphones/insert earphones and the response is recorded from the electrodes placed on various positions on the scalp of the child. There is continuous ongoing activity in the brain, an introduction of sound in the auditory path, causes a change in this ongoing activity and this can be recorded in a form of waveform. This testing is best done when the child is calm or asleep. This can be done in new-borns, difficult to test children and also in children suspected with neurologic dysfunction (8th

62 nerve-tumour, dyssynchrony etc.). This test can also be used for hearing screening programs in NICU. The test is carried out using a BERA instrument. The test also aims to determine the threshold of hearing, however the results obtained are interpreted and deduced in order to get the actual threshold of hearing. The waveform obtained is denominated with certain peaks (I-VI). The lowest intensity upto which peak V can be identified is defined as the threshold obtained from BERA and is usually 15 dB above PTA threshold. Fig 13: Set up for ABR/ASSR Importance of BERA 1. It is a very important screening and diagnostic test. It can be used in neonates also. 2. It is an important component of the test battery used to assess young children and difficult to test population. This is because it gives ear specific information about degree of hearing loss. 3. It is also an important test for differentiating between cochlear and nerve pathologies, e.g. tumor. 4. It is a very important test as it is not affected by state of arousal, cognition and vocabulary of the child.

63 2.4.12 Otoacoustic Emissions Otoacoustic emission are low level, inaudible sounds produced in the inner ear. Further these can be elicited and recorded from ear canal on introduction of external sound. This is a quick procedure. The instrument consists of a probe assembly, to deliver tone and record responses at the same time from the ear canal. The presence of response indicates intactness of some part of inner ear, however the response can get affected by middle ear pathologies, presence of wax in ear canal etc. Used both as screening and diagnostic purposes. Children who fail in this test are referred for further testing. This test is also used as a part of test battery. Diagnostic tests can be Transient Evoked OAE (TEOAE) or Distortion Product OAE (DPOAE). Fig 14: OAE Importance of OAE 1. It is an important test as it is quick, and reliable. It can be used for neonates. It can be used for screening as well as diagnosis of hearing loss. 2. It can detect early signs of sensorineural hearing loss. Frequency wise responses can be obtained in a special OAE test called DPOAE. 2.4.13 Auditory Steady State Response The auditory steady-state response (ASSR) can be thought of as an electrophysiologic

64 response to rapid auditory stimuli. The goal of ASSR is to create an estimated audiogram from which questions regarding hearing, hearing loss, and aural rehabilitation can be answered. Stimulus is modulated pure tone. Has potential to be a faster test than ABR when perfected. Some equipment can test multiple frequencies and both ears simultaneously. Uses same basic set-up and equipment as ABR. ASSR is similar to the Auditory Brainstem Response (ABR) in some respects. For example, ASSR and ABR record bioelectric activity from electrodes arranged in similar recording arrays. ASSR and ABR are both auditory evoked potentials. ASSR and ABR use acoustic stimuli delivered through insert earphones (preferably). ASSR is evoked using repeated sound stimuli presented at a high repetition rate, whereas ABR is evoked using brief sounds presented at a relatively low repetition rate. Importance of Assr 1. ASSR allows the hearing care professional to create valid audiograms for those unable to participate in traditional behavioral tests. 2.5 Audiometer The audiologist uses an instrument called AUDIOMETER for many hearing tests like puretone audiometry, BOA etc. There are different types of audiometers that are commercially available. These can be classified as diagnostic, screening, computer-based depending upon their function. Also there are different makes and models available commercially. 2.5.1 Block Diagram Fig 15: Audiometer

65 2.5.2 Parts And Their Use The basic functions of an audiometer are to produce pure tones at selected frequencies, change the intensity of the signal, select how the signal is delivered to the ear and direct the signal to a desired ear. For example a tester would select 1000 Hz as the frequency, 40dB as the intensity, earphones as the transducer and right ear for the signal presentation. To achieve these functions following parts are required Fig 16: Parts of an Audiometer 1. Pure Tone Oscillator (Frequency dial) - it is the part of the electronic circuit located in the audiometer which generates

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pure tones at different frequencies like 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, 4000 Hz, 8000 Hz.

Some audiometers also provide option to test mid frequencies. It is represented as frequency dial/ switch with markings of various frequencies on the audiometer. 2. Attenuator/Attenuator Dial - This part of the circuit helps to control the sound pressure level or the intensity of the sound. The intensity can be changed in 5 66 dB steps from -10 dBHL to a maximum output level which varies with the test and frequency. 3. Interrupter Switch - this part of the circuit helps to present

the signal to the patient. It is an on-off switch for

puretone presentation. It also controls the duration of the signal presented to the patient. 4. Power Switch- This is used to switch the audiometer ON and OFF.A.C main supply of 220 volts or batteries can supply the power. 5. Transducer Selector - This part of the circuit helps to select the transducer through which the signal will be delivered. Transducers are the parts which convert electrical energy into sound energy or vibratory energy.For example Headphones are selected for air conduction testing.The BC vibrator is selected for bone conduction testing. 6. Router switch - this part of the circuit helps to direct the signal to desired location. For example right ear or left ear. 7. Signal Selector Switch-helps to decide the type of signal to be delivered. For example puretone, speech or noise. 8. Masking Dial/Switch: A part of this test makes use of noise to stop participation of a particular ear. The masking switch is used to present the masking noise in some audiometers. 9. V-U Meter- this helps to monitor the output level. 10. Microphone- is used to present speech through headphones or loudspeakers. 11. Patient Response Switch- Optional facility, given in patient's hand. He can press the switch to indicate his response upon hearing the sound, simultaneously a light glows on the audiometer for the tester to understand. Not recommended for young children as they can give false response. 2.5.3 Type of Audiometry

Sound Field Audiometry Sound field audiometry is a test in which the test stimuli are delivered through a loudspeaker instead of earphones, is commonly used in the clinical evaluation of difficult

67 to test clients, such as infants, young children, and persons with developmental disabilities, as well as in the assessment of hearing aid benefit for adults and children. The loudspeakers are placed at an angle from the child in the test room,for example 45 °.The type of signal used can be pure tones, modulated tones (warble), noise or speech .The response of the child can be obtained by behavioural observation(BOA, VRA) or conditioned responses (free field audiometry). An audiogram can be obtained across the audiometric test frequencies. Fig 17: Sound Field Audiometry Closed Field Audiometry The audiometric results obtained in a sound treated room, under headphone condition. More accurate results (thresholds) can be obtained in this condition. Under headphones the thresholds can be obtained frequency wise and ear wise. The stimuli which can be used are pure tones, warble tones or speech. Moreover we can block the participation of either ear by using noise in a special procedure called masking. This yields the true thresholds of each ear.The stimulus can be presented using a variety of transducers names supraaural headphones,circumaural headphones, or insert earphones. Closed field audiometry is suitable for older children (more than 5 years) and adults, who can keep wearing the transducer during the test time.

68 Fig 18: Transducers for Closed Field Audiometry Supra Aural HeadphoneCircum Aural Headphone Insert Earphones.

2.5.4 : Role of Special Educator in Conditioning for Pure Tone Audiometry Special educators are one of the important team members in the identification and intervention of hearing loss. These professionals are included in the daily routine of a hearing impaired child. A child being conditioned for puretone audiometry, often takes days of practice before delivering the accurate response. Prior to that a regular conditioning practice needs to be carried out. The hearing impaired child spends most of his waking hours in school after being at home, therefore parents and special educators play an important role in conditioning the child for PTA. The concept of classical conditioning or operant conditioning can be implemented in the course of conditioning the child. The special educator can easily communicate with the child and make him/ her understand the whole process as the teacher shares a good rapport with the child. The teacher can make use of certain noisemakers, loud sound generating items to elicit the conditioned response in the child. He can plan to have a daily 15 minutes practice session during classroom hours. He can train the child to give conditioned responses, such as raising hand, keeping a peg etc upon hearing the sound. The teacher can initially

69 give the sounds with visual cues (in front), then without visual cues (from the back). This practice helps the audiologist to finally carry out the entire testing and get a reliable audiogram. 2.6 : Audiogram The results of puretone audiometry, are plotted on a graph. This plotting is done at various frequencies and intensity level. The graph is called an audiogram. 2.6.1 Understanding of Audiogram The figure shows a typical audiogram. The X-axis shows the frequencies and the Y-axis shows the intensity levels across which the testing is carried out. The thresholds are plotted at the junction of frequency and intensity. For example in the figure below, the threshold at 1K(1000 Hz) is 25 dBHL. Each vertical line represents frequency and each horizontal line represent the intensity level. The frequencies are expressed in Hz or KHz from 250 to 8000 Hz (left to right). The intensities are expressed in dBHL, from low to high (top to bottom), -10 dBHL to 120 dBHL. In a typical audiogram the air conduction threshold for both ears is plotted, the bone conduction threshold of better ear is plotted first followed by the other ear. If needed the masked AC and BC thresholds are plotted. A typical audiogram is plotted in figure 19. Symbols: For plotting audiograms, specific

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symbols are used for air conduction and bone conduction threshold of each ear.

These symbols are internationally standardised. Red colour is used for plotting of right ear and blue for left ear. The thresholds for air conduction are joined by a solid line, but the thresholds for bone conduction are joined by dotted lines. The symbols are shown in figure 20. Fig 19: Typical Audiogram

70 Fig 20: Symbols used on an audiogram 2.6.2 Audiogram Interpretation Audiogram mainly provides

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information about type and degree of hearing loss. Also it provides separate information about each ear, which helps

in diagnosis, as well as planning appropriate management. The PureTone

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Average (PTA) provides information about the degree of hearing loss and the

difference between air conduction threshold and bone conduction threshold indicate the type of hearing loss. Degree of hearing loss- for determining

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the degree of hearing loss (amount of impairment) the pure tone average is calculated. The pure tone threshold of each ear at three frequencies 500 Hz, 1000 Hz and 2000Hz,

are summed and divided by three. For example the threshold at 500 Hz, 1000 Hz and 2000 Hz is 50, 60 and 40 dBHL. The PTA is calculated as follows: $50 + 60 + 40 = 150/3 = 50\text{dBHL}$ 3 The degree of hearing loss in the above example is moderate.

71 The degree of hearing loss in the above example is moderate. Table 1 : PTA and Degree of hearing loss PTA Degree of Hearing Loss -10 to 15 dB

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Normal Hearing 16-25 dB Minimal Hearing Loss 26-40 dB Mild Hearing Loss 41-55 dB Moderate Hearing Loss 56-70 dB Moderately Severe Hearing Loss 71-90 dB Severe Hearing Loss

Type of Hearing loss: Hearing loss

is categorized into different types, depending on what part of the auditory system is damaged. The

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three types of hearing loss are conductive, sensorineural and mixed hearing loss.

For understanding the various types of hearing loss, we need to understand the normal hearing sensitivity. Normal Hearing Sensitivity: When the thresholds for both AC and BC are within 15 dBHL, also the difference between AC and BC thresholds is less than or equal to 10 dBHL, we can interpret it as normal hearing sensitivity. Fig 21: Audiogram showing normal Hearing

72 Conductive Hearing Loss- When the AC thresholds are abnormal (upto 70 dBHL), BC thresholds are within normal range creating an Air-bone gap (ABG), the audiogram gives an indication of conductive hearing loss. It can be seen for one ear or both ears. Both ears may show the same degree or different degrees. Any deficit or malfunction in external ear and/or middle ear causes a conductive hearing loss. Fig 22: Audiogram showing conductive hearing loss in both ears.

Sensorineural Hearing loss- When both AC and BC thresholds are affected or abnormal, with ABG equal to or less than 10 dBHL, the audiogram indicates sensorineural hearing loss.

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The defects of inner ear or auditory nerve results in sensorineural hearing loss.

Fig 23: Audiogram showing sensorineural hearing loss

73 Mixed Hearing Loss – When both AC and BC thresholds are affected, the ABG is more than 10dBHL.

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The mixed hearing loss occurs when there is involvement of the outer ear and / or middle ear and

the inner ear. Fig 24:Audiogram Showing Mixed Hearing loss Configuration of Audiogram The shape or contour of the audiogram is called its configuration and can be understood from an audiogram. It suggest the underlying pathology. Depending upon the configuration, certain frequencies will be more affected than others. It helps to decide about amplification device and plan the rehabilitation work up. Also helps to predict benefit from amplification and various rehabilitation programs including educational management. Some configurations are as follows: 1. Flat Configuration; all frequencies are equally affected 2. Sloping Configuration: High frequencies are more affected than low frequencies 3. Rising Configuration: Low frequencies are more affected than high frequencies. 2.6. Audiogram Interpretation and Educational Implication The degree, type and configuration of hearing loss helps to assess the educational needs of the hearing impaired child. The educational needs which can be assessed using

74 information from audiogram are as follows: 1. Deciding on the schooling option. Depending upon the degree and type of hearing loss selecting the type of school- a) Special School placement – this option is for children with more severe hearing loss(bilateral profound hearing loss).Moreover for children who had a late identification and hearing aid fitting with severe to profound hearing loss, special school placement is recommended. b) Mainstream school- Hearing impaired children with less severe hearing losses can be included in mainstream schools provided they had an early identification and intervention. It can be further decided depending on their degree and type of hearing loss about the type of mainstreaming to be done- regular school (minimal or mild hearing loss),integrated school, and inclusive school. c) Non-formal Education – national open school placement d) Some children need special school in early years and then they can move on to mainstream school.(mild to severe degree) e) Some children may need special school after primary education. f) Some children may need specialized individualized input along with enrolment in mainstream school. g) Some children may benefit from mainstream schools and yet require specialized academic support for social studies, science or languages or literacy.(moderate to profound sensorineural hearing loss) h) Some children may need some classroom amplification and some may need sign language interpretation in the class.(severe to profound sensorineural/ mixed hearing loss) i) Some may need certain concessions and exemptions and the others may not need them. 2. Deciding on the curriculum- Some children may follow the standard educational hierarchy, but some might need a flexible curriculum. For example children with more severe sensorineural hearing loss, might need a flexible curriculum, they often find language and literature subjects difficult as these need more proficiency in speech and language skills.

75 3. Deciding on the type of evaluation of performance to be administered. For example, conducting written exams over oral exams, using a grading system instead of any examination etc. 4. Deciding about classroom needs- The most important place where the child spends quality time for acquiring education is the classroom. Classrooms for hearing impaired children should be designed and equipped according to their hearing needs. a) Seating Arrangement- For instance children with severe to profound sensorineural hearing loss and limited benefit from hearing aids may need preferential seating in the classroom, front seat, close to teacher.Children with milder losses,conductive type may not need this seating arrangement. b) Classroom Acoustics- Children with more severe losses and sensorineural type are affected by noise and reverberation. The classroom must be designed to keep them noise and reverberation free. c) Installation of classroom amplification devices – All children with hearing impairment benefit from assistive listening devices installed in classrooms. However children with severe to profound hearing loss benefit the most from these devices.For example, FMsystems, loop induction systems.Children with unaidable hearing loss might need installation of alerting devices,such as flash lights to indicate end of period. 5. Deciding on teacher-student ratio – Children with more severe loss need more individualised support. So a lesser ratio is preferred for more severe hearing losses. 6. Deciding upon the communication strategy to be used – unisensory vs multisensory approach. Children with more severe loss will need multisensory approach for teaching, for example use of visual and tactile clues. 7. Deciding upon medium of instruction and communication to the child. 8. Help to design appropriate teaching aids that will excel the child’s learning in classroom. 9. Assess the child’s hearing every day, with or without hearing aid in the classroom. This can be done by using simple tools like conversation, using Ling Six sound Test. 10. Plan an educational management strategy depending upon the degree, type

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and configuration of hearing loss. 76 2.7 Concept of Unaided, Aided Audiograms, Speech Spectrum and its applications 2.7.1

Unaided Vs Aided Audiogram Audiogram obtained in unaided condition (without amplification device) and in aided condition (with amplification device) is compared to know the actual benefit from amplification. This procedure helps to determine the functional gain. In both the conditions, conditioned (VRA OR PTA) or behavioural responses (BOA) are obtained in sound field environment. The stimulus can be modulated tones (warble), narrow band noise, pure tones. The stimuli are presented via loudspeakers in both unaided and aided conditions. The minimum response level of the child are noted on the same audiogram, to compare the difference in both conditions. The amplification device (e.g hearing aid) is adjusted according to child's hearing thresholds. More recently speech stimuli is used. (Speech perception tests) or real ear measurements are carried out to get more appropriate responses. However measurement of functional gain is still practiced as a routine clinical test. The functional gain can also be estimated by using the results of aided ASSR. Fig 25: Aided(A) and Unaided (S) responses Clinical Implication 1. Measurement of functional gain is a very useful tool for young children and infants.

77 2. Measurement of functional gain is very important and useful for children with associated problems. 3. It gives us an idea about the actual benefit from the amplification device. 4. It suggests about the modification to be made in the current aided hearing, or the device setting. 5. Depending upon the results of functional gain measurements comparison between two hearing aid settings or two different devices can be done. As a result the most appropriate device can be chosen for the child. 6. It is a very effective counselling tool, to explain the parents about hearing aid benefit. 7.

Functional gain measurements can be used to select between communication strategies to be used with the child (verbal vs non verbal) 8. The results of functional gain measurement can be used to predict progress in speech language skills and educational skills. 2.7.2 Concept of Speech Spectrum

78 The speech spectrum also called

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the speech banana is a representation of different speech sounds on the audiogram depending on their frequency and intensity at typical conversation levels. Most speech sounds are within the 250 to 4000Hz range, with a few high frequency sounds between 4000Hz and 6000Hz. A plotting of the child's thresholds at each frequency on the speech banana will show the speech sounds which the child is able to hear. Any sound which is below the level of the child's threshold will be heard, and anything above this threshold line will not be heard. A child with a mild loss may not hear f, v and z in the low frequencies and f, s and th in the high frequencies. Thus, children with mild losses develop speech and respond to sounds, and the hearing loss is identified at a later age. These children will often have difficulties with pronunciation of words, depending on the sounds they are unable to hear. Difficulty will be experienced in noisy environments such as the classroom. A moderate loss will result in missing out on number of consonants in the speech banana, depending on the shape of the loss, while a severe (and greater) loss will result in all speech sounds being missed. However, environmental sounds (like the piano, dog barking,

and heavy machinery)

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will be heard. These children will respond to sound but, without amplification, will not hear sounds clearly. With amplification the threshold at which sounds are heard will be improved and thus speech sounds will

be heard clearly. 2.7.3 Clinical Applications of Speech Spectrum 1. One use of the speech banana is to help visually understand what sounds are not audible. It is an excellent counselling tools for parents to understand why their child seems to hear certain sounds or words but not others. In some cases, audiologists will do aided testing to show what sounds within the speech banana can be heard when using a hearing aid or cochlear implant. When the child's unaided and aided audiogram are plotted on the speech spectrum, it helps us to understand the child's hearing status (environmental and speech sounds). This further helps us to select amplification device, and plan rehabilitation program.

2. For children who are already wearing amplification device, the aided response can be plotted on the speech spectrum, and depending upon the response, the hearing aid can be readjusted, if required.

79 2.8 Let us sum up 1. Sound is the basic acoustic unit perceived by human ear. It has certain parameters which can be expressed in different units. 2. The auditory development in humans starts before birth and attains almost adult like hearing by 2 years of age. 3. The hearing capacity can be assessed using a variety of tests. These tests can be either objective or subjective depending upon the participation of the child. Usually a test battery approach is used for correct diagnosis of hearing loss. 4. The basic instrument used for testing is an audiometer. The audiometer is capable of generating certain sound signals e.g pure tones, speech etc. The signal generated is presented to the child via transducers like headphone, loudspeaker etc. The selection of transducer depends upon the test to be done. 5. The ultimate goal of assessment is obtaining threshold of hearing with the help of puretone audiometry. 6. The results of pure tone audiometry are plotted on an audiogram. The results can be plotted ear wise. The interpretation of audiogram helps us to understand the probable site of deficit/damage. It also gives information about degree of hearing loss. It helps to plan the rehabilitation process including educational aspect. 7. According to standardised classification the hearing loss might range from minimal to profound degree in either ear or both ears. There can be asymmetric hearing loss in each ear. 8. The hearing loss can be conductive, sensorineural or mixed depending upon the site of deficit/damage. 9. Aided vs unaided audiogram gives us an idea about the child's hearing with and without hearing aid. Also helps to plan the rehabilitation process. 10. Aided and unaided audiogram are plotted on the speech spectrum, which is a representation of all the speech sounds used by humans, depicting their frequencies and intensities. Plotting the aided and unaided audiogram on the speech spectrum gives an idea about the sounds the child can hear with and without hearing aid.

80 2.9 "Check your Progress" 1. What are the physical attributes of sound?

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..... 2. By which age the child starts localising the sound source?

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..... 3. What are the subjective tests of hearing? Briefly describe the procedure for conditioning a child with hearing loss.

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..... 4. What is an audiometer? Name its parts.

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..... 5. A child's Air Conduction threshold are as follows. What is the degree of hearing loss?

..... 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz 8000 Hz 85 Db 90 dB 100 dB 120dB 120dB 85dBNR

81 6. What information you can get from a child's aided audiogram? What is a speech spectrum?

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..... 2.10 References 1. Northern J.L and Downs P.M, Hearing in children, Fourth Edition,1991 2. Kramer S, Audiology Science to Practice,2008 3. Martin F.N ,Introduction to Audiology, Third Edition,1986 D.SE(HI) Manual

82 Unit 3 □□□□□ Assessment of Language & Communication Structure 3.1.1 Introduction : 3.1.2 Objectives : 3.1.3 Communication : Concepts and types (Linguistic versus Non Linguistic) 3.1.1 Introduction : Communication is “any act by which one person gives to or receives information about one’s needs, desires, perceptions, knowledge, or affective states. Communication may be intentional or unintentional, may involve conventional or unconventional signals, may take linguistic or non-linguistic forms and may occur through spoken or other modes.” Humans convey information through a variety of methods: speaking through telephones, email, blogs, TV, art, hand gestures, facial expressions, body language and even social contexts. Communication can occur instantaneously in closed, intimate settings or over great periods of time in large public forums, like the Internet. However, all forms of communication require the same basic elements: a speaker or sender of information, a message, and an audience or recipient. The sender and recipient must also share a common language or means of understanding each other for communication to be successful. As such, a study of communication often examines the development and structure of language, including the mathematical languages used in computer programming. The act of communicating draws on several interpersonal and intrapersonal skills. These include speaking, listening, observing, questioning, processing, analyzing and evaluating. Recipients of a message must be able to identify the sender’s intent, take into account the message’s context, resolve any misunderstandings, accurately decode the information and decide how to act on it. Such skills are essential to learning, forming healthy relationships, creating a sense of community and achieving success in the workplace. As a field of study, communication spans a broad, rich array of subjects, including sociology, psychology, philosophy, political science, linguistics, history, literature, criticism and rhetoric. Although much of the field’s subject matter is theoretical in nature, communication studies have proven applicable to business, film, theatre, composition, advertising, education, foreign policy and computer science. In today’s globalized, media-driven world, communication studies have become more relevant and exciting than ever. Web developers seek new, inventive ways to draw Internet users to their websites. Public policy writers debate society’s most pressing issues. Through linguistics, computer scientists are developing programming languages that may someday allow humans to interact directly with computers.

3.1.2 Objectives : After completing the unit student-teachers will be able to ●●●● Explain the concept, types and structure of communication and language. ●●●● Acquire knowledge about Developmental milestones in typically growing children. ●●●● Understand the clinical as well as environmental Impact of deafness on communication and language. ●●●● Acquire knowledge about need for assessment of communication and language. ●●●● Understand the various assessment tool related to communication and language.

3.1.3 Communication : Concepts and types (Linguistic versus Non Linguistic) The term “communication” has been derived from the Latin “communis,” that means “common”. Thus “to communicate” means “to make common” or “to make known”, “to share” and includes verbal, non-verbal and electronic means of human interaction. This act of making common and known is carried out through exchange of thoughts, ideas or the like. The exchange of thoughts and ideas can be had by gestures, signs, signals, speech or writing. People are said to be in communication when they discuss some matter, or when they talk on telephone, or when they exchange information through letters. Basically, communication is sharing information, whether in writing or orally.

84 Scholars who study communication analyze the development of communication skills in humans and theorize about how communication can be made more effective. It is the meaningful exchange of information between two or a group of people. Communicative competence designates the capability to install inter subjective interactions, which means that communication is an inherent social interaction. Schramm (1964) defines communication as “a tool that makes societies possible and distinguish human from other societies”. Berelson and Steiner (1964) define communication as the transmission of information, ideas, emotions, skills through the use of symbols, words, pictures, figures, and graph. Theodorson and Theodorson (1969) define communication as “the transmission of information, ideas, attitudes, or emotion from one person or group to another...primarily through symbols.” Human beings can communicate with each other. We are able to exchange knowledge, beliefs, opinions, wishes, threats, commands, thanks, promises, declarations, feelings - only our imagination sets limits. We can laugh to express amusement, happiness, or disrespect, we can smile to express amusement, pleasure, approval, or bitter feelings, we can shriek to express anger, excitement, or fear, we can clench our fists to express determination, anger or a threat, we can raise our eyebrows to express surprise or disapproval, and so on, but our system of communication before anything else is language. In this book we shall tell you a lot about language, but as a first step towards a definition we can say that it is a system of communication based upon words and the combination of words into sentences. Communication by means of language may be referred to as linguistic communication, the other ways mentioned above - laughing, smiling, shrieking, and so on -are types of non-linguistic communication. Most or all non-human species can exchange information, but none of them are known to have a system of communication with a complexity that in any way is comparable to language. Primarily, they communicate with non-linguistic means resembling our smiling, laughing, yelling, clenching of fists, and raising of eyebrows. Chimpanzees, gorillas, and orangutangs can exchange different kinds of information by emitting different kinds of shrieks, composing their faces in numerous ways, and moving their hands or arms in different gestures, but they do not have words and sentences. By moving in certain patters,

85 bees are apparently able to tell their fellow workers where to find honey, but apparently not very much else. Birds sing different songs, whose main functions are to defend their territory or to attract a mate. References: Schramm, W. (1954). How communication works. In W. Schramm (Ed.), The process and effects of mass communication. Urbana, IL: University of Illinois Press. Berelson, B., & Steiner, G. (1964). Human behavior: An inventory of scientific findings. New York: Harcourt, Brace, and World. Theodorson, S. & Theodorson, A. (1969). A modern dictionary of sociology. New York: Cassell Education Limited. Huddar, A., More, R., Ghate, P. & Gathoo, V. (2007). Language and Communication. New Delhi: Kanishka Publishers.

86 3.2 □□□□□ Communication Structure 3.2.1 Introduction: 3.2.2 Language 3.2.3 Speech: 3.2.4 Components of Language: 3.2.5 Language Content 3.2.6 Language Use 3.3 Normal Developmental Milestones of Speech and Language: 3.2.1 Introduction: Theoretically, communication can be defined as the process involving sending and receiving messages which is important to transmit information, share feelings, etc. between persons and groups. It involves the process of encoding and decoding via which information is encoded by a speaker and decoded through the listener. Linguistically, communication is defined as a rule based mental system of language codes for expressing an understanding thoughts, feelings and ideas. Communication can be represented in the forms involving either a verbal or a non-verbal mode. Verbal communication involving a set of linguistic codes foral- auditory, visual-graphic) following a set of mental rules is called as oral language. Similarly, non-verbal communication involving use of pantomimes, gestures but not governed by mental rules of spoken language is called as sign language. 3.2.2 Language Introduction: Language has been defined from various perspectives depending on the theories that have been proposed to explain the process of language acquisition. From a social view point, language can be defined as a speech act which includes the reason for speaking (intentions), the situations in which the event occurs (context) and different ways in which one speaks depending on the circumstances (alternation).

87 From a behavioral view point, language is defined as a learned behavior in which the processes of classical and operant conditioning facilitate the development of language. From a linguistic framework, language can be represented as a system that consists of symbols (words) governed by mental rules (grammar) which is used to represent the ideas about the world. From a cognitive framework, language has been defined as a mode that serves to express thought. Language has been defined as a culmination of processes involving sensation, perception, imagery, conceptualization, symbolization and abstraction. Piaget defined language as a fine cognitive act which results into developmental processes including intelligence, social, sensory-motor, emotional and cognition. 3.2.3 Speech: On the other hand, speech has been defined as the verbal manifestation of language and is the result of overlaid function of different physiological systems involving articulation, phonation, respiration, resonance, and regulation. Interaction between communication, language and speech: Types of communication: Basing on mode communication can be of two types (i) Verbal communication- involves use of language and other verbal modalities (paralinguistic cues) (ii) Non-verbal communication- involves use of signs. gestures, sign language, lithography, etc. Basing on the use of senses, communication can be described as (i) Auditory based communication- involves use of auditory signals. Example- sirens, alarms, telephones, etc. (ii) Visual based communication- involves use of visual signals. Example- reading, writing, gestures, facial expressions, etc. (iii) Tactile and olfactory based communication involves use of tactile and olfactory signals such as hand-shake, kiss, hugging, slapping, different smells, etc. Basing on developmental stages, communication can be described as :

88 (i) Perlocutionary stage ●●●●● Present from birth and continues throughout life. ●●●●● Lack of consciousness and goal directed intentions. ●●●●● Communication involves care givers interpretation of infant's behavior. ●●●●● It is a one way process in which caregiver infers messages by willing fully interpreting infant's behavior as communicative signals. Example : (a) caregivers attention to reflexive and differential cry of infant. child directed speech (b) Social smile, gaze coupling. (ii) Illocutionary stage ●●●●● Develops at 6 months of age ●●●●● Represents the emergence of semantic intentions ●●●●● Infant's behavior is consciously directed towards influencing other persons to act on some object the concept of cause-effect and means-end relationship emerge, that is, changes have causes, and persons can be the agents of change. ●●●●● Infants learn to use gestures in phonetically consistent forms and vocalizations to convey intentions during this period, Not only semantic intention, the overall concept of intentionality emerges during this stage (semantic intentions- protesting, requesting, declarative, existence, non-existence, recurrence, rejection). ●●●●● The use of joint reference, i.e., shared focus of infants and caregivers of identifying an object and joint action, i.e., goal oriented motor behavior are routinely performed during an event. The use of proto declaratives and proto imperatives are also seen during this stage. (iii) Locutionary stage ●●●●● This stage is marked by the use of true words along with complex gestures to express intentions. ●●●●● This stage is also identified with development of joint attention in an infant. 3.2.4 Components of Language: Language is a complex combination of several component, rules and systems. Bloom and Lahey (1978) had divided language into three major components-

89 (i) Form (ii) Content (iii) Use The interaction of form, content and use of language is called as knowledge of language. The knowledge and concept of language is called as language competence. Basing on Chomskian views, performance has been viewed as expressive language and competence as receptive language. Performance has been defined as the ability to use the inbuilt grammar and grammatical rules and competence as the inherent capability to acquire grammatical rules from exposure to it from the environment. Disorders of language can be due to faulty interaction between these three components of language. Language form refers to the underlying rule, system, or the grammar of a language. Language form consists of three major components. These are: (i) Phonology (ii) Morphology (iii) Syntax PHONOLOGY Phonology refers to the rules that govern the way in which speech sounds are represented in a particular language. Phonology studies the range of speech sounds used by a native speaker while speaking and the way they are produced. Phonology also governs the way in which speech sounds are categorised in a particular language and the way they are combined to form syllables and words. Example- English has 43 speech sounds, Whereas, Telugu has 47 speech sounds (phonemes). Phonology can be divided into two components- segmentals and supra-segmentals. SEGMENTALS The segmentals refer to the phonemes and syllables found in a language. PHONEME — any speech sound is called as a phone and the meaningful speech sounds which combine to form syllables and words are called as phonemes. Every language has a limited set of phonemes which combine to form the grammar of that language. All the phonemes that exist in all the languages of the world have

90 been represented in an International Phonetic Alphabet Inventory (IPA). The phonemes such as [b], [p], [o] in combination with other phonemes such as [a] form syllables [ba], [po], [pa], etc. phonemes have been categorized basically into consonants and vowels and the consonants have been categorized basing on place of articulation and manner of articulation. Basing on place of articulation consonants are categorised as bilabial, labiodental, dental, alveolar, palatal, velar, glottal and retroflex. Basing on the manner of articulation consonants are categorized as stops, fricatives, affricates, nasals, laterals, aspirates, unaspirates, voiced, voiceless, trills. Based on tongue height, vowels have been classified as front, mid and back vowels. SYLLABLES: A syllable refers to the unit of speech sound composed of a vowel and a consonant or similar combination. Syllable consists of an onset and a rhyme further consists of a nucleus and a coda. Syllables are the smallest units which can be separated in a word SUPRA- SEGMENTALS; When syllables are combined in words and phrases, the rhythmic contour of combination of syllables make up the prosody of the language. Features of prosody include the relative stress on one or another syllable in a string. The melodic rise and fall of the intonation of the syllables and pattern of pause time that occurs between segments. The prosodic features of sound are super imposed of the sound segments, that is, phonemes and syllables and thus arte called as supra-segmentals. MORPHOLOGY: Morphology refers to the study of internal organization of words. The smallest segment of speech that carries meaning is called as morpheme. Thus morphology consists of word and word inflections. A morpheme can also be represented as the smallest meaning of word that carries meaning. Morphology enables the language user to modify word meanings and produce semantic distinction such as numbers, verb, tense and possession, extended word meanings and derived word classes. A morpheme can be of two types- (a) Free morpheme- it refers to the smallest meaningful unit in a word which can exist independently and has its own meaning For example: "cut" in cutting (b) Bound morpheme- they are grammatical markers that cannot function independently and must be attached to free morphemes or to the

91 other bound morphemes. For example: "ed", "ing", "er", "un", "ly", "s", etc. With respect to number -cat, cats With respect to tense -talk, talked With respect to possession-Mary, Mary's With respect to extended word meaning - Respect, Disrespect With respect to derived word classes - beauty, beautiful, etc. Morphology of a language also includes two types of word classes: (i) Content words- these are nouns, verbs, adjectives and adverbs. Content words are the building blocks of a sentence which carry meaning. Content words exist independently in a language. Content words referring to objects are called as substantive words (noun) and those words referring to relationships are called relational words (verb). Content words keep adding on throughout a person's lifetime basing on his experiences and thus are called open class words. (ii) Function words - it refers to those words that connect the content words in a sentence. These are prepositions, articles, conjunctions, and pronouns. Function words are constant in a person in a language and thus are called as closed class words. Apart from functions words and content words, Morphology consists of Morphological inflections called as 'affixes'. Affixes are those morphemes that are added to roots. Roots are those words that cannot be divided. The affixes have been divided into two types: (i) Prefixes - morphemes added at the beginning of roots. (ii) Suffixes - morphemes added at the end of roots. Morphological inflections modulate the meaning of a sentence, i.e., they provide information about the meaning of number and time. Relation between nouns, verbs, and adjectives along with the morphological inflections constitute the syntax of a language. SYNTAX: Syntax refers to the rule system which governs the word order in a sentence. The word order can be described as: (i) The order in which words should be arranged in a sentence (ii) The way in which sentence should be organized (iii) Relationship between words, word classes word types and other parts of the

92 sentence. Syntax specifies which word combinations are acceptable or grammatical and which are not. Word sequences follow definite word order rules, i.e., the phrase structure rules and transformational rules. Each sentence may contain a noun phrase that includes a noun and a verb respectively. Within noun and verb phrases, certain word classes appear. Example- articles always appear before nouns. Thus, 'The boy' is grammatical and 'Boy the1 is syntactically incorrect. Hence, according to. McLaughlin. syntax is that part of grammar which specifies rules for sequencing or ordering words to form phrases and sentences. The sequencing of words in a sentence is governed by two types of grammatical rules: (I) Linear structure: A linear structure is formed when two words in combination do not mean anything more than each of the words alone. Example: The meaning of "more cookie" is same as the meaning of 'more' and the meaning of the relation between 'more' and 'cookie' (two of the words convey the same meaning as one word in isolation). The linear structure relations can be described with the formula $f(x)$ where $*f$ is a fixed value which does not change and 'x' is a variable which can assume many values. (II) Hierarchical structure: When the meaning relation of words in combination with one another, is something more than the meaning of the separate words, the syntactic structure can be described as the hierarchal structure. The hierarchal structure defines how words and phrases are arranged in a sentence. "Noam Chomsky categorized hierarchal structure into two types of structure rules: (a) Phrase structure rules: These rules help in sentence organization where units in each sentence are organized in hierarchy. Each of these units can again be further broken down into its constituent parts. In all languages a sentence contains at least a noun and a verb as its basic units. The basic relationship is written as: (Sentence = Noun Phrase + Verb Phrase) A noun phrase contains noun and associated words such as articles, adjectives, etc. A verb phrase consists of verb, adverbs, prepositional phrases and possibly a noun phrase as an object of the verb. The phrase structure of sentences can be explained through a sentence tree diagram. (b) Transformational rules: They rearrange the basic structure rules to create 93 general sentence types such as declarative, interrogative, negative, passive and imperative. Each sentence comprises of two basic structures: Deep structure and Surface structure. The deep structure contains the basic meaning of the sentence and the actual sentence produced is known as the surface structure. The relationship between deep structure and surface structure is determined by transformational rules. By changing, recording and modifying the deep structure elements. These transformational operations create the surface structure. A transformational rule can be represented by a formula. $NP_2 + \text{Verb Tense} + V (-ed) + \text{by} + NP_j$ For example: The cat was chased by the dog. Similarly the same sentence can be represented as: $NP_i + V + (\text{The dog chased the cat})$. Linguistically, every sentence is composed of subject and a predicate. A sentence in which a group of words are centered around people or objects are called noun or noun phrases. Similarly, if a group of words is centered towards actions or relationships in a sentence, they are called as verb or verb phrases. In a sentence, a noun is always predicted by a determiner called the noun modifier, which qualify, specify, or rank the noun. The determiners include pre- articles, articles, demonstratives, possessives, ordinals, quantifiers, comparatives and adjectives. Pronouns such as he/she/they are also used in a sentence instead of noun to convey the same meaning. In a sentence, the predicate is represented as a verb phrase. A verb can take various forms depending on the content and context of the sentence this can be: (i) Action verbs - Walking, Eating (ii) Process verbs - Hearing, Seen (iii) State verbs - Ball, Alone (iv) Grammatical verbs - is, are, was, were (v) Lexical verbs - Run, Sit, Write (vi) Transitive verbs - Heat, Heard (vii) Intransitive verb - Smiling A sentence in transformational structure thus can take various forms depending on the content and context of the sentence.

94 3.2.5 Language Content Language content refers to the meaning represented by language. Language components can be explained by the following tree diagram. Denotes an idea or concept or an arbitrary system for dividing reality into categories and units. These categories and units group similar object, actions, relationship and distinguish dissimilar one. Semantics is concerned with the relationship of language form with objects, events and their relationship, as well as word and word combination. Word/symbols do not represent reality but rather a concept. A concept is related to a whole class of experiences rather than to a single one. Semantics is the result of the cognitive categorization process (reference between object and events). Language content or semantics defines the way objects and action relationships are represented. The way objects and action relationships are represented by a person determines the language topic of that person. As experiences differ from others, language topic varies from person to person. However, language content is universal across cultures and languages and helps a person to use language form correctly according to situations.

Language content is general, depersonalized and independent of particular context where as language topic is particular, personalized and contextual. Language content can be categorized as based on representing and understanding of: (1) Objects (2) Relation between objects (3) Relation between events The understanding of .objects and their meaning can be represented as particular objects or classes of objects. Second category, i.e., relation between object can be defined the relation of one object to itself or relation of one object to another object. Third category, i.e., event relations includes relations between two different events or relations within a single event. Object relation refers to dimensional words such as big/little, high/low, etc.; spatial words such as behind, outside/inside, far/ near, etc. and kinship words such as son, daughter, grandfather, brother, father, mother, etc. Event relations includes temporal words such as after, before, since, until, etc.

95 The object, object relations and event relations are related to each other through word orders. These word orders are called as semantic relations. A children master, semantics during their language learning, the complexity of word order also increases. In English, the semantic relations normally include sentence construction such as: (1) Agent + Action + Object (2) Agent + Action + Locative (3) Agent + Object + Locative (4) Agent + Action + Object + Locative, etc. The semantic relations for objects and the relations are expressed in the form of semantic intentions.

3.2.6 Language Use Language use or pragmatics serves three major functions: (i) The use of language for attending different goals (ii) The use information from the context to determine what one must way to achieve the goals (iii) The use of the interaction between persons to initiate, maintain- and terminate conversations. Language use/Pragmatics has been described by Bloom and Lahey (1978) on the basis of communication function and communication context. Communication functions involve both personal and social goals that describe the interaction and the balance of control between speakers and hearers. Personal functions are served when one comments on himself, solves a problem or asks a question to gain information. On the other hand, social functions (interpersonal) refer to the behaviors one shows for getting things done. Socially mediated goals are served when one seeks and maintains the attention of others or gives a direction for someone to act. Pragmatics is also related to the context of spoken message. The idea about context helps for deciding which form of the message will serve the function of the message in different context.

96 The pragmatic rules governs sequential organization and provenance of conversation, repair of errors, and roll and speech acts. A speech act is a unit of linguistics communication and contains not only the forms of utterance but the meaning and the intention of the speakers as well. Organization and provenance of conversation include turn-taking, initiating, maintaining and closing a conversation, establishing and maintaining topic and making relevant contributions to the conversation. Conversation includes giving and receiving feedback. Conversational role skills include establishing and maintaining role and switching linguistic codes for each role. Pragmatics also includes the extra-linguistic aspect of language. These refers to the non-verbal features that accompany expressive language and serve to modifv. amplify, fine tune the actual meaning being expressed linguistically. Among the extra-linguistic aspects, pragmatics includes pre-dominantly the par a-linguistic codes used in a language. These para-linguistic codes are also known as supra-segmental aspects or prosody of speech. The supra-segmental aspects modify the meaning of the spoken message as it is produced in different context and includes mainly the stress, rhythm, intonation, pause, juncture, etc.

97 3.3 □□□□□ Normal Developmental Milestones of Speech and Language: ●●●● At birth-Birth Cry ●●●● 0-1 months - Reflexive Cry, Vocalization ●●●● 1-2 months - Differential cry, differential vocalization, i.e., caregivers can differentiate between hunger cry, pain cry, pleasure and happy sounds ●●●● 2-3 months - Cooing Stage In this period the infant develops the ability to start and stop oral movements and this stage is characterized by laughter and known distress pleasures, like cooing sounds which express happiness. During this time the infant produces consonants like [k] and [g], and vowels like [u]. Though they are not accurate and their resonance is not complete. The child's vocalization contains 2-3 different sounds. ●●●● 4-6 months - Babbling Stage During this time infants begin to exhibit marginal babbling which is described as the production of variety of vowels like sounds with occasional vocal tract closure. "Marginal babbling" may contain simple consonant vowel (CV) syllables or vowel consonant (VC) syllables. The vowels resonate more fully in this period, compared to the period between 2-4 months. Thus, the resultant tones in this period are called fully resonant nuclei (FRN). Speech is characterized by prolonged periods of vocalizations and strings of sounds. These sounds are mostly bilabial such as [b, p] or alveolar [d]. ●●●● 6-7 months - Reduplicated (canonical) babbling The infants start to playfully experiment with different sound combinations in this stage. Thus, this stage is known as vocal play. The child produces string sounds such as [p], [b], [t], [d], [m] and [n]. The infant uses long reduplicated strings of consonants and vowels such as jbabababa, jmamamama. ●●●● 7-9 months During this period, the child responds to mother by babbling like vocalization

98 and child also starts to babble whenever he/she is spoken. This is called as "Directed Babbling". During this period, the child starts to babble to communicate socially with the caregiver. This is called as "Socialized Babbling". In this stage the child also varies the strings of syllables, i.e., consonants and vowels change from one syllable to another. Hence, this stage is also called as the stage of "Non-reduplicated/Variegated Babbling". Example: [bagada]. ●●●● 9-11 months At this stage, the child tries to imitate adult like speech in a meaningful way, i.e., phonemic sequence, syllabic structure and intonational contours in the child's vocalizations follows that of adult's speech. These non-meaningful sequence of phonemes having intonation and stress patterns that sound appropriate for meaningful speech are called "jargon". Along with jargon, the child also uses proto words which have sound-meaning relation. (Example: 'bhow-bhow' for dog, 'meow-meow' for cat etc.). These proto words are also called "Vocables" or "ideomorphs". ●●●● 12-18 months - First word By 12 months of age, the child starts to acquire the first meaningful word. This develops directly with his ability to name different objects. By 18 months of age, most of the children acquire a minimum of 3-4 meaningful words involving the most basic relationships like father, mother and basic needs like milk, water, food, etc. By 18 months of age, normally children may have a word vocabulary of up to 50 to 100 words also along with use of ideomorphs as well as jargon. Development of Semantics : The ability to represent something in mind when it is not present (representational thinking) is important for development of language. A child in order to learn the conventional word associated with a concept must be able to represent the phonetic form of that word from past experience and must be able to represent the concept for its use, hence a mental schema or representation of an object or an associated event or the relationship between the event and the object. The development of jargon marks the development of semantics.

99 ●●●● 8-12 months At this age, the development of semantics begins and the child starts relating to persons and objects. However, the child is able to comprehend the meaning of objects and events but cannot represent them in expressive language. ●●●● 12-18 months The child has a vocabulary of about 35-100 words. Children begin to combined words basing on objects and the relationship with events. Child at this age develops various semantic intentions such as: (i) Possessions and possessives i.e., relating to own self. Example: mine, my ball, my dress, etc. (ii) Existence and non-existence i.e., objects being present or being absent permanently, (iii) Rejection and negation i.e., the child learns to stop activity if the adult says 'no' or uses the word 'no' to either reject or stop unfavorable activities. (iv) Disappearance/recurrence i.e., objects when taken out of sight, the child intends to see the disappeared objects. (v) Location - the child looks for objects located in certain places. The child also starts learning new words outside his/her routine conversation and tries to learn the meaning of it by taking cues of the situation. In this stage, nouns constitute 40% of the vocabulary followed by verbs constituting 10%, adjectives 10% and function words 10%. The 30% of the child's vocabulary consists of protowords and other grammatical classes. The child begins to form categorical concepts i.e., mental representation of events, objects and object-event relation. ●●●● 18-24 months The average vocabulary of a child is about 200 words. The child starts to comprehend two word relationships such as: (1) Agent + action (2) Action + object (3) Agent + object (4) Action + location

100 (5) Object + location (6) Possessor + possession (7) Entity + attribute (8) Demonstrative + entity The categorical representation increases and the child continues to extend new words to other members of the same category through fast mapping. The child continues to over extend items into a category (over extension error) or under extend items into a category (under extension error). Children learn to identify the different reference (object, events and object event relations) based on adult attentional and intentional states. The idea about how the word is organized into categories of objects, events, relations, states and properties develops very fast and thus this stage is called fast mapping. The child basing on increasing linguistic and world knowledge and understanding of disposed context use more varied and richer language. ●●●●● 24-30 months The child starts to understand questions and asks 'wh' questions related to object, people, action and location. Example: ggggg "What is this?" -for object ggggg "Who is he?" - for people ggggg "What is he doing?" - for action ggggg "Where are we?" - for location. ●●●●● 30-36 months "Why" related question start at this age. This improves with the improvement in reasoning skills for both comprehension and expression. More specialized concepts start to develop. In this stage the child acquires concept of preposition hence words like on, in, there, by, here, etc. start to develop. ●●●●● 36-42 months Children start to develop color concepts and can identify basic color like red, green, blue, etc. Children also develop knowledge of kinship i.e., they identified different family members according to their relationship. Children also learnt

101 concept of opposites and learns to use contrastive words like big/small, etc. A syntax development also occurs alongside; the children learn the concept of words like 'and/or' etc. with which they produce complex sentences. ●●●●● 42-48 months At this stage, the child starts to learn time concept, understands and expresses when and how and develops the concept of shapes, sequencing and size. ●●●●● 4-5 years Children develop the knowledge of alphabets and their corresponding phonetic sounds, learns the concept of counting numbers, uses advanced conjunctions like - because, so, when, etc. Children have an expressive vocabulary of around 2000-2200 words at this stage. ●●●●● 5-6 years Children during this period accumulate receptive vocabulary of around 14000 words, learning around 9 new words per day. It is at this stage, that a child masters the use of spatial words like - in front, behind, under, on' etc, and temporal words like - after, before, since, until, etc. ●●●●● 6-7 years The child starts to learn to expand meaning of various words and overall semantic development occurs as the child experiences new concept. The child during this period has an expressive vocabulary of around 5000 words. ●●●●● 8-9 years New words are learnt at school and both expressive and receptive vocabulary is increased. The child uses pronouns like he, she, they appropriately, especially in language composition, statements and conversations. The learns to define words and word definitions include synonyms and categories, the child also understand that some words have multiple meanings and meanings may change according to context and situation. The child also gains knowledge of figurative language. ●●●●● 9-12 years The child learns the meaning of abstract words and can explain the semantic

102 relationship of the words in sentence. Semantic development gets completed by 12 years. Syntactical Development: The development of syntax is marked by the production of single word utterances in which a string of utterances consisting of single meaningful words and ideomorphs are used to convey meaning. Syntax development is generally determined by measuring the MLU. Brown (1973) summarized the development of syntax based on 5 developmental stages. Brown further states that appearance and mastery of 14 grammatical morphemes is central to the development of syntax. These 14 grammatical morphemes are: 1. Present progressive inflection 2. Preposition - in 3. Preposition- on 4. Regular plural inflection 5. Past irregular 6. Possessive inflection 7. Uncontractible copula 8. Articles 9. Regular past tense 10. Regular third person singular 11. Irregular third person singular 12. Uncontractible Auxiliary 13. Contractible copula 14. Contractible auxiliary. These Brown Stages are as follows: 44444 Stage I (MLU 1.0-2.0) {12-26 months of age} Children acquire the first meaningful word and speech is characterized by the

103 use of single words and early multi word utterances. Semantic intentions and semantic relations are predominantly present and used by the child. 2 years old toddlers learn simple word orders. The utterances are often telegraphic i.e. they lack appropriate grammatical morphemes. Child uses semantic relations such as : (i) Agent + action (ii) Action + object (iii) Action + Location (iv) Entity + location (v) Entity + attribute (vi) Demonstrative + attribute 44444 Stage II (MLU 2.0-2.5) {27 TO 30 months of age} In this stage the child acquires and uses all the 14 grammatical morphemes. In this stage, the child learns to use, the subjects more consistently and begin to modify nouns occurring in the object phrases of longer utterances, even when subject phrases are also present "Tommy ate big cookie". The child also uses different words to convey meaning. The characteristic feature of this stage is the development of morphemes. 44444 Stage III (MLU 2.5-3.0) (31-34 months of age) The child acquires basic scheme and constituents consisting of a subject verb and an object Hence, this stage marks the development of sentence form. In this stage, modifiers appear in both subject and object phrases i.e. noun phrases are elaborated. Auxiliary-verbs like tense markers, interrogatives and negatives are predominantly used in this stage. The modulation or elaboration of sentences occurs during this stage. 44444 Stage IV (MLU 3.0-3.75) (35-40 months of age) This stage is marked by emergence of complex sentence forms and embedded sentence elements. For example: "I know what you did." In this T stands for subject; 'know'-verb and 'what you did' represents the embedded element of object.

104 This stage is marked by the child's ability embed elements of one sentence within another, as well as correct use of different verb classes. The child masters the concept of irregular past tense. Example: 'go?' 'went'. Use of articles (both definite and indefinite) - example: 'a', 'an', 'the', etc. As well as use of possessive markers - example: 'David's book'. 44444 Stage V (MLU 3.75-4.5) (age of 40 months and above) In stage V, the child masters the use of all 14 grammatical morphemes including 3rd person present tense (3PPT). This stage is marked by the emergence of compound sentences in which the child uses sentence connectors to conjoin two simple sentences. The child also masters the use of verb classes including 'wh' words. By stage V, the acquisition of syntax is almost complete. Disorders of Speech and Language in The Hearing Impaired Introduction: Hearing impairment results from a number of causes and is usually characterized by the type and degree of hearing loss. Type of hearing loss is related to the site of the disorder within the auditory system, and degree of loss is related to the extent that the disorder is infringing on normal function. Disorders of Language Content: Hearing impaired individuals ideas of the world, from which the content of- language derives, develop in the same sequence as that of a hearing person, but with a slight delay. A lot of research evidence have been cited and suggest that the deaf child who is learning sign language codes the same semantic notions as the hearing child who is learning to speak. Although the form of communication differs, the content is the same. Even, the acquisition of semantic relations is similar to that of a normal child. Disorders of Language Use: The hearing impaired individuals can communicate a wide variety of functions and intents using both verbal and non verbal means and is mostly similar to that of hearing individuals. However, deaf individuals are not able to fully comprehend metaphorical use of language and have a tendency to literally interpret embedded meanings.

105 Disorders of Language Form: Hearing impaired individuals know sentence forms and can determine the form class that should be inserted in a frame, but they do not know the use or meaning of specific functor words. Thus, the hearing impaired individuals learn the form of language as it is written, but do not learn language in terms of its content or use. Even in use of content words, hearing impaired individuals have restricted use of relational words. Specific Effects: Vocabulary: Vocabulary develops more slowly in children who have hearing loss. Children with hearing loss learn concrete words like cat, jump, five, and red more easily than abstract words like before, after, equal to, and jealous. They also have difficulty with function words like the, an, are, and a. The gap between the vocabulary of children with normal hearing and those with hearing loss widens with age. Children with hearing loss do not catch up without intervention. Children with hearing loss have difficulty understanding words with multiple meanings. For example, the word bank can mean the edge of a stream or a place where we put money. Sentence Structure: Children with hearing loss comprehend and produce shorter and simpler sentences than children with normal hearing. Children with hearing loss often have difficulty understanding and writing complex sentences, such as those with relative clauses ("The teacher whom I have for math was sick today.") or passive voice ("The ball was thrown by Mary"). Children with hearing loss often cannot hear word endings such as -s or -ed. This leads to misunderstandings and misuse of verb tense, pluralization, nonagreement of subject and verb, and possessives.

106 Speaking: Children with hearing loss often cannot hear quiet speech sounds such as "s," "sh," "f," "t," and "k" and therefore do not include them in their speech. Thus, speech may be difficult to understand. Children with hearing loss may not hear their own voices when they speak. They may speak too loudly or not loud enough. They may have a speaking pitch that is too high. They may sound like they are mumbling because of poor stress, poor inflection, or poor rate of speaking. Individuals with Hearing Impairment typically have a great deal of difficulty with articulation, because normal articulation depends to a large extent on hearing the sounds of a language. Clinical experience and research has shown that hearing impaired and deaf- speakers often have problems with various aspects of speech production, resulting in loss of intelligibility. The kind of distortion in speech can be easily recognized as 'deaf speech'. Speakers may have difficulty producing vowels and consonants and may also be unable to control the suprasegmental aspects of speech.

Segmental Problems

- Vowel problems, particularly neutralization (limitations in horizontal and vertical movements of tongue)
- Consonant errors - omissions and substitutions (voicing, place and manner of articulation errors).

Suprasegmental Problems Suprasegmental problems are another feature of deaf speech, including inappropriate, excessive or insufficient variations in Fo and intensity. Prosody-refers to pitch, intonation and rhythm and these aspects are of interest in a hearing impaired speaker. Prosodic errors, stem from situations such as intonation deficiencies caused by poor control of fundamental frequency (i.e. monotonous speech), inappropriate breath control, slow speech rate, abnormal uses of pauses, and abnormal uses of rhythm and stress (Girgin, 999; John&Howarrth, 1965; Lederet al., 1978; Markides, 1970).

107 Some of the prosodic characteristics of hearing impaired speaker are:

- Rate and Rhythm Hearing impaired children usually have difficulty maintaining suitable rate and rhythm of speaking (excessively slow rate and inappropriate rhythm). The amount of phonation time on syllables is a frequent problem among the hearing impaired; some children should increase their time and others shorten it for improved rhythm, rate and speech intelligibility. Others may have problem of continuous phonation, voicing unvoiced and voiced sounds. A child's slow rate of speaking may be related to lack of breath control. For example, he may need to take a breath every few words and not have enough breath to finish a complete phrase. The total time for the hearing impaired speakers averaged 8-10 sec per sentence and normally hearing speakers averaged 3-4 sec per sentence (Colton and Cooker, 1968). It is suggested that slower speaking rate of deaf speaker's results in perceived hyper nasality and that the hyper nasality is not caused by velopharyngeal dysfunction.
- Lacks typical intonation Incorrect production of intonation contours is a common phonatory problem among the hearing impaired. Intonation is often described as too monotonous or too jumpy, or, either irregular with some rise and fall or monotonous or insufficient or excessive intonation variability. Monson (1979) tested 3-6 year severely and profoundly hearing-impaired children imitating words. Duration of word and Fo contour of the word was examined. The children's task was to imitate a word with a smoothly falling declarative contour. However, most hearing impaired children did not produce smoothly falling Fo contour. Instead, they produced flat contour or changing contour (Fo may first rise then fall, then be level, then rise all over the course of a single syllable). Also, they did not produce enough variation in Fo to differentiate between declarative vs interrogative utterance. These atypical contour patterns can seriously degrade a speaker's intelligibility. Abnormal pause behavior/abnormal use of pauses. Pronovost (1977) stated many deaf individuals are likely to produce separate phonemes and words with many pauses as a result of having been taught to articulate speech sounds as precisely as possible.

108 Increased duration of speech sounds and segments. Whitehead and Jones (1976) studied vowel duration in three groups of male adults - hearing impaired, deaf group and normally hearing group. They found longer vowel durations in hearing impaired and deaf groups. Durational measures on the three groups led the authors to conclude that a hearing impaired population who receives some auditory input can learn the timing system in the same way a normally hearing population does, but a deaf population does not appear to learn these durational differences to the same extent. This suggests the importance of residual hearing. The first two groups sound as if they have more continuous phonation than the normally hearing person. Academic Achievement: Children with hearing loss have difficulty with all areas of academic achievement, especially reading and mathematical concepts. Children with mild to moderate hearing losses, on average, achieve one to four grade levels lower than their peers with normal hearing, unless appropriate management occurs. Children with severe to profound hearing loss usually achieve skills no higher than the third- or fourth-grade level, unless appropriate educational intervention occurs early. The gap in academic achievement between children with normal hearing and those with hearing loss usually widens as they progress through school. The level of achievement is related to parental involvement and the quantity, quality, and timing of the support services children receive. Social Functioning: Children with severe to profound hearing losses often report feeling isolated, without friends, and unhappy in school, particularly when their socialization with other children with hearing loss is limited. These social problems appear to be more frequent in children with mild or moderate hearing loss than in those with a severe to profound loss.

109 Impact of hearing loss on speech and language development

Hearing Degree	Type	Missed Sounds	Effect Level (dB)
16-25	Slight Conductive	10% speech signals	Misses fast paced Sensorineural peer interactions, fatigue in listening.
26-40	Mild Conductive	25% - 40% speech	Misses 50% of class Sensorineural signal, distant discussions, has sounds, unvoiced problems in consonants, plurals suppressing and tenses. background noise.
41-55	Moderate Conductive	50% - 80% speech	Articulation deficit, Sensorineural signal limited vocabulary, learning dysfunction.
56-70	Moderately Sensorineural	100% of speech	Delayed language Severe / Mixed information syntax, atonal voice, reduced speech intelligibility
71-90	Severe Sensorineural	All speech sounds	Speech not developed / Mixed can hear loud or deteriorates, environmental noises learning deficits
90	Profound Sensorineural	All speech sounds	Speech not developed / Mixed only feels vibrations or deteriorates, learning deficits

110 3.4

93%

MATCHING BLOCK 25/28

SA

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Assessing communication and language: Developmental checklists, scales, standardized tools and assessing language samples using parameters of measurement (Productivity, Complexity, correctness and communicativeness)

Structure 3.4.1 What Is Assessment? 3.4.2 Purpose of Assessment 3.4.3 Types of assessment 3.4.4 How do I assess? 3.4.1 What Is Assessment? The processes of systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development is known as assessment. Through the processes of assessment student's learning skill can be understood and also can be improved. In other words the processes of assessment can be defined as processes of systematic gathering, analyzing, and interpreting evidence to determine how well performance matches those expectations and standards; and using the resulting information to document, explain, and improve performance. 3.4.2 Purpose of Assessment Through the assessment procedure for communication, students are encouraged to be more active in their communication. The ultimate purpose of assessment is to create self-regulated communicators who can leave school able and confident to continue communicating throughout their lives. 3.4.3 Types of assessment There are two general categories of assessments: formal and informal. Formal assessments provide data which support the conclusions for the test. These types of formal assessments are also known as standardized measures. Formal tests are usually administered when student's communication skill is below average

111 his or her age. The data is mathematically computed and summarized. In formal assessment scores are on percentiles, stanines, or standard scores. Informal assessments are usually based on the content and performance and usually does not provide any data. The example of informal assessment can be a reading task. It indicates how well a student is reading a book. Scores such as 10 correct out of 15, percent of words read correctly, are given in this type of assessment. Whenever taking about the assessment of communication and language it is important to know about the communication and language in brief. Communication is mainly an active an intentional two way process of exchange of messages. Language is the main vehicle for communication. Language is a set of arbitrary symbols used by a group of people for the purpose of communication. There are examples of few formal tests: Name of the test Developed Target Age Domains by population Scales of Early Jean S. Children 2-8 years Receptive language Communication Skills Moog and with Expressive language for Hearing Impaired Ann E. hearing Children Geers impairment Childhood Autism Eric Children chiihood • Relationship Rating Scale Schopler, with autism to people Robert J. • Imitation Reichier, • Emotional and Barbara response Rochen • Body use Renner, • Object use 1986 • Adaptation to change • Visual response • Listening response • Taste-smell- touch response and use Fear and nervousness • Verbal communicati on • Non-verbal communicati on

112 • Activity level • Level and consistency of intellectual response • General impressions Apraxia battery for Barbara L. Neuromoto Adolescent • Diadochokin adults Dabul, 2000 r speech s and esthetic rate Disorder adults • Increasing word length Limbapraxia • Oral apraxia • Latency and utterance time for polysyllabic words • Repeated trials test • Inventory of Articulation characteristi cs of apraxia Receptive Expressive Bzoch, IThiid7en~ Birth to 3 Receptive language Emergent Language League, 8 years Expressive language Scale 3 Brown, 2003 Frenchay Dysarthria Enderby, Neuromoto 12 years to • Reflexes Assessment 1983 r Speech adult • Respiration Disorder • Lips • Palate • Laryngeal • Tongue • Intelligibility Influencing factors 3.4.4 How do I assess? For the purpose of assessment first demographic data needs to be collected. The name of the client, age and gender of the client should be known. Speech development history is very important to know because without knowing speech developmental

113 history it is difficult to understand whether the student's speech and language skill is delayed or age appropriate, and if it is delayed from when this process of delay started. Under the developmental history whether the child vocalizes spontaneously and on demand, age of babbling, first word and first sentence should be included. Mode of communication of the child needs to be noted. The child can use verbal communication or nonverbal communication or both. The range, frequency, effectiveness and appropriateness of communication should be assessed. Under each mode of communication i.e., whether verbal communication or nonverbal communication; both comprehension and expression should be assessed. The details about language background and speech and language stimulation should be taken into account. Identification of communication needs and participation pattern: The subject of communication, with whom, when (times of day), where (location and position), why, how and about what topic and vocabulary the client communicates need to be known in detail. We know that sensory skills play very crucial role for speech and language development. Therefore, the status of visual skills whether the vision is normal or corrected, ability to focus and tract, colour blindness is there or not need to be assessed. Similarly, for assessment of auditory skills whether the client is hearing impaired or not, whether temporary hearing loss is there due to illness or not should be checked. Oral peripheral examination The structure and functions of all the oral peripheral mechanisms like lips, teeth, tongue, jaw, hard palate, soft palate need to be assessed. Articulation at phonological level and phonetic level of all the vowels, consonants and blends should be checked. For the production of speech, breath support is necessary. Therefore, breath control and phonation duration need to be assessed. Loudness, pitch and quality of voice should be checked perceptually as well as using perceptual scale for assessment. Suprasegmental aspects are the important parameter for assessment. Among the suprasegmental aspects accent, emphasis, intonation, phrasing and rate of speech are the area of assessment. Cognition is one of the primary pre-requisite for language development. Therefore, the cognitive skill of the client should be assessed. Among cognitive skills attention,

114 use of object, means end relationship, object permanence and stage of play development need to be assessed. Imitation skills for gross body movement and speech also should be noted. Letter recognition, word recognition, reading comprehension, copying, writing to dictation, spontaneous writing ability under reading and writing skills should be checked. Speech intelligibility of the client should be assessed based on the rating scale. Finally the communication and the language of the client should be provisionally diagnosed. Productivity : Productivity is the degree to which native speakers use a particular grammatical process for the formation of new structure, especially in word formation. The process of productivity generally concerns with which grammatical form would be used with newly coined word. For example, in standard English the formation of preterite (past form) and past participle forms of verbs by the means of ablaut (for example, run- ran-run) is no longer used. Mostly the form of "ed" is used at the end of the verb (for example, e-mailed) irrespective of any form to indicate the past form and past participle form. Similarly, in case of plural "s" is majorly used. The ending "en" is longer productive, being found in oxen, children because these old forms sound incorrect or irregular to modern ears. The plural form of the word brother has been replaced with brothers in place of brotheren because of its irregular sounding. During the transition from old English to modern English, many strong verbs have completely lost because they sound archaic or they are no longer truly understood. During the evolution over the last five hundred years or more, English has developed very different in ways from most world languages across history. With a long written past English has preserved many words that might otherwise have been lost or changed. Written language has many conventions for writing polite and formal prose than the spoken language. In other words, written language is often very different from how people normally speak. As English speakers are universally literate, it has become easy for people to bring back into life archaic words and grammar forms. This is often to create a comic or humorously old-fashioned effect. It is with the expectation that these new coining words will be understandable. These processes are rare for languages without a culture of literacy. English has borrowed

115 extensively many words from the other languages because of technology and trade. For example, the plural form of the word "radius" which is a Latin word, has not decisively settle between "radiuses" and the original Latin "radii", though the educated people prefer to use the Latin plural form. Based on the same rules (Latin plural) new words have been coined. Complexity of language : By comparing two Santo languages, Tolomako and Sakao , these two languages are very similar to each other and equally distinct from English, an English speaker is neither inherently biased as being seen as more easy or difficult. The complexity of language depends upon the parameters of language like phonology, morphology, syntax. When the two languages are closely related to each other based on these parameters, those two languages are said to be easier. Correctness: In prescribed grammar, correctness is the notion that certain words, word forms, syntactic structures follow the standards and conventions (that is the rules) prescribed by traditional grammarians. It is a misleading idea that whether a piece of language is right or wrong. Practically language may be better described as appropriate or acceptable to a given context. As per the classical model, the so -called rules of English are pieces of advice laid down by grammarians. Based on the intention of speaker, some of these rules may be proven as good for clarity of language whereas, others are considered as constraints on living language. In old English there are some rules like a sentence cannot be finished with preposition, cannot be started with and, are some examples of rules which are still followed by some language users but deliberately flouted by some other users. There are two main principles practically creating grammatical rules: Prescriptive rules describe the attitude that there are some conventional rules and everyone should obey them, on the other hand, descriptive rules describe the attitude of modern linguists that what is said by a natural speaker is normal and these real language should be described by the linguists to create a model of language. In spite of all these views, fundamental rules which make a language unique yet these are so embedded that the rules are rarely raised as an issue by the user or it is difficult to draw the line between good and bad language. Depending upon some factors like time, speaker, medium, audience, situation style, message, these differences usually follow the process of change and therefore flexible hard to define.

116 Communicativeness: Communicative Language Teaching is an approach of teaching second language and foreign language. It emphasizes both on means and the ultimate goal of facilitating language. The term communicativeness implies different meaning to different facilitators. To some facilitators, it simply means a great emphasize on the use of target language in the classroom particularly on orality. To other facilitators, communication implies the exchange of unknown information between interlocutors, and finally to other facilitators, as a cultural bond system for making meaning. Despite their variations in opinion, all the module facilitators seem to advocate for a communicate approach. References : Hedge, M.N. (1996). *Ethnocultural Considerations in Assessment*, Pocket Guide to Assessment in Speech-Language Pathology. London: Singular Publishers, 221. McLaughlin, S. (1998). *The Dimensions of Human Communication*, Introduction to Language Development. USA: Singular Publishers, 1-42. McLaughlin, S. (1998). *The Beginnings-Infant Communication*, Introduction to Language Development. USA: Singular Publishers, 175-218. Subba Rao, T.A. (1992). *Acquisition of Speech and Language by Normal Children*, Manual on Developing Communication Skills in Mentally Retarded Persons. Secunderabad: NIMH, 83-120.

117 3. 5. Identification of Needs Related to Communication and Language Communication through speech and language is the entity which differentiates humans from other species and this has become their paramount need. Children who find difficulty in talking and understanding what others are saying have speech language communication need. About one in every ten children has a probability of having some kind of speech language communication need¹. Hence many children with speech language and communication need will just look like any other child and they may show learning difficulty and problem in socializing leading to poor behavior. Their behavioral problem may again lead to, that they may be misinterpreted, misdiagnosed or missed altogether. The difficulties which they will encounter are; 1. Paying attention while listening to others. 2. Articulation difficulty, problem in movement of oral peripheral structures. 3. Difficulty in understanding use of language that is affected pragmatics. 4. They may have problem in recognizing difference between certain sounds or words. 5. They may have problem in memorizing what they hear due to poor, memory, so it is hard to learn new words and follow instructions. There are some frequently used words that are used to describe different types of speech language communication need: 1. Speech and language delay 2. Speech and language disorder 3. Specific language impairment 4. Comprehension (or receptive language) difficulty 5. Expressive language difficulty 6. Speech difficulty 7. Social interaction difficulties (sometimes called pragmatic difficulty) 8. Stammering/Stuttering/Dysfluency /Non-fluency 9. Selective mutism

118 10. Verbal dyspraxia While identifying a child's need of communication through speech and language, at the beginning, the questions which must be taken into consideration are: 1. Age - How old the child is? 2. What type of difficulty they have including the type of onset? and 3. What is the severity of their problem? Need of some children are expressed from a very young age, and others need may be identified until they are at school or even more lately until they become a Young adult. Diagnosis can be gradual or it unfolds overtime and can be a difficult process. People who will be at the first to realize that a child or young person has a problem: 1. Parent or family members 2. Any staff at school or nursery 3. A young person themselves Some children may find no difficulty at the primary levels of their schooling, but find problem on more complicated curriculum, at higher levels and on larger demands on their needs to communicate through speech-language. The possible warning signs of a young child, that they may have speech language communication need: 1. Does not respond to sound. 2. Regressing in terms of development. 3. Have little interest in communication. 4. Talks slowly than other children of the same age. 5. Has difficulty understanding simple instructions or requests. 6. Unusual speech and language compared to other children of the same age. 7. Problem in tasks like reading, spelling and mathematical problems. 8. Even family members may find difficulty to understand them. 9. Difficulty in making and keeping friends and participating in games.

119 The possible warning signs of an older child and young people who might have speech - language communication need; 1. They may be slow to answer or to follow an instruction. 2. They may need several repetition and simplification of instructions. 3. They might switch off when someone is talking to them, it seems they are not listening. 4. Their language may sound muddled and they may find difficulty in organizing their thoughts into words. 5. They may find writing or expressing verbally about some basic thing which they have managed, effortful. 6. They may not understand jokes, or complicated language like idioms. 7. They may find problem in joining and maintaining conversations. A health visitor, a general physician, a teacher or nursery staff and a family member may refer these children to a speech-language therapist. A Speech language therapist will assess and will tell whether the child has speech language communication need and its appropriate intervention.

120 Unit - 4 □ □ □ □ Assessment and Identification of Needs Structure 4.1 Introduction 4.2 Objectives 4.3 Respiration and Phonation 4.3.1 Respiration 4.3.2 Pre-requisites for Respiration 4.3.3 The Process 4.3.4 Types of Respiration/Breathing 4.3.5 Need for Assessment 4.3.6 Phonation 4.3.7 Process 4.3.8 Prerequisites 4.3.9 Types of Phonation 4.3.10 Need for Assessment 4.4 Basics of Articulation and Phonology 4.4.1 Introduction 4.4.2

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Active and Passive Articulators 4.4.3 Classification of vowels and consonants 4.4.4 Assessment of Articulation 4.5 Suprasegmental Aspects of Speech and its Assessment 4.5.1

The various suprasegmental features of language 4.5.2 Assessment of Suprasegmental Feature
121 4.6

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Milestones of Speech Development in Typically Developing Children 4.6.1 Chart of normal speech sound development sequence 4.7 Speech Intelligibility 4.7.1 Concept 4.7.2 Factors affecting speech intelligibility 4.7.3 Assessment of Speech Intelligibility 4.8 Let's sum up 4.9 Check Your Progress 4.10

Reference 4.1 Introduction Speech is a medium, used to convey message which is in a particular form called language. In other words, language is verbally expressed using speech in humans. Speech and language help in successful communication. Impairment of speech or language cause communication disorders which in turn affect the child's educational, social and personality development. Speech development starts at an early age and attains adult mastery by the age of 7-9 years. Speech production is an interesting and intricate process. It involves different systems of the human body. These systems are: 1. Respiratory System 2. Phonatory System 3. Articulatory system 4. Resonatory System The airflow from the respiration process is modified and produced by the other three systems. This is called speech production. As a prerequisite of age appropriate speech development, the intactness of all the above systems is essential. In this chapter we will learn about these systems, their role in speech production, need to assess these systems.

122 4.2 Objectives To learn about : 1. Respiration and phonation, the process, types and the need to assess these processes 2. Articulation & Phonology: speech organs as articulators, speech sounds and their description & classification. Assessment of articulation. 3. Various prosodic aspects of speech & their assessment 4. Normal development of speech in children from birth 5. Speech intelligibility and factors affecting it. Assessment of speech intelligibility. 4.3 Respiration and Phonation 4.3.1 Respiration ●●●● It is a process which is very essential for human life, it helps in breathing and exchange of air with the environment. Speech production is a secondary function of respiration. Respiration provides the power for the process of speech production. The respiratory process involves the following basic structures/parts: ●●●●● Bronchi ●●●●● Trachea ●●●●● Lungs ●●●●● Pharynx ●●●●● Larynx ●●●●● Oral and nasal cavities Other structures which provide the structural support are: ●●●●● Musculature ●●●●● Thorax ●●●●● Skeletal framework- spinal column, rib cage and pelvis

123 ●●●●● Thorax and abdomen and their muscles ●●●●● Muscles of neck, chest and shoulder Diagram of Respiratory System 4.3.2 Pre-requisites for Respiration All the above mentioned structures/parts should be anatomically intact and should be physiologically accurate that is have good function in order to carry out the process of respiration. Respiration involves inspiration/inhalation that is taking air in and expiration/exhalation that is breathing air out. All the structures function with each other to help in inspiration and expiration. The nerve supply and control of higher centres of human body over the process of respiration should be uninterrupted and appropriate for proper functioning of the respiratory system. The child should not have diseases of the respiratory system, for example upper respiratory tract infection, asthma or conditions of brain damage (cerebral palsy) which may cause disturbances of the respiratory system.

124 4.3.3 The Process The general process of respiration is vital for life. It consists of two sub processes namely inhalation/inspiration and exhalation/expiration. The cycle of inhalation followed by exhalation is also called breathing. This is carried out to get fresh air containing oxygen from the environment and removing impure air containing carbon dioxide from the human body. The air is inhaled through the nose/oral cavity, it passes through the pharynx, larynx and then reaches the lungs. It is in the lungs where exchange of oxygen with carbon dioxide takes place. When the lungs have taken in sufficient amount of air from environment, the body prepares for the next cycle of breathing that is exhalation. In exhalation air goes out via the same path. For speech production, the vocal fold vibrates during the exhalation phase. The whole process is controlled by information from the brain conveyed through nerve supply to the respiratory system. Speech breathing For speech production the process of general breathing or respiratory mechanism alters. The inspiration time increases or in other words we take in more air so that we can support our speech production especially if the utterance is long and loud. Moreover, we can time our inspiration and expiration—for example during singing or recitation we can decide on the times we want to breathe in and out. Moreover, the exhalation time is much longer as compared to quiet breathing.

4.3.4 Types of Respiration/Breathing There can be variations in the breathing pattern depending upon the structures involved. However the type of breathing used usually do not affect the speech production process. It can be of following types: 1. Diaphragmatic or abdominal breathing- It involves expansion of the abdomen. It is carried out in a relaxed state. It leads to deep breathing and is advisable in many respiratory diseases. Best for prolonged singing. 2. Thoracic breathing- It is a more shallow breathing. Usually very less amount of air is taken in the chest and exhaled out. 3. Clavicular Breathing- It is the shallowest type of breathing. In this the clavicle moves keeping the lower part inactive. Only upper part of lungs get involved during the breathing. This type is not suitable for speech production and can lead to a strained voice.

4.3.5 Need for Assessment Respiration is one of the vital supporting mechanism/process for speech production. Any disruption in the structures and function of the respiratory system will lead to speech disorders. Thus the physiology of the respiratory system needs to be assessed in case of speech disorders. Parameters such as air pressure, vital capacity, S/Z ratio, phonation duration are assessed on a routine basis. The needs can be as follows: 1. The assessment and measurement of the parameters related to respiratory system, gives us information about the intactness of the system. The obtained values can be compared with age and sex appropriate norms to check for any abnormality. 2. A general need is to establish normative data according to age, sex and other body statistics such as weight etc. Comparison with these values can help us identify disorders. 3. The measured values can act as baseline before the speech therapy sessions and can be measured in between sessions to check progress of therapy. 4. The assessment results help to differentially diagnose between pathologies or conditions e.g problem of respiratory system vs problem of vocal folds (phonatory system) 5. The measured values can give us idea about child's current capacity, this can help us to set speech therapy goals. 6. Assessment of respiratory function help to decide the therapeutic strategies or methods that can be used for remediation for example behavioural, or instrumental.

4.3.6 Phonation Phonation occurs when the air flow from lungs causes the vocal folds in the larynx to vibrate. Usually phonation refers to a prolonged or sustained voice production. In order to achieve a sustained voice the air flow from the lungs during exhalation should be carried out in a controlled manner rather slowly and not abruptly.

126 4.3.7 Process The process of phonation involves laryngeal muscles, cartilages of the vocal cord, ligaments and nerve supply. The vocal folds are elastic in nature owing to their anatomical make-up. At rest they act as a valve which stops food particles to enter the larynx and prevent aspiration. However the secondary function of vocal folds is speech production, which occurs when they fall apart and close in a periodic fashion due to the process of exhalation. The pathway above vocal folds lead to vocal tract which has two openings oral cavity and nasal cavity. The air flow coming from the lungs passing through vocal folds can come out through oral or nasal cavity. The cycle of vocal fold vibration, that is periodic opening and closing, causes the air pressure beneath the vocal folds to fall or rise. When the air pressure from lungs builds up beneath closed vocal folds they are forced to open or fall apart. Again when the pressure falls below a certain level they again close or come together. Moreover the various muscles and other structures play together and bring changes in tension, length and mass of vocal folds. This leads to faster or slower vibrations and causes changes in the quality of voice produced. For example when the vocal folds are tensed and become thinner, the voice produced increases in pitch. The vibratory patterns vary among humans and gives identity to human voice along with other features.

4.3.8 Prerequisites

1. All the anatomical parts involved in phonation should have normal structure and function. In other words any anatomical anomaly will affect phonation.
2. All the structures involved in phonation should have appropriate working.
3. The respiratory system, which provides power for phonation should be working appropriately.
4. The vocal tract, vocal folds, larynx should not be affected due to any disease or disorder. E.g motor disorder like cerebral palsy.
5. An individual should have normal hearing sensitivity to monitor the act of phonation and regulate the air flow.
6. An individual should have normal cognitive functions and motor control so that the whole process can be regulated.
7. The individual should not use any faulty ways to produce voice or should not practice any vocal abuse to have a proper phonation.

127 4.3.9 Types of Phonation The space between the two vocal folds change in distance and shape depending upon the amount of opening and closing of the vocal folds. Depending upon the shape of this space called glottis, there can be following types of phonation:

- No Phonation/Voiceless sound - There is silent passage of airflow, the vocal folds remain far apart allowing air to pass freely. The sounds produced in this condition are called voiceless.
- Voiced Phonation - The vocal folds vibrate regularly, that is with complete closure on each vibration. The sounds produced in this condition are called voiced.
- Other types - the other types of phonation are breathy, falsetto and whisper, which are produced by different positions of vocal folds between no closure and regular closure.

4.3.10 Need for Assessment Phonation is the first step in voice/speech production. The presence of normal phonation indicates the initiation of an appropriate speech. Normal phonation is characterised by adequate loudness, age appropriate pitch and soothing quality of voice. Any abnormality of these characteristics will lead to speech disorders especially voice disorders. The detailed assessment of phonatory system is an important part of speech assessment. The parameters assessed are phonation duration, S/Z ratio, objective as well as subjective measurement of pitch, loudness and quality. The needs for assessment are as follows:

1. The assessment of phonation helps to trace the site of dysfunction. For example at the vocal folds, or below at the respiratory level.
2. The assessment results can be used by the medical specialist for medical diagnosis, to check treatment progress. For example assessment before and after some laryngeal surgery or voice rest.
3. The assessment results also help to check efficacy of certain devices used, for example devices used to remove hypernasality.
4. The results of assessment help to set the goals of speech therapy, help in deciding about the therapeutic procedures to be administered.

128 5. The assessment results act as a baseline measurement for speech therapy and help to monitor progress. 6. The results of assessment can be used to counsel the parents/child about the voice/phonation problem which helps them to get motivated for treatment. 7. Assessment can be carried out to establish normative data in a given population. This data can be used for comparison in case of dysfunctions.

4.4 Basics of Articulation and Phonology

4.4.1 Introduction

ARTICULATION It is the process where the air stream coming from the lungs through vocal folds is modified by the movements of speech organs in the vocal tract. These speech organs are the lips, the tongue, jaw, soft palate. The speech organs involved in articulation can be classified as active articulators and passive articulators. For producing a speech sound two articulators need to come in contact and modify the air stream. The point of contact is called the place of articulation and the way in which the contact is formed and released is called manner of articulation. The result of the air flow modification is production of speech sounds, or combination of speech sounds, which are recognised by the brain. Again these sounds can be classified as vowels, semivowels, diphthongs & consonants. Any errors in production of the speech sounds causes articulation disorder.

PHONOLOGY It is the study of speech sounds, how they are organised, used and combined to form language. In other words it is the study of sound system of a language. It includes all the sounds and their features. It also includes the rules which decide how these sounds interact with each other. For example the production of sound /l/ in the words /lal/ and /Balti/ differ from each other. A typically developing child's language is characterised by phonological processes. These are naturally occurring language patterns seen in a child's language. For e.g final consonant deletion /jo/ for /jol/. However they disappear at a certain age. When this does not disappear at that particular age, it causes phonological disorder.

4.4.2 Active and Passive Articulators

Active Articulators These are the speech organs which actively move and make contact with other articulator in order to produce a speech sound. The kind of speech sound produced depends on the articulators, the place and manner of articulation. The active articulators are as follows:

- Lips- the visible part of mouth. Owing to its muscular make up, it's very flexible and can take a variety of shapes like rounding, retracting, and opening. The lips usually make contact with each other and other structures to produce consonants. For example /b/ is produced when both lips come in contact. And vowels and semivowels are produced with changed shapes. For example lip retracting for /i/.

- Tongue- another muscular structure, one end is fixed and the other end moves freely. It can move side to side, move up, touch the part behind upper teeth, lower its body, raise its body. In the production of vowels the tongue's position is altered, resulting in air flow modification. In case of consonants, tongue may make contact with another articulator. For example for the sound /t/, it touches the alveolar ridge or palate.

- Lower Jaw - it's a highly movable structures and houses the lower teeth also. The movement of jaw is very crucial for speech sound production, it can lower and raise itself to varying extents which helps in production of different vowels and consonants. Moreover the lower teeth provides as an articulator for some consonants as /f/, /v/.

- Soft Palate- it's the muscular portion of palate after the hard palate. It end in the uvula, which acts as a gate between oral and nasal cavities. So when the soft palate and uvula rise and close the nasal path, the air flow has to pass through the oral cavity and the sounds are oral. When the palate moves down and allows air to pass through the nasal cavity, nasal speech sounds are produced. For example /m/, /n/.

- Teeth - divided into lower and upper teeth. Important for biting, grinding and chewing of foods. It act as a passive articulator for many speech sounds. It does not moves on its own, but an active articulator e.g tongue or lips, makes contact with it to produce a speech sound. For example /t/ in the Bengali

130 words /tala/ or /tal/ is produced by the contact of tongue and upper teeth. These sounds are called dental or labiodental.

- Alveolar Ridge- it is the part just behind the teeth. Usually the ridge behind the upper teeth is of importance for speech productions. The active articulator tongue make contact with this portion to produce sounds like /t/ in the word /tata/, /r/ etc. These sounds are called alveolar sounds

- Hard Palate- Just after the alveolar ridge, the rigid and immovable part called har palate starts and continues upto the end of buccal cavity. This portion separates the nasal and oral cavity as it lies between both. It helps to direct the air flow towards the exit of oral cavity. It acts as a passive articulator for many speech sounds. Speech sounds produced with the help of hard palate are called palatal sounds. For example /r/, /l/

4.4.3 Classification of vowels and consonants

All the speech sounds produced can be divided broadly into vowels and consonants. Some other descriptions include semivowels and diphthongs. All the speech sounds can be classified into some groups depending on the way they are produced. The classification of speech sounds is very important in every language, as it helps to understand the production of each sound. Moreover it also helps to analyse and remediate speech errors.

131 Vowels These sounds are produced when the air flow from the vocal folds can pass freely through the oral cavity. In other words the articulators do not make any constriction or contact with each other to block the air flow. However the active articulators change their shape and position to alter the air flow and result in different vowel production.

Classification of Vowels Based on lip shape ●●●● ROUNDED and PROTRUDED - when both the lips take a rounded or protruded shape, the vowels produced are called rounded. For example /o/, /u/. ●●●● UNROUNDED - when the lips do not assume any rounded shape, can stretch or retract, then unrounded sounds are produced. For example /a/, /i/

Based on Tongue Position ●●●● FRONT - these vowels are produced when tongue tip moves up or down. For example vowel /i/ ●●●● CENTRAL - these vowels are produced when tongue's middle part moves up or down. For example vowel /a/ ●●●● BACK - the back of the tongue rises or lowers compared to the resting position of the tongue. For example /o/, /u/. ●●●● HIGH - tongue moves and stays at higher place than the resting position. ●●●● MID - the height of the tongue remains unchanged

Based on duration ●●●● LONG VOWEL - longer duration taken to produce a vowel ●●●● SHORT VOWEL - short duration is taken to produce a vowel.

Classification of Consonants Consonants are produced by movement of active articulators and in some cases complete or partial contact with the passive articulators. The airflow is altered and modified during production of consonants.

132 Consonants can be classified based on the following aspects: ●●●● PLACE OF ARTICULATION ●●●● MANNER OF ARTICULATION ●●●● VOICING OR NO VOICING

PLACE OF ARTICULATION - This category describes the articulators whether active or passive involved in the production of a particular speech sound. It indicates the point at which the air flow is completely or partially obstructed. The consonants can be classified as follows:

Type of the Sounds	Description	Example in English
Bilabial	Produced by contact of both lips	/b/, /p/
Labiodental	Produced by contact of lower lip and upper teeth	/f/, /v/
Dental	Produced when tongue tip touches upper teeth	/th/, /dh/
Alveolar	Produced when tongue tip touches alveolar ridge (gums behind upper teeth)	/t/, /d/
Palatal	Produced when tongue touches the hard palate	/ch/, /j/
Velar	Produced when back of the tongue touches the soft palate	/k/
Retroflex	Produced when tongue tip twists and make rapid repeated movements and touches the hard palate	/r/
Glottal	Produced when there is simultaneous vibrations of vocal folds and release of puff of air	/h/

133 MANNER OF ARTICULATION - this category describes consonants based on the way they are produced. The air flow from the vocal folds can pass through a narrow passage between articulators or can be stopped abruptly by an articulator. The stoppage of air flow can be followed by release of air puff or no such release. The sounds can be described as follows:

Type of Sound	Description	Example in English
Plosives or Stops	Produced when air flow is /p/, /t/ completely and abruptly withdrawn causing sudden release of air	
Fricatives	Produced when the air /s/ flow passes through a narrow constriction causing a friction noise	
Affricates	Produced when air flow is /ch/ stopped abruptly and then released to cause a frictional noise	
Nasals	Produced when the air /m/, /n/ passes through the nasal cavity instead of oral cavity	
Aspirate	Produced when a greater /ph/, /kh/ amount of air is obstructed and suddenly released	
Laterals	Produced when the air /l/ flow is blocked in the centre of oral cavity and released through the sides	

Voiced Vs Voiceless - Voiced consonants are produced when vocal folds vibrate and release air stream in to the vocal tract. Voiceless sounds are produced when there

134 is no vocal fold vibration but the air from the lungs directly reaches the oral cavity. The sounds can be categorised as follows:

Type of Sounds	Voiced	Voiceless
Bilabial	b	p
Alveolar	d	t
Velar	g	k
Labiodental	v	f
Fricative	sh	s

All the speech sounds can be described by their place of articulation, manner of articulation and voicing characteristics. For example the sound /b/ is a bilabial, plosive and voiced sound.

4.4.4 Assessment of Articulation Abnormality

In any of the articulators lead to errors of speech production. These errors are characterised by phonetic/phonemic errors or articulation errors. The error in production of speech sounds can be specific for example in a particular position of word, or it can be in general erroneously produced all the time. Articulation errors can be caused by abnormality in the structure of articulators or functions of articulators. These abnormalities are present as a associated condition of many disorders like motor speech disorders (cerebral palsy), mental retardation, hearing impairment, structural abnormality (tongue-tie, cleft lip-palate).

Need for Assessment

The assessment of articulation is a part of routine speech assessment. It helps us to understand the underlying cause of disorder, helps to assess the awareness of individual and family thus their counselling about the disorder, to decide the treatment plan like medical vs therapeutical, indicates use of formal tests, helps to form a baseline for therapy, assess the progress of therapy, decide on time of discharge from therapy, and to decide on follow up design.

Assessment Procedure

Brief Case History - The complaint, its onset and nature is recorded in details. The informant can be parents, caregivers and the child himself. A note is taken about

135 the associated disorders. Brief history about the treatment availed till date is taken for example surgery, therapy etc. Assessment of Articulators- the articulators are assessed for their appearance and functions. These can be observed directly if the child is cooperative or can be assessed with the information provided by the parents. The following parameters are assessed: Articulators APPEARANCE FUNCTION lips Normal/abnormal Movements like rounding, retraction and protrusion present/absent/restricted Tongue Normal/Abnormal Movements like side to side, pulling up, rolling up Hard Palate Normal/Abnormal NA Soft Palate & Uvula Normal/Abnormal Movement during vocalisation Teeth Normal/Abnormal Chewing Jaw/Mandible Normal/Abnormal Opening & closing of lower jaw. The primary functions of the articulators are also assessed. These are blowing, swallowing, sucking and chewing. A note is taken about drooling (if present). Error Analysis-The speech sounds produced which are incorrectly are recoded, the frequency with which they are misarticulated is noted. The position at which they are misarticulated is noted for example final position of a word. The error patterns in word and sentence level is recorded. The consistency of the errors is assessed. Speech Intelligibility- The overall speech intelligibility is rated on a scale of 0 to 6, where 0 denotes normal speech and 6 denotes very poor speech intelligibility. Diadochokinetic Rate - the production of syllables /pa/ /ta/ and /ka/ in one second is recorded. This gives information about rate and range of movement of articulators (lips, tongue, mandible & soft palate) Stimulability - The stimulability of the child is assessed under two conditions with reinforcement and without reinforcement. The stimulus can be auditory, visual, audio-visual, graphic and motokinesthetic.

136 Formal Tests - Some formal tests can be used to specify the speech sounds erroneously produced, their position in the word level, consistency of their production and the pattern of the error like substitution by another sound, deletion or omission of the sound etc. Example of such tests are Bangla Articulation Test and Picture Articulation Test. In Bangla Articulation Test all the vowels and consonants are listed with words comprising these sounds at three positions initial, medial and final. The response is elicited mostly by using pictures or models for young children. For older children the written words can be used directly. For children who cannot read, the tester may produce the words and ask the child to repeat. In the last case factors related to tester like testers speech production skills, knowledge of the language and personal bias should be realised. Also the child's hearing status should be considered while performing the test using auditory stimulus. The child is usually given few trials and then the final response is recorded. The response can be either correct or incorrect. Further the incorrect response can be categorically recorded into four responses, substitution(s), omission (o), distortion (d) and addition (a). The error can be present in all the three positions or any one or two positions. A sample of the format used is as follows: Sl.No. Phonemes Position Item Correct S O D A 1 /a/(the Initial onsho first Bengali vowel) 2 Medial bol 3 /aa/ Initial Aam 4 Medial Mach 5 Final pa 4.5 Suprasegmental Aspects of Speech and its Assessment The speech sounds (segmental features- vowels & consonants) are connected to form phonemes and words. The words are connected to form sentences. The speech of human is characterised by lot of meaning conveyed by words and the way they

137 are produced in a particular context or environment. The way speech is produced conveys the emotional status of the speaker, his/her intent and also the process of communication is smoothly carried out. Words or segmental part of speech alone cannot convey the full message on its own. Suprasegmental aspects also called prosody of speech give colour and flair to segmental features and make speech production interesting. If suprasegmental features are removed human speech will become robot like. The same sentence can convey varied meanings or intentions with varying use of any of the suprasegmental features. The prerequisite for appropriate suprasegmental features is presence or acquisition of appropriate segmental features, adequate hearing and adequate psychological development. Suprasegmental features also get affected when rate and strength of movement of articulators is affected. 4.5.1 The various suprasegmental features of language are mainly as follows: ●●●● Stress ●●●● Intonation ●●●● Rhythm Let us learn briefly about each. Stress - It is that feature which is used to indicate or convey importance of a particular word or phrase in a sentence. It can be used on the whole word or on a part of the word. The part of speech which is stressed is produced with greater energy. Stress patterns also differ based on words/no of syllables. In single syllable words, the primary stress is usually on the whole word. In bisyllabic and multisyllabic words the stress can be on a single or multiple syllables. For example let us take a sentence THIS IS MY RED BAG. We can convey different information by changing the stress from one word to the other, like THIS is my red bag indicates the ownership of the bag among many similar bags. This is MY red bag indicates the ownership of the bag to a particular person Intonation- It is conveyed by variation in pitch pattern of voice production within a phrase or sentence. The pitch can be rising or falling or in any other manner to convey varying meanings. Intonation mark sentence ending. It also convey feelings

138 like anger, or sarcasm. The use of intonation differentiate a sentence as a statement or a question. For example, "This is your red bag" with not much pitch variation is a statement. And the same sentence becomes a question when the sentence ends with a rising pitch, 'This is your red bag?' Rhythm- This is the timing pattern between the successive units of speech. There is a periodicity or timing pattern while the speaker takes breath in between utterances. In one breath he may utter 2-3 or more words depending on the context. In music, this is usually repetitive, same timing is maintained in a full song, but for speech, the rhythm depends on the speaker, content and context. Another aspect called tempo can be understood here, it is the speed or rate at which a speaker speaks. It is dependent on the speaker. Juncture- It is the pause pattern used between words and leading to association of a particular syllable to a particular word. Moreover the placement of phrases at phrase juncture, the length of pauses is also very crucial. For example "peace talks" vs "pea stalks"

4.5.2 Assessment of Suprasegmental Feature The assessment of suprasegmental features is carried out as a part of routine speech assessment. The child or speaker under assessment needs to have a developed connected speech. The assessment lead to the understanding of deficits in expression of these features. Thus this helps to plan and carry out speech therapy program. Perceptual Analysis There is a lack of standardised tests. Mostly perceptual analysis is carried out to assess each feature. The analysis can be carried out by recording speech samples from the child while reading, talking or storytelling. The analysis can be carried out even during conversation with the child as a part of assessment. Some tests described in the literature describe the use of experienced listeners, for the perceptual analysis. The listeners should have adequate knowledge about the language, context and should be aware of the normal patterns of suprasegmental features. However the perceptual analysis can be carried out by the clinician alone. During reading activities, the features can be highlighted to help the child to produce them correctly. For example stressed words can be underlined. Moreover use of rating scales to rate overall speech intelligibility also gives us information about suprasegmental features. Use of

139 correct prosodic features is very important to obtain good speech intelligibility. Children using the suprasegmental features correctly are more intelligible. Instrumental Assessment Instrumental evaluation always gives direct and objective results. Many parameters of speech can be measured using spectrographic analysis. This gives information about durational aspects of speech, pitch variations, intensity, stress, intonation,rate of speech, and voice quality. The prosodic control can be objectively assessed section by section and analysed to get information on fundamental frequency, its parameters and intensity contours. The assessment can be carried out by downloading certain software in an advanced computer fitted with a high fidelity microphone. Examples Praat, Audacity etc. These analyses can also be carried out in standalone systems like Visi-Speech. The assessment of fundamental frequency between two utterances can be done easily to differentiate between question and statement. Similarly the peak fundamental frequency values and intensity values can be compared between stressed and unstressed words. However accuracy of instrumental measurements can be affected in case of impaired speech. For example presence of hypernasality may reduce the acoustic contrast between utterances, reducing the obtained values. Moreover there can be instrumental errors or lack of tester's knowledge which can affect the results. 4.6

100%

MATCHING BLOCK 28/28

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Milestones of Speech Development in Typically Developing Children Development of speech

sounds follows a particular pattern in typically developing children. All the speech sounds including vowels,consonants,semivowels, diphthongs and blends develop at different ages depending upon mastery of central control on motor speech organs,muscles and proficiency of articulatory movements.As a result speech sounds which can be produced with ease develop first followed by more intricate sounds. The speech development can be illustrated from birth as follows: Birth to 3 months The infant mainly has crying and comfort sounds at this stage. These sounds have rudimentary vowel like utterances, which cannot be specified.

140 3 to 6 Months The child starts cooing, gurgling and babbling. Speech sounds like /p/, /b/ and /m/ become prominent along with vowels like /o/, /u/, /i/ and /a/ in their speech production. 6 to 12 months Continue to use the above developed consonants and vowels with more efficiency. 1 Year to 2 years Few more consonants get added n, t, d in the child's speech production. At this stage the child starts to take a step towards developing production of more complex speech sounds. In this time the child experiences certain phonological processes, which might sound faulty to an adult but are very normal patterns found in the speech development of a typically developing child. The phonological processes are: Voicing- This is where sounds made with no voice are replaced with voiced sounds (e.g. "car" becomes 'gar', "tea" becomes 'dea') Stopping- This is where sounds made with a long airflow are replaced by sounds made with a stopped airflow (e.g. "sea" becomes 'tea', "shoe" becomes 'to') Final consonant deletion- The ends of words are often missed out (e.g. "tap" = 'ta') Velar Fronting- This is where sounds made with the tongue hitting the back of the mouth (e.g. /k/ and /g/) are replaced with sounds made at the front of the mouth (e.g. /t/ and /d/) so "car" becomes 'tar', "key" becomes 'tea' Palatal Fronting- This is where the tongue is moved forward in the mouth so the 'sh' sound becomes a /s/ sound Weak Syllable Deletion- This is where non-stressed syllables are deleted from words (e.g. "elephant" becomes 'ephant') Assimilation- The pronunciation of the whole word is influenced by the presence of a particular sound in the word (e.g. "dog" become 'gog') Consonant Cluster Reduction- This is where clusters of consonants in words are reduced by one or more consonants (e.g. 'brick' becomes 'bick', "clown" becomes 'cown')

141 De-affrication - This is where the affricate sounds 'sh', 'ch' and 'j' are replaced with fricative sounds ('sh', /s/, /z/) or the /t/ or /d/ sound. Gliding - This is where the /l/ and the /r/ sounds are replaced with the /w/ or the 'y' sound. The voiceless 'th' sound (as in 'thank you') is replaced with a /f/ sound The voiced 'th' sound (as in 'with') is replaced with a /v/ sound 2-4 years More speech sounds get included in the production list like /k/, /g/, /f/, /s/. The child also keeps repeating the phonological processes. The child's speech is still not very intelligible to unfamiliar person. 4-6 Years More difficult speech sounds start emerging like /y/, /h/, 'sh', 'ch', 'j', /z/, /l/, /v/. The child still uses the phonological processes and continues to make the normally occurring errors. By 6 years the child's speech becomes very distinct with few errors like in sounds /r/ and /th/. Even unfamiliar individuals start comprehending the child's speech. 6-8 years By 8 years the child is able to say almost all speech sounds with much clarity. The normal phonological patterns start to disappear and completely disappear by 8 years. 4.6.1 Chart of normal speech sound development sequence. The horizontal bars represent age. The speech sounds are mastered by the age where the bar terminates. For example the sounds k, g, d, t are mastered by 4 years of age.

142 4.7 Speech Intelligibility 4.7.1 Concept To carry out effective and smooth verbal communication, it is mandatory to understand what is being said. That is the speaker should have clear and intelligible speech. Speech intelligibility is a measure of how well a particular speaker's speech is comprehensible. The speaker should be understood by familiar as well as unfamiliar listeners. Age appropriate voice, articulation, normal fluency of speech, normal language development and good quality of speech production sum up to give rise to good speech intelligibility. Usually a child's speech starts to become intelligible even to unfamiliar listener by and after 4 years of age. Intelligibility to familiar listeners By 18 months = 25% intelligible

143 By 24 months = 50-75% intelligible By 36 months = 75-100% intelligible Lynch, Brookshire & Fox (1980) Intelligibility to unfamiliar listeners Dr Peter Flipsen Jr, (2006) By age 1 = 25% intelligible By age 2 = 50% intelligible By age 3 = 75% intelligible By age 4 = 100% intelligible 4.7.2 Factors affecting speech intelligibility In order to speak clearly the speaker should have the following characteristics: 1. Voice: The individual should have age and sex appropriate voice quality. The organs of the respiratory system, vocal tract should be structurally and functionally adequate to result in an acceptable voice quality. The child should not have any structural abnormality, motor speech disorder, intellectual deficiency and hearing impairment in order to be able to produce good quality of voice. The children have similar voice quality until puberty, after which male and female adolescents have different voice quality. The voice should be adequate in loudness, appropriate in pitch and should have a pleasing quality (not harsh, hoarse or nasal) 2. Articulation - All the articulators should have normal structural make up. The active articulators should have appropriate rate and range of movements. The child should not have any motor speech disorder, hearing impairment, structural anomaly (cleft lip/palate) and intellectual deficiency in order to have clear articulation. 3. Fluency - The rate at which the speech is produced should be age appropriate. It should be free from any non-fluencies like repetitions, blocks or hesitations. However up to an age of 4 years, the child might display a normal non-fluency pattern which should not be confused with fluency disorder. 4. Suprasegmental features- The use of stress, intonation, rhythm and pause should be timely and appropriate. A child having speech without these features

144 will sound robotic, and not pleasing to the ears, and will lead to disinterest, lack of motivation of the listener. 5. Knowledge of language- The child should have normal language development sequence. It is not only important the way speech is produced, but what content it has. 4.7.3 Assessment of Speech Intelligibility Assessment of speech intelligibility is a part of routine speech assessment. It provides information about the child's current speech intelligibility which can be used to counsel parents, decide treatment strategies and also curriculum for education. The measurement acts as a baseline before treatment/therapy and also helps to monitor progress of therapy. Perceptual Procedures Most of the clinicians use perceptual measures for assessing intelligibility. Rating scales are widely used in all set-ups. A speech sample, either live or recorded is presented to a listener or group of listeners for judging the intelligibility on a scale. For example a scale of 0 to 6 is used, where 0 denotes most intelligible and 6 denotes poor intelligibility. Unfamiliar listeners are best as the listener bias can be removed. However there can be some limitations of the perceptual measurements. The points on rating scales may not be clearly demarcated. The rating might slightly differ from one judge to another. Other Procedures: Write down Methods The listener/judge can write down the child's utterances as understood. Thereafter the number of words correctly produced can be calculated. The intelligibility can be calculated in percentage by using the simple calculation: $\text{Speech Intelligibility (\%)} = \frac{\text{No of words correctly produced}}{\text{Total no of utterances}}$ 4.8 Let's sum up Respiration provides the power for the process of speech production. The structures involved in respiration and their respective functions should be intact for adequate speech production. There is a need for assessment of 145 respiratory process as a part of routine speech evaluation. Phonation is the next step after respiration. It involves the vocal folds and vocal tract. The phonatory system is also evaluated as a part of routine speech assessment procedure. The assessment results are used for management of various speech disorders. There active and passive articulators which act in coordination to result in smooth speech production. All the speech sounds are classified based on manner, place and voicing characteristics. Articulation assessment provides important information for speech sound correction. The emotions/feelings of a speaker are conveyed with the help of suprasegmental features used in speech production. Intonation, stress and rhythm are the basic prosodic features. These features can be assessed perceptually as well as instrumentally. The development of speech sounds in a child follows a particular sequence. Any disruption leads to delayed speech or speech errors. It typically starts at birth and continues till 8 years of age. Speech intelligibility is obtained by the presence of many contributing factors. It is very important for effective communication. Assessment of speech intelligibility is a part of routine speech assessment. Mostly perceptual measure are employed to assess speech intelligibility. 4.9 Check Your Progress 1. What are the various systems of human body which are involved in the act of speech production? 2. What is speech breathing? 3. Why do we need to assess the respiratory system? 4. What are the sounds which are produced with the help of alveolar ridge and tongue? 5. What are the speech sounds you can expect to hear in the speech of a 4 year old child? 6. Frame a sentence in your language, change the intonation patterns and say the sentence.

146 7. At what age you can expect to hear intelligible speech from a familiar child and an unfamiliar child? 4.10 Reference 1. Speech Science Primer-Lawrence J. Raphael,Gloria J.Bordan,Katherine S.Harris 2. Manual on developing communication skills in mentally retarded Persons- T.A. Subba Rao 3. Flipsen, P., Jr. (1995). Speaker-listener familiarity: Parents as judges of delayed speech intelligibility. Journal of Communication Disorders 28(1), 3-19 4. S.E.S.H:02 Blocks 1-4 5. Assessment of Motor Speech Disorders-Anja Lowit, Raymond D. Kent 6. The Speech of Hearing-impaired Children-Andreas Markides 7. Sander E.K "When are speech sounds learned" JSHD,37,1972 8. Lynch, J.I., Brookshire, B.L., & Fox, D.R. (1980). A Parent - Child Cleft Palate Curriculum: Developing Speech and Language. Tigard, OR: CC Publications 9. <http://www-01.sil.org/computing/ipahelp/ipaartr2.htm> 10. Buzzle.com

ASSESSMENT AND IDENTIFICATION OF NEEDS HEARING IMPAIRMENT HEARING IMPAIRMENT C-12 (H.I.) B. Ed. Spl. Ed. (M.R./H.I./V .I.)-ODL ASSESSMENT AND IDENTIFICATION OF NEEDS HEARING IMPAIRMENT C-12 (H.I.) Published by : Netaji Subhas Open University , DD-26, Sector-I, Salt Lake, Kolkata-700 064 & Printed at : The Saraswati Printing Works, 2, Guru Prosad Chowdhury Lane, Kolkata 700 006 (Not for sale) mission? Any system of education which ignores Indian conditions, requirements, history and sociology is too unscientific to commend itself to any rational support. — Subhas Chandra Bose

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	Hearing (1990) represented the American Speech Language Hearing Association (ASHA), American Academy of			
SA	Algorithms for hearing aid fitting A comparative study .docx (D109543288)			
2/28	SUBMITTED TEXT	56 WORDS	51% MATCHING TEXT	56 WORDS
	Assessment and Identification of Needs UNIT - 1 : EARLY IDENTIFICATION OF HEARING LOSS : NEED & STRATEGIES 9-40 UNIT - 2 : ASSESSMENT AND IDENTIFICATION OF NEEDS 41-81 UNIT - 3 : ASSESSMENT OF LANGUAGE & COMMUNICATION 82-119 UNIT - 4 : ASSESSMENT OF SPEECH 120-146 UNIT - 5 : EDUCATIONAL ASSESSMENT AND IDENTIFICATION OF NEEDS 147-176 8 9 1.1			
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3/28	SUBMITTED TEXT	14 WORDS	88% MATCHING TEXT	14 WORDS
	through the middle ear and into the ear canal, where they can be			through the middle ear and into the ear canal, where it can be
W	https://pdfcoffee.com/essentials-of-audiology-gelfand-4-edition-1-pdf-free.html			

4/28	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>Northern, J.L. and Downs, M.P. (1978) Hearing in children, Baltimore, Williams and</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
5/28	SUBMITTED TEXT	15 WORDS	71% MATCHING TEXT	15 WORDS
<p>Use of Checklist and Behavioral Observation in Early Identification of Hearing Loss by School Teacher (Congenital)</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
6/28	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>Concept of Unaided, Aided Audiograms, Speech Spectrum and its applications 2.7.1</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
7/28	SUBMITTED TEXT	16 WORDS	76% MATCHING TEXT	16 WORDS
<p>information about type of hearing loss is very important for otologists to take decisions about medical treatment.</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
8/28	SUBMITTED TEXT	15 WORDS	85% MATCHING TEXT	15 WORDS
<p>Role of Special Educator in Conditioning for Pure Tone Audiometry 2.6 Audiogram 2.6.1 Understanding of Audiogram 2.6.2</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
9/28	SUBMITTED TEXT	21 WORDS	97% MATCHING TEXT	21 WORDS
<p>early detection of progressive hearing loss. 4. It helps in determining the amount of benefit from medical and surgical treatment. 5. The</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				

10/28	SUBMITTED TEXT	12 WORDS	83% MATCHING TEXT	12 WORDS
<p>pure tones at different frequencies like 250 Hz,500 Hz,1000 Hz,2000 Hz,4000 Hz,8000Hz.</p> <p>W http://dl1.tarjomac.ir/audiology-speechtherapy/TPC202189.pdf</p>		<p>pure tones at specific frequencies like 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, 4000 Hz, and 8000 Hz.</p>		
11/28	SUBMITTED TEXT	24 WORDS	92% MATCHING TEXT	24 WORDS
<p>Regular or periodic assessment of hearing sensitivity by puretone audiometry helps in identifying the changes in hearing sensitivity of subject at regular intervals. This helps</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
12/28	SUBMITTED TEXT	18 WORDS	86% MATCHING TEXT	18 WORDS
<p>etc. 9. The results of this test are accepted by agencies to ascertain auditory fitnessfor certain jobs like pilots, policemen,</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
13/28	SUBMITTED TEXT	11 WORDS	87% MATCHING TEXT	11 WORDS
<p>the signal to the patient. It is an on-off switch for</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
14/28	SUBMITTED TEXT	13 WORDS	84% MATCHING TEXT	13 WORDS
<p>symbols are used for air conduction and bone conduction threshold of each ear.</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
15/28	SUBMITTED TEXT	18 WORDS	72% MATCHING TEXT	18 WORDS
<p>information about type and degree of hearing loss. Also it provides separate information about each ear, which helps</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				

16/28	SUBMITTED TEXT	12 WORDS	83% MATCHING TEXT	12 WORDS
<p>Average (PTA) provides information about the degree of hearing loss and the</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
17/28	SUBMITTED TEXT	12 WORDS	83% MATCHING TEXT	12 WORDS
<p>three types of hearing loss are conductive, sensorineural and mixed hearing loss.</p> <p>three major types of hearing loss— conductive, sensorineural, and mixed hearing loss.</p> <p>W http://dl1.tarjomac.ir/audiology-speechtherapy/TPC202189.pdf</p>				
18/28	SUBMITTED TEXT	29 WORDS	39% MATCHING TEXT	29 WORDS
<p>the degree of hearing loss (amount of impairment) the pure tone average is calculated. The pure tone threshold of each ear at three frequencies 500 Hz, 1000 Hz and 2000Hz,</p> <p>SA 8 Unit 3 Identification of Deafness and Assessment of Hearing.docx (D162037133)</p>				
19/28	SUBMITTED TEXT	23 WORDS	63% MATCHING TEXT	23 WORDS
<p>Normal Hearing 16-25 dB Minimal Hearing Loss 26-40 dB Mild Hearing Loss 41-55 dB Moderate Hearing Loss 56-70 dB Moderately Severe Hearing Loss 71-90 dB Severe Hearing Loss</p> <p>SA Elveen Thesis before urkund -2.12.2022.docx (D151761506)</p>				
20/28	SUBMITTED TEXT	13 WORDS	76% MATCHING TEXT	13 WORDS
<p>The defects of inner ear or auditory nerve results in sensorineural hearing loss.</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				

21/28	SUBMITTED TEXT	15 WORDS	86% MATCHING TEXT	15 WORDS
<p>and configuration of hearing loss. 76 2.7 Concept of Unaided, Aided Audiograms, Speech Spectrum and its applications 2.7.1</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				

22/28	SUBMITTED TEXT	199 WORDS	88% MATCHING TEXT	199 WORDS
<p>the speech banana is a representation of different speech sounds on the audiogram depending on their frequency and intensity at typical conversation levels. Most speech sounds are within the 250 to 4000Hz range, with a few high frequency sounds between 4000Hz and 6000Hz. A plotting of the child's thresholds at each frequency on the speech banana will show the speech sounds which the child is able to hear. Any sound which is below the level of the child's threshold will be heard, and anything above this threshold line will not be heard. A child with a mild loss may not hear f, v and z in the low frequencies and f, s and th in the high frequencies. Thus, children with mild losses develop speech and respond to sounds, and the hearing loss is identified at a later age. These children will often have difficulties with pronunciation of words, depending on the sounds they are unable to hear. Difficulty will be experienced in noisy environments such as the classroom. A moderate loss will result in missing out on number of consonants in the speech banana, depending on the shape of the loss, while a severe (and greater) loss will result in all speech sounds being missed. However, environmental sounds (like the piano, dog barking,</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				











23/28	SUBMITTED TEXT	19 WORDS	91% MATCHING TEXT	19 WORDS
<p>The mixed hearing loss occurs when there is involvement of the outer ear and / or middle ear and</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
















24/28	SUBMITTED TEXT	32 WORDS	80% MATCHING TEXT	32 WORDS
<p>will be heard. These children will respond to sound but, without amplification, will not hear sounds clearly. With amplification the threshold at which sounds are heard will be improved and thus speech sounds will</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
25/28	SUBMITTED TEXT	17 WORDS	93% MATCHING TEXT	17 WORDS
<p>Assessing communication and language: Developmental checklists, scales, standardized tools and assessing language samples using parameters of measurement (Productivity, Complexity, correctness an communicativeness)</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
26/28	SUBMITTED TEXT	20 WORDS	97% MATCHING TEXT	20 WORDS
<p>Active and Passive Articulators 4.4.3 Classification of vowels and consonants 4.4.4 Assessment of Articulation 4.5 Suprasegmental Aspects of Speech and its Assessment 4.5.1</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
27/28	SUBMITTED TEXT	33 WORDS	33% MATCHING TEXT	33 WORDS
<p>Milestones of Speech Development in Typically Developing Children 4.6.1 Chart of normal speech sound development sequence 4.7 Speech Intelligibility 4.7.1 Concept 4.7.2 Factors affecting speech intelligibility 4.7.3 Assessment of Speech Intelligibility 4.8 Let's sum up 4.9 Check Your Progress 4.10</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				
28/28	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>Milestones of Speech Development in Typically Developing Children Development of speech</p> <p>SA SEHI-31 - FINAL 23.08.2021.docx (D122369686)</p>				

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1 B. Ed. Spl. Ed. (M. R. / H. I. / V. I)- ODL Programme AREA -

C C-12 : ASSESSMENT AND IDENTIFICATION OF NEEDS [MENTAL RETARDATION/ INTELLECTUAL DISABILITY]

A COLLABORATIVE PROGRAMME OF NETAJI SUBHAS OPEN UNIVERSITY AND REHABILITATION COUNCIL OF INDIA

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Material (SIM) is prepared keeping conformity with the B.Ed.Spl. Edn.(MR/HI/VI) - ODL Programme as prepared and

circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU from the 2015-2017 academic session.

AREA - C ●●●●● DISABILITY SPECIALISATION COURSES COURSE CODE - C-12 M. R./I. D. ASSESSMENT AND

IDENTIFICATION OF NEEDS ©

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without the written permission from the NSOU authorities. Dr. Ashit Baran Aich Registrar(Actg.)

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17)

the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations

which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the

National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and

futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the

directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of

Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the

month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within

such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put

the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It

required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every

intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs

are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline

concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of

these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the

Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the

learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher

dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better

understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled

support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also

provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support

systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations.

However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must

acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their

respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar

Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed. (M. R. / H. I. / V. I)- ODL Programme AREA -

C C-12 : ASSESSMENT AND IDENTIFICATION OF NEEDS [MENTAL RETARDATION/ INTELLECTUAL DISABILITY]

6

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June, 2016

7 Netaji Subhas Open University AREA -

C C-12 : ASSESSMENT AND IDENTIFICATION OF NEEDS C-12 □ □ □ □ □

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Assessment and Identification of Needs UNIT - 1 : INTELLECTUAL DISABILITY—NATURE AND NEEDS 9-65 UNIT - 2 : ASSESSMENT 66-125 UNIT - 3 : ASSESSMENT AT PRE-SCHOOL AND SCHOOL LEVEL 126-149 UNIT - 4 : ASSESSMENT AT ADULT AND VOCATIONAL LEVELS 150-191 UNIT - 5 : ASSESSMENT OF FAMILY NEEDS 192-212 8 9 Unit - 1
 □□□□ Intellectual Disability—Nature and Needs Structure : 1.1 Introduction 1.2 Objectives 1.3 Historical Perspective of Intellectual Disability 1.4 Definition of Intellectual Disability—International and Indian perspective 1.4.1 ICD-10 1.4.2 American Association on Intellectual and Developmental Disabilities (AAIDD) 1.4.3 World Health Organisation (WHO) 1.4.4 PWD Act 1995 1.4.5 RPD bill (proposed) 1.4.6

Diagnostic and Statistical Manual of Mental Disorder IV (DSM IV) 1.4.7 Diagnostic and Statistical Manual V (DSM V) 1.5 Etiology, Causes & Prevention 1.5.1 Prenatal Hazards 1.5.2 Perinatal Hazards 1.5.3 Postnatal Hazards 1.5.4 Prevention of Mental Retardation 1.5.4.1 Primary Prevention 1.5.4.2 Secondary Prevention 1.5.4.3 Tertiary Prevention 1.5.4.4 Prenatal Prevention 1.5.4.5 Natal and Perinatal Prevention 1.5.4.6 Postnatal Prevention
 10 1.6 Classification of persons with intellectual disability 1.6.1 Psychological classification 1.6.2 Medical classification 1.6.3 Educational classification 1.6.4 Based on intensity of needed supports 1.6.5 ICF 1.7 Screening, Identification, Characteristics and Needs of PWD 1.7.1 Early Identification and Screening 1.7.2 Characteristics of Intellectual Disability 1.7.3 Needs of PwID 1.8 Check Your Progress 1.9 Let us Sum Up 1.10 Reference 1.1 Introduction

77%

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Intellectual Disability (ID), once called Mental Retardation, is characterized by below-average intelligence or mental ability and a lack of skills necessary for day- to-day living. People with intellectual disabilities can and do learn new skills, but they learn them more slowly. There are varying degrees of intellectual disability

intellectual disability has limitations in two areas. These areas are Intellectual functioning. Also known as IQ, this refers to a person's ability to learn, reason, make decisions, and solve problems Adaptive behaviors. These are skills necessary for day-to-day life, such as being able to communicate effectively, interact with others, and take care of oneself. Historically, the person affected by Intellectual disability have experienced varied treatment ranging from abandoning them to providing them equal opportunities like non -disabled persons. The definitions have undergone changes based on the trend of the day.The various definitions also will be discussed.

100%

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The word "Etiology means causation. Knowledge of the causative factors of

intellectual disability is important.

86%

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Intellectual disability can be caused by any condition that impairs development of the brain before birth, during birth or in the childhood 11 years. Several hundred causes have been discovered, but in about one- third of the people affected, the cause remains unknown. There are varying degrees of intellectual disability,

depending on the extent of damage to the brain in the individuals. Here we will see how they are classified based on certain yard sticks .Medical classification, go by causes/etiology, psychological classification are made based on IQ. The educational goes by potentials of the persons with intellectual disabilities.

95% MATCHING BLOCK 3/203

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With the implementation of the Persons with Disabilities Act (PWD), 1995 intellectual disabilities has been recognized as a disability with an identity of its own. Earlier, data on mental retardation had been clubbed with data on mental illness. It is only in the recent years that early identification of persons with mental retardation has become possible. Systematic thinking on screening and identification emerged consequent to the National Policy on Education (NPE), 1986, even though working groups had been set up even as early as 1981 during the International Year of the Disabled Persons (IYDP) by the then Ministry of Welfare. Early identification includes screening, early diagnosis and parent counseling. 1.2

61% MATCHING BLOCK 4/203

W

Objectives After studying this unit you will be able to: ●●●●● Narrate the historical perspective of Intellectual Disability ●●●●●

Understand definition as they evolved ●●●●● Define mental retardation ●●●●● Understand the causes and prevention of MR ●●●●● Explain the classification of MR. ●●●●● Understand different screening methods. ●●●●● Understand needs of PWDS. 1.3 Historical perspective of Intellectual Disability (ID) History of Intellectual Disability

100% MATCHING BLOCK 5/203

W

Identification of persons with mental retardation and affording them care and management for their disabilities is not a new concept in India. The concept had been translated into practice over several centuries as a community participative 12 culture. The status of disability in India, particularly in the provision of education and employment for persons with mental retardation, as a matter of need and above all, as a matter of right, has had its recognition only in recent times, almost after the enactment of the Persons with Disabilities Act(PWD), 1995.

As years passed by "the right to live received recognition and importance. However they were considered as menace to the society requiring segregation from the community and requiring close cutodial supervision. Thus came up the institutional care. The persons with mental retardation were segregated from family and community and put institution for 24 hours total care. History of intellectual disability in India ●●●●●

78% MATCHING BLOCK 8/203

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As early as the Ramayana period (around 5000BC) we have a reference to intellectual disability. Queen kaikayi's maid Mantara was dull witted and thus easily duped. The concept of problems was mentioned first in Atharva veda. ●●●●● A much older system of philosophy the Sankya, contain a statement on different types of intellectual disabilities. ●●●●● The Garba upanishad (around 1000 BC) a treatise on embryology, suggests that babies with defects are "born to those parents whose minds are distressed." ●●●●● Differential diagnosis among various sorts of odd behavior has always been hard, but are more readily recognizable " childish mind" model for

intellectual disability

90% MATCHING BLOCK 9/203

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appeared in a riddle of the Upanishads compiled perhaps in 500BC. ●●●●● A careful study of the ancient Indian literature reveals that there have been a few references to persons with intellectual disability. In the mythology of patanjali, we read that patanjali had to teach Goudapathaga, who was

a

89%

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dull headed persons. ●●●●● The Patanjali yoga sutras deal with yoga as a therapy. A careful reading of these sutras reveal that persons with mental retardation have also been taken into consideration for this therapy. ●●●●● The grate physician charaka has given various causes for

intellectual disability

89%

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and discusses the different types and classification. ●●●●● Clear reference to persons with intellectual disability can be traced in the Sangam literature (200BC-200AD) by Erayanar and Avvaiyar and more recently by Thiruvalluvar. 13 ●●●●● In the 4th century BC, Kautilya banned the use of terms insulting persons with disabilities. He employed many people with disabilities in his spy network. ●●●●● King Amarsakti had three sons viz, Vasusakti, Ugrasakti and Anekasakti, who were greater fools or "supreme block-head". This folly caused their father's courtier Vishnu Sharma to devise the world's first special education text Panchatantra, around the 1st century Be. Basham remarks "Never was a school text book better written" ●●●●● Ancient Hindu, Buddhist and Sanskrit

text

93%

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treat idiocy like other birth handicaps, arising through sin in an earlier incarnation .According to Manu, the Law Giver, that as a consequence of a remnant of the guilt of formar crimes , as persons are idiots ,dumb,blind, deaf and deformed,all despised by the virtuous. ●●●●● The Buddhist Mantalsi Jatakar recounts an early attempt to teach "the profound dullards" by activity methods and practical curriculum, but he did not succeed .Later some teachers did persevere so that the unfit rather than being weeded out might end up with more time at school than the clever ones. ●●●●● Arthasatra mentions treatment and care given to people with disabilities at mattas (monasteries) and in the time of Ashoka, at the hospital at Pataliputra.Sinhalese asylums for people with disabilities were set up by the century in what is now

SriLanka. History of special Education in western countries: Introduction from Ancient times to 1200AD The subject of mental retardation has been neglected in ancient writings but there is enough evidence in historical records to show it existed. The causes were then as now congenital, chromosomal, inter uterine damage, premature or protracted birth, or infections and accidents in infancy and childhood. Infant mortality was high and most children with Downs Syndrome, cerebral palsy or other disability where there was a weakened resistance to infection would have succumbed early to pulmonary infections, heart defects and gastroenteritis. However, some would have survived, like children who had a mental disability but no physical impairments. At a time when most people lived by agriculture, herding sheep and goats, or fishing, and reading and writing were unnecessary, moderate intellectual disability would not have been important. People with disabilities, whether physical or mental disabilities were treated in different ways according to

14 where they lived. Some parts of the Talmud advocated disability as a holy state and a means of getting to heaven and similar sentiments were expressed towards those who helped disabled people. At the heart of Jewish law was the idea that every human being newborn or adult, deformed or healthy, slave or free was made in the image of God. Abortion and infanticide were condemned while pagan religions sanctioned, condoned and encouraged the killing of malformed or sick infants. Plato stated that pregnant women over the age of forty years should have an abortion and Aristotle recommended both infanticide and abortion if there was a risk of a deformed child. He supported a law to ensure the compulsory exposure of all malformed babies who were abandoned with their ankles pinned together. The birth of a retarded child was interpreted by the Greeks as a punishment inflicted on its parents by the gods. Rearing a sick or disabled child was economically burdensome and unprofitable. In Sparta, racial homogeneity was prized. Citizens had to be physically strong and mentally able. There was a legal requirement to abandon deformed and sickly infants. Babies were left to perish on a mountainside or thrown into a chasm. If the disability was not obvious at birth, but the child was later found to be an "idiot" the child would be abandoned. And left to fend for itself, Meanwhile the Celts had a much more enlightened attitude. The social order was based on community, democracy and individual rights. Each clan or tribe occupied its own territory, and this was divided into three sections. The clan leader and his family had one section, another was set aside for the use of the poor, sick and disabled and the largest section was common ground for the whole tribe. Members working their own plots paid taxes which were used for the upkeep of the community and to support the poor, the sick and the aged. The Celts had hostels, orphanages and hospitals. Ancient Celtic laws show there was a well-developed medical service and that each individual tribe was responsible for caring for the sick, the wounded and those with mental handicaps. The Celts covered territory from Ireland to Hungary, from Sweden to Spain. Early Roman law gave power to the father to have absolute rights over his children. He could expose any female infant or a child of either sex who was deformed or disabled. Soranus a physician in the 1st and 2nd centuries AD wrote the earliest known treatise on gynecology and in it he had a chapter entitled How to recognize the Newborn that is worth rearing. He gave a quite scientific and detailed analysis of the various medical examinations which should take place. Some mentally retarded people would have received asylum in sanctuaries as

15 did other groups in the ancient world. However feeble minded and mentally disabled people had their political rights curtailed and would not have been granted Greek or Roman citizenship. As Christianity spread, a far more compassionate view was taken of people with disabilities of any kind. Charity towards people with disabilities and illnesses was preached and the Church set up orphanages for abandoned children in the 3rd and 4th centuries and the earliest hospital was founded by St Fabiola in Rome in 399 AD. St Nicholas, the Bishop of Myra showed particular compassion towards mentally retarded children and urged giving them tender care. In the Islamic world from the seventh century, feeble minded people were treated with respect. There was a belief that their minds were in heaven while their body moved around amongst ordinary mortals. Not all people we would think of as mentally disabled were thought to have any disability, but rather to be special individuals who were favoured by Heaven. Little was known about the causes of mental handicap, and medicine was based on "humours" and a close link between the body, mind and soul. Europe was still in the Dark Ages of science and medicine but in the Islamic world Avicenna (980- 1037) wrote a textbook the Canon of medicine in which he mentioned hydrocephalus, meningitis and other mental disorders. He recognized and defined various levels of intellectual functioning and knew that brain injury could affect memory and speech. There were mental hospitals in Cairo and Baghdad in the 11th and 12th centuries. Ibn Al-Baitar also wrote about mental disabilities during the first half of the thirteenth century. From the time of the end of the Roman Empire in Europe until the late middle ages, life remained very rural. By 1066 England had a population of less than one million. The majority lived in villages and hamlets surrounded by forests and marshes. Agriculture was the main occupation and the most powerful people were those who owned the most land. In a rural society literacy and intellectual ability were not important and every member of the family would have taken part in the daily grind of fetching water and fire-wood, ploughing the fields, or feeding the animals. Disabled people would have relied on relatives for their care but with poverty, malnutrition, poor hygiene and a feudal system life would have been hard. However city life was beginning again and St Bartholomew's hospital was founded in 1142 in London. In Prussia we have a record from the 12th century which said that mentally afflicted people were put in prison. As the medieval period continued, the population gradually increased and life became more sophisticated as more people moved into towns and

16 the generation of wealth meant that new phenomena such as urban beggars, some of them disabled became an issue and the importance of landed wealth led to the first law defining a distinction between mentally ill people and mentally disabled people. The Mediaeval period 1200-1450 Children with mental disabilities could be born to anyone rich or poor. Medieval society was based on the preserving and transfer of landed wealth. If the heir to property were mentally disabled, the King wanted to make sure that he was protected during his life time (or her lifetime) and that the property then went to the rightful successor. During the second half of the 13th century a law was passed. It distinguished between "natural fools", people who were mentally disabled from birth and those who had a mental illness and might recover or have periods of lucidity. The King used to "contract out" care of mentally disabled people to private individuals. In fact often private individuals would tell the king about a mentally disabled person so that they might get custody it was a private but monitored guardianship. They would pay the King a lump sum called a fine and annual rents and they would enjoy the revenue from the land and provide the person with the necessities of life until they died and the land passed to their heirs For a mentally ill person, especially one who had periods of lucidity they had to be kept at the economic level suited to his rank and the guardian could not have the surplus revenues. If they recovered the guardian no longer looked after the estate. A record of an Examination of Emma de Beston in Cambridge 1383.exists.Emma was asked whence she came, said she didn't know. She knew there were seven days in the week but could not name them. She said she had had 3 husbands but couldn't name one. She was asked how many shillings there were in 40 pence. She did not know. Asked if she would take 40 silver groats or 40 pence she said they were the same value. They found she was not of sound mind having neither sense nor memory nor sufficient intelligence to manage herself her lands and her goods. By inspection she had the face and countenance of an idiot .Because of this 80% of cases coming to the court described the heir as a fool rather than a madman because the guardian got more revenue from a fool. When the law was changed in the 16th century the number of people described as mentally disabled coming before Courts of Wards dropped to 30% in 1640. There was no dramatic decline in mental handicap. It is simply that when it was no longer advantageous to the guardian to have custody of someone who was disabled rather than mad, more people were recognized as mentally ill rather than mentally disabled. Another document from the thirteenth century clearly distinguishes mentally ill from mentally disabled people. It stated that "women, serfs, people under 21, open lepers, idiots, attorneys, lunatics, deaf-mutes, those excommunicated by a bishop and criminal persons" were all barred from becoming judges. In 1376 in Hamburg mentally retarded persons were confined to a tower in the city walls called the idiots cage. In Gheel in Belgium there was a saints shrine said to cure the mentally ill and afflicted. Many mentally handicapped and mentally ill people went there. Eventually an adult care scheme grew up where families fostered people with mental handicaps. This is still going on. Renaissance, Reformation and Beyond 1450-1800 Many paintings of the Renaissance, show infants and children with Downs Syndrome depicted as cherubs and the infant Jesus. Various explanation have been put forward. Some have said that people with mental or physical disabilities were all part of Gods order blessed infants of their good God, and had a special place alongside popes, bishops, king's noblemen and knights. People believed they would gain the favor of God by giving help and compassion to them. If this were true, it would have been a golden age where handicapped people were not only socially accepted but taken as models of divine and saintly beings. Unfortunately this theory is not entirely true. During the sixteenth and seventeenth century there are two views of disabled people ,either related to Satan or innocents unstained by normal and sinful human characteristics. In 1480, a book about witches. The Mallus Malificorum was published and read widely .In some areas where there was great superstition, women who gave birth to a disabled child were sometimes killed or exiled. They believed that a baby with a deformity or mental handicap was not the baby that was born to its mother but a replacement left by fairies and demons. This view was adapted from pagan folklore and Christianized explanations of the story were that the parents were guilty of some wickedness, or that the parents loved the child more than they loved God or that the mother had been seduced by the devil. Superstition held that a disabled, or deformed child was bad luck a curse divine retribution or that disability indicated possession by the devil or was the outcome of evil-doing. During the Middle Ages and into the 16th century people with physical defects, like hunchbacks or dwarfs, and people with simple minds were often kept as court

18 jesters and fools. There is a tradition that Tycho Brahe (1546-1601) the astronomer had as a close companion an imbecile to whose mutterings the astronomer listened to as divine revelations. Mentally disabled people would have been cared by many members of the family but if the breadwinner died, or the family fell on hard times they could claim relief from the parish. 17th and 18th century parish records mention people with learning disabilities describing them as idiot, stupid, innocent, witless. Different phrases like crazy or mad were used for mentally ill people. If the primary care died then person could be the legal obligation of parish and be looked after by the Parish nurse or other parishioners. Sometimes they would receive a clothing allowance. Bethlem or Bedlam Hospital was transferred to the City of London. In 1598 a committee appointed to inspect Bethlem found it "so loathsomely and filthy kept, not fit for any man to come into the said howse." there was an attitude that people who placed lunatics or idiots in Bedlam ought to pay for their upkeep. It was now felt that families who couldn't look after the mentally disabled person themselves should pay towards their upkeep and care elsewhere. Sometimes the mentally handicapped person was cared for in his own lodgings by a servant the beginning of private lunatic asylums. In early 16th century the majority of hospitals were almshouses and leper houses which did not provide medical care. During the seventeenth century hospitals providing care for the sick increased in number during the eighteenth century, specialist hospitals especially lying in hospitals became more common as did institutions into which the mad were detained since madness was not seen as a medical problem, these institutions were refuges rather than hospitals in the modern sense. 1615 in a legal dictionary, "an exposition of certain difficult and obscure terms States "Idiot is he that is a fool natural from birth and know not how to account or number 20 pence nor cannot name his father or mother nor of what age himself is or such like easy and common matters so that it appears that he has no manner or understanding or reason nor government of himself whether it is for his profit or disproof." In the 1650 's the managers of Bedlam tried to make a distinction between the curable mad and "those dangerous to be abroad" who should be in a hospital and harmless idiots who should not befit would be necessary to certify those who were lunatic .A subcommittee was set up to identify and eject those who were idiots and not lunatic. Bedlam was rebuilt in 1676. Segregation, Incarceration and Eugenics 1800-1945 The period from 1800- 1945 has been in many ways one of the worst for people

19 with mental handicaps and disabilities. Industrialization and scientific theories led to them being shut away from society and the legacy of prejudice is still with us today. This was also the period during which thousands of disabled people became the victims of mass murder by the Nazis. There were five categories of mental illness: melancholia or delirium, mania with delirium, mania without delirium, and dementia. - The fifth was, idiotism or the obliteration of the intellectual faculties. He described a defective perception and recognition of objects, partial and total abolition of the intellectual and active facilities, This disorder may originate in a variety of causes such as excessive or enervating pleasures, the abuse of spirituous liquors, violent blows on the head, deeply impressed terror, profound sorrow, intensive study, tumors of the cavity of the cranium, apoplexy, excessive use of the lancet in the treatment of active mania. The greatest number of idiots are either destitute of speech or are confined to the utterance of some inarticulate sounds. To be an idiot is almost levelled with an automaton to be deprived of speech or to Seguin a pupil of Itard founded in Paris the first school for idiots in 1837 .In 1846 the first private school for mental defectives in England was opened in Bath. In 1847 Park House in High gate opened by a philanthropist Andrew Reed and this had an annexed at Colchester which later became the Royal Eastern Counties hospital and newly built model asylum at Earl's wood which opened in 1855. It had 500 beds which set the pattern for many similar institutions and these 19th century hospitals lasted well into second half of the twentieth century. Retain that power merely of pronouncing inarticulate sounds, to be obedient only to the instructions one and sometimes to be insensible even to that to be incapable of feeling, attending to or gratifying without assistance their appetite for food, to remain motionless in the same place and position for several days together without discovering one single expression either of thought or expression. To be at other times subject to certain furious and evanescent outbursts of passion. Such are the characteristics of idiotism. Hence attention to their physical wants and comforts is the utmost that can be devised for these unfortunate beings ... education would not be appropriate owing to the natural indolence and stupidity of idiots they might be engaged in a manual occupation suited to their capacities. In 1867 the Idiots Act was passed. It was decided that "harmless paupers of the chronic or imbecile class should not be the responsibility of the workhouse, which was their only refuge. Instead they should be seen the 1860's the first large scale institution was built in order to incarcerate and segregate people then known as idiots

20 and the insane in Large numbers. Its chief physician was Down who was the first person to accurately describe the syndrome which bears his name The theories of Dr. Down. He believed that people with Downs Syndrome were a throwback to a more primitive racial type. He was impressed by the oriental appearance of their eyes and thought his patients looked like Mongolians whom he apparently believed to be primitive. Down may have thought that different ethnic races represented different evolutionary stages in man which meant that people with "mongolism" were throwbacks or representatives of arrested development at some earlier evolutionary stage. At this time there was a belief that the British race was superior to all others, a view we now know to be racist. Mental handicap appeared in all social classes the wealthy Victorians in Britain began to make residential provision for their own affected relatives and this provision was later extended to include the other social classes. In England small schools for the so called idiots began to open and pre occupation with education included those with disabilities. Unfortunately this only interested a minority and as industrialization gained momentum there was little room for the weak and incapable. The workhouses became full of social rejects. Until 1870 the majority of children in the UK received no formal education. Education was provided by voluntary bodies, the church and private fee paying schools. Most "mentally defective" children were confined to workhouses and institutions. Asylums were set up and "educable idiots and imbeciles" there received training and formal teaching. The Forster education act of 1870 established school boards to provide elementary education in those areas where there were insufficient places in voluntary schools. National Curriculum Elementary classes were large. Instruction was based on the "official code" with rote learning and memory tests. Teachers were paid by results. Some children were not able to learn in this environment. The 1899 Elementary Education (defective and epileptic children act) applied to children who "by reason of mental or physical defect are incapable of receiving benefit from the instruction in ordinary schools but are not incapable by reason of such defect of receiving benefit from instruction in special classes or schools. There was considerable reluctance however to set up such schools and by 1908 only 133 out of 327 education authorities were using their powers. In 1914 the power to provide education for mentally defective children became a duty and in 1918 for physically disabled children. These special schools and 21 private institutions were often run as charities supported by voluntary subscriptions. The main purpose was to provide training and discipline so that the disabled inmates became less of a public burden and didn't end up as beggars or living on poor law handouts or becoming a public nuisance. While the institutions was providing asylum(refuge) their inmates were expected to help run them. It was felt a healthy body encouraged a healthy mind and Satan made work for idle hands. Physical training and work therapy were encouraged. Social training including simple tasks like mending and cookery was given and instruction in whatever primary subjects could be learned such as telling the time and classes in Speech. They were not hospitals but therapeutic communities did not to care for the "helpless". In Ireland in the Late 19th and early 20th century religious orders began to take over country mansions, build residential centers, or take over disused sanatoriums Isolated by physical barriers spacious grounds, walls, busy roads. Nuns and monks intention to provide a high quality of devoted care for "children of God" emphasizing their role as protectors of a rejected population, these religious communities drew upon their own traditions of separation from the outside world. They catered for a wide geographical area. By the end of the 19th century the enthusiasm for education had given way to demands for the permanent segregation from the rest of society. Eugenics was based on a wrong interpretation of Darwin's theories of natural selection. Focusing on hereditary nature of defects it led to wholesale incarceration... Disabled people became segregated into institutions there was no welcome for disabled people in the community. The National Assistance Act of 1911 introduced the first welfare benefits. A Royal commission on the feeble minded estimated that there were 150,000 "mental defectives "in England and Wales. The care of the mentally handicapped was passing from educationalists to the medical profession who were thought to be able to provide answers to the problem. The government came under pressure to do something for mentally handicapped people... This pressure came from two opposing schools expressing compassion on one hand and fear on the other. The Mental Deficiency Act of 1913 laid on local authorities the duty of providing care for certain cases of mental deficiency. This was done partly by Guardianship paying for accommodation in certain voluntary institutions providing new premises. Inclusion, Civil Rights and a better life 1945-2000 The 1944 education act introduced Compulsory Secondary Education. It also

22 introduced the 11 plus segregating children into secondary modern and grammar schools and subdividing children with impairments into 11 categories including educationally sub normal, maladjusted and those with speech defects as well as blind, deaf and delicate. Seriously disabled children had to be educated in special schools more and more special schools were opened in the 50s 60s and 70s. In 1948 with the introduction of the National Health Service in Great Britain many institutions were nationalized and became hospitals. This led to more emphasis on the more helpless patients and on those with disturbed behavior being admitted to these hospitals to the exclusion of those only requiring accommodation and simple supervision. The National Assistance Act of 1948 imposed a duty on Local Authorities to arrange for the welfare of disabled persons. These include people who are "deaf, blind, dumb, and other persons who are permanently handicapped by illness, injury or congenital deformity or who are suffering from a mental disorder" Mental disorder covered both mental illness and mental handicap. In the 1950's and 60's it was recognized that environment plays an important part in the development of social and mental ability and in 1970 under the Education (Handicapped Children) Act the 70,000 children who had been considered uneducable under the terms of the 1913 MDA act got the right to education under a new category of "educationally sub normal-severe" and 400 new special schools were formed out of the old junior training centers. The Disabled Persons employment act of 1959 says a local authority must make provision for sheltered employment, training and assistance in finding work for registered disabled people. The chronically sick and disabled persons Act of 1970 put a duty on local authorities to provide services for disabled people such as practical assistance in the home, help with getting TV, radio, library and other recreational facilities, help with travelling to services arranged or approved by the local authority, assistance with adaptations to the home for greater safety or comfort, holidays, meals at home and elsewhere and help with getting a telephone training. But attitudes change very slowly and a leaflet from as late as 1973 published by the then National Society for Mentally Handicapped children states: "When informed by their doctor that their child is affected with mongolism and warned that it may show some mental backwardness, parents often imagine the worst and think that their child will never walk or talk. Although a few Mongol children are as handicapped as this and they can live at home when young, they will

23 probably later need permanent hospital care. Due to their slow intellectual growth most Mongols are precluded from making satisfactory progress in formal education of the type provided by Local education authorities. However they benefit from the less formal type of education which they receive at the special centers provided by the local Department of Health although these are not always yet available in the more sparsely populated areas of Britain. In addition to the two already mentioned there is a third considerably smaller group of children with mongolism who are even less backward and develop intellectually from a half to two thirds the rate of an average child. Many of this group can profit from formal education, particularly when given in the smaller classes with specially trained teachers in schools for the educationally subnormal" From a leaflet published by the National Society for Mentally Handicapped Children entitled The Child with Mongolism (under which is the strap line 80 to 90 per cent can learn to do simple tasks) Printed in 1973. In 1981 at the time of the trial where Dr. Leonard Arthur was accused of murdering a baby with Downs syndrome such children were described as "walking time bombs of disease and infection" In a different trial concerning Alexandra another baby with Downs Syndrome she was described as "an unfortunate pathetic creature", " a helpless and mindless Mongol" The Disabled Persons Act 1986 put a duty on local authorities to assess people for services. The 1981 education act and the 1989 Children Act, have helped to improve services for children. The 1993 Community Care Act took services away from Long stay hospitals and placed them in the community but without extra cash. The 1993 Education Act and the new Labour legislation are trying to increase choice for children to attend mainstream schools and the Disability Discrimination Act of 1995 hopes to ensure that disabled people have equal civil rights in some areas. It makes it against the law to run a service or provide goods and facilities in a way which makes it impossible or unreasonably difficult for a disabled person to use the service or goods. It is against the law to refuse to serve someone who is disabled. People will have to provide equipment or other helpful items to make it easier for disabled people to use their service. People will have to remove physical obstructions or provide other ways of letting disabled people use their services. The government is able to set minimum standards for new public transport vehicles and for new homes and buildings. The Community Care (direct payments act) 1996 gave local authorities the power to make cash payments known as direct payments to community care users for the purchase of their own support. However, the new code of practice

24 on Special Educational Needs and the education section of the disability discrimination act have both been weakened by pressure from people who see inclusion as expensive. In conclusion, how does life for an "intellectually impaired" person in 2000 compare with that of a "natural fool" in 1 000 AD? Their standard of living is much better. Almost everyone in Britain today lives more comfortably than the King lived in Norman times-they have flush toilets, gas and electricity, good transport, a variety of food whatever the season and 24 hour a day entertainment from TV. They have much better health care and education and a welfare system to protect them from starvation and destitution. However the legacy of segregation is still with us today. Many people coming into the community in the 80's and 90's have lived for more than 50 years in a mental handicap hospital. Many children are still educated in special school, and those in mainstream encounter prejudice and ignorance and a mindset of league tables while adults are still catered for in specialist day centers and residential homes. Nevertheless, public attitudes are slowly changing, the Disability Discrimination Act and legislation on inclusion though not going far enough recognize that people with learning disabilities have equal rights and their opportunities for education and employment are much better than 50 years ago. Let us hope that during the 21 st century the harm done in the 19th and early 20th centuries by eugenics can be put in the past and that just as the 20th century brought about civil rights for women and former slaves, the 21 st century can bring about equal rights and opportunities for people with learning disabilities.

1.4 Definition of Intellectual Disability—International and Indian perspective
1.4.1 Definitions as per ICD10 ICD-10 is the 10th revision of the

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International Statistical Classification of Diseases and Related Health Problems (ICD),

a medical classification list by the World Health Organization (WHO). It contains codes for diseases, signs and symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or diseases. "

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A condition of arrested or incomplete development of the mind, which is especially characterized by impairment of skills manifested during the developmental period, skills which contribute to the overall level of intelligence, i.e. cognitive, language, motor, and social abilities. Retardation can occur with or without any other mental or physical condition. 1.4.2 American Association on Intellectual and Developmental Disabilities (AAIDD) Intellectual disability is a disability characterized by significant limitations in

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both intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills. This disability originates before the age of 18.

KEY CONCEPTS I. DISABILITY II INTELLECTUAL III. ADAPTIVE BEHAVIOUR IV. AGE OF ONSET DISABILITY A

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disability is any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being. (WHO, 1976) Disability is

an umbrella term, covering ●●●●● Impairment ●●●●● Activity Limitations ●●●●● Participation Restriction
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INTELLECTUAL FUNCTIONING Intelligence refers to general mental capability, such as learning, reasoning, problem solving and so on.

Limitations in intellectual functioning refers as an IQ test score is approx.

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ADAPTIVE BEHAVIOUR Adaptive Behaviour represents the conceptual, social and practical skills that are learned and performed by people in their everyday lives. ●●●●● Conceptual skills- Language and Literacy, money, time, number ●●●●● Social skills- interpersonal skills, social responsibility,

safety, follows rules, avoids victimization. ●●●●● Practical skills- ADL, occupational, travel, using telephone. AGE of ONSET

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There is evidence of disability during the developmental period— before the age of 18. 27 ADDITIONAL CONSIDERATIONS ●●●●●

Community Environment ●●●●● Peer Group ●●●●● Cultural Differences ●●●●● Linguistic Diversity 1.4.3

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World Health Organisation (WHO) A condition of arrested or incomplete development of the mind, which is especially characterized by impairment of skills manifested during the developmental period, skills which contribute to the overall level of intelligence, i.e. cognitive, language, motor, and social abilities. Retardation can occur with or without any other mental or physical condition.

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Intellectual disability means a significantly reduced ability to understand new or complex information and to learn and apply new skills (impaired intelligence). This results in a reduced ability to cope independently (impaired social functioning), and begins before adulthood, with a lasting effect on development.

Disability depends not only on a child's health conditions or impairments but also and crucially on the extent to which environmental factors support the child's full participation and inclusion in society. The use of the term intellectual disability in the context of the WHO initiative "Better health, better lives" includes children with autism who have intellectual impairments. It also encompasses children who have been placed in institutions because of perceived disabilities or family rejection and who consequently acquire developmental delays and psychological problems. 1.4.4 PwD Act 1995 "

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"Mental retardation" means a condition of arrested or incomplete development of mind of a person which is specially characterized by subnormality of intelligence. 28 1.4.5

RPD bill(proposed) THE RIGHTS OF PERSONS WITH DISABILITIES BILL, 2014 A BILL

to give effect to the

United Nations Convention on the Rights of Persons with Disabilities

and

for matters connected therewith or incidental thereto. WHEREAS the United Nations General Assembly adopted its Convention on the Rights of Persons with Disabilities on the 13th day of December, 2006; AND WHEREAS the aforesaid Convention lays down the following principles for empowerment of persons with disabilities,- (a) respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons; (b) non-discrimination; (c) full and effective participation and inclusion in society; (d) respect for difference and acceptance of persons with disabilities as part of human diversity and humanity;(e) equality of opportunity; (f) accessibility; (g) equality between men and women; (h) respect for the evolving capacities of children with disabilities and respect for the right of children with disabilities to preserve their identities;

AND WHEREAS India is a signatory to the said Convention; AND WHEREAS

India ratified the said Convention on the 1 st day of October, 2007; AND WHEREAS it is considered necessary to implement the Convention aforesaid. 1.4.6

Diagnostic and Statistical Manual of Mental Disorder IV (DSM IV) DSM is the manual used by clinicians and researchers to diagnose and classify

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mental disorders. "Mental retardation is defined as significantly sub average general intellectual functioning that

is accompanied by significant limitations in adaptive functioning

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in at least two of the following skills areas i.e communication, self-care, home living, social/interpersonal skills, use of academic skills, work, leisure, health and safety

with an onset before the age of 18 years." 1.4.7 Diagnostic and Statistical Manual V (DSM V) The diagnosis of intellectual disability (intellectual developmental disorder) is revised from the DSM-IV diagnosis of mental retardation. The significant changes address what the disorder is called, its impact on a person's functioning, and criteria improvements to encourage more comprehensive patient assessment.

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Intellectual Disability (Intellectual Developmental Disorder) is a disorder with onset during the developmental period that includes both intellectual and adaptive functioning deficits in conceptual, social, and practical domains.

Intellectual disability involves impairments of general mental abilities that impact adaptive functioning in three domains, or areas. These domains determine

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how well an individual copes with everyday tasks: The conceptual domain includes skills in language, reading, writing, math, reasoning, knowledge, and memory.

The

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social domain refers to empathy, social judgment, interpersonal communication skills, the ability to make and retain friendships, and similar capacities.

The practical domain centers

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on self-management in areas such as personal care, job responsibilities, money management, recreation, and organizing school and work tasks. 30

Unit 1.5 □□□□□ Etiology, Causes & Prevention 1.5.1 Prenatal Hazards Infections The most common prenatal infections associated with intellectual disability are rubella, toxoplasmosis syphilis and cytomegalovirus. These infectious diseases are responsible for a small percentage of the population of intellectuality disabled persons. Congenital rubella This disease in new borns is caused by a virus that infects the pregnant woman during the first placental and then to fetel infection. The embryological timing of the viral insult is crucial as the fetus is especially vulnerable during the first 3 months of pregnancy. The symptoms are varied and unpredictable; rubella pregnancies may lead to spontaneous abortion to still birth to live birth with one or more abnormalities or to a perfectly normal child. Congenital Rubella is wholly preventable through a vaccme. The vaccination of children is of special concern because they often spread the viral infection to previously unexposed mothers. Vaccination of prospective mothers is also recommended. Congenital cytomegalovirus This is the most common of fetal infectionsand is found in about 1 percent of all new borns. Fortunately about 95 percent of affected infants are asymptomatic. Neonatal death is common and about 75 percent of survivors show neurological abnormality, blindness, deafness, spastic quadriplegia, orhypotonia, and variable degress of intellectual disability. Congenital Toxoplasmosis This is a protozoan infection that like rubella is typically non injurious to the pregnant woman but devastating to the fetus also as in rubella Fetal vulnerability is largely confined to the first of month of prenatallifecular and neurological lessons and brain calcification characterize the congenital form of the disease. The acutely ill new born usually dies in the first month of life and the great majority of survivors posses complete or partial blindness and psycho-motor disturbances. Treatment of the new born consists of chemotherapy which is desinghned to arrest the infectious process.

31 Metarnal Fetal blood incompabilities Intellectual disability may occur when the mother aquires what is in effect an allergic reaction to her new born baby blood. Rh disease is the well-known example of the phenomenon. ABO blood group in compability is also a potential though lesser cause of fetal central nervous system damage. Rh - incompability It occurs when mother and fetus have different Rh blood groupfactors. The Rh factors is an autosomal hereditary trait, Rh positive is dominant to Rh- negative. The maternal - fetal incompability arises only when an Rh negative mother bears a child of an Rh positive father. Where the father is homogenous, all of the children would be Rh-positive and potentially vulnerable the remainder, off the offspring shall be Rh-ncgative like the mother. Although the precondition to the Rh disease is an Rh-negative mother and an Rh-positive fetus problems arise only, if there has been some previous mixing of fetal and maternal blood. If this has Rh-positve blood will have responded to the baby's foreign blood by producing anti bodies that have the capability of destroying fetal blood cell. Such antibody effects are more likely to be found in later born children but fortunately only about 10 per cent of vulnerable mothers-react. Sensitization of the rh negative mother to rh positive blood usually occurs at child birth when some mixing of maternal and fetal blood into the maternal circulation or after an abortion. Following sensitization of the mother she begins to produce anti- bodies. If this occurs during the first pregnancy there are usually no ill effects on the fetus. But if during suceding pregnancies mixing recurs an enhanced maternal store of antibodies can destroy red blood cells, causing fetal anemia and setting the stage for possible post natal damage to the brain. It is the latter that has an implications for intellectual disability. Folic Acid Deficiency Neutral Tube defects are birth defects that occur in the brain or spinal cord. Spina-bifida is the most common NTD. Babies born with the NTD anencephaly can be still born or die soon after birth. Women, who take the vitamin -B and folic acid is also help\ful in preventing NTD. These foods include peas corn dried beans, white and whole wheat bread, fortified breakfast cereals and orange juice. The folic acid can be destroyed if these foods are over cooked.

32 Drugs alcohol and tobacco There are some 20 drugs that are known to produce adverse fetal effects so called teratogens. In the late 1950s and early 1960s we became aware of thalidomide, in the 1960s with the flourishing of hard drugs; we were alerted to the chromosomal breakage in connections with LSD and to fetal heart lungs skeleton, and central nervous system associated with the maternal use of amphetamines. an anti-nauseant used during pregnancy and a cause of limb malformations. In the 1960s it was found in drug-addicted. In the 1970s and 1980s, attention has been called to the adverse effects on the fetus of alcohol and tobacco during pregnancy. Narcotic Addiction The use of heroin and methadone throughout pregnancy appears to have two fetal effects. Babies tend to be similar and about 80 percent are born addicted. Addiction is seen in the appearance of withdrawal symptoms within 4 days after birth. In order of frequency, they involve the central nervous system looseness, in coordination of sucking and swallowing and seizures the gastrointestinal system and the autonomic nervous system. Marijuana The effect of marijuana smoking during pregnancy is unclear. Women who use marijuana during pregnancy are at greater risk for babies with low birth weight, shorter gestation periods and major malformations. Alcohol The most commonly abused drug alcohol has been clearly tied to fetal abnormalities including intellectual disability. The clinical picture in the neonate has been termed the fetal alcohol syndrome. Its symptoms are retarded physical development, microcephaly, micrognathia microphthalmia, cardiac defects and intellectual disability. Although there is no direct evidence of an adverse effect of maternal tobacco smoking during pregnancy on later mental development, research indicates increased pregnancy risks that could be associated with neurological abnormality and cognitive impairment. The initial study on the effects of cigarette smoking during pregnancy found an increased risk of pre-maturity in the newborn. Numerous studies reveal that birth weights are reduced in proportion to the number of cigarettes smoked. There is now evidence that maternal smoking related increase in several complications of pregnancy bleeding, abruption of the membrane.

33 Other teratogenic Drugs Drugs used for medical purposes may also damage the fetus. Reference was made earlier to thalidomide. Quinine can cause deafness, and anticovulsant drugs can produce abnormalities. The so-called fetal hydantoin syndrome occurs in about 10 percent of the offspring of epileptic women and like the fetal alcohol syndrome includes growth impairment at both the physical and intellectual levels. During pregnancy the mother must avoid smoking, taking alcohol, harmful medications poses some risks of lung disorders in neonates and drugs for giving birth to a healthy child. Radiation The teratogenic effects of radiation have long been known. Early studies found that women who were receiving therapeutic pelvic irradiation for cancer during early pregnancy have an increased risk of having children with microcephaly and intellectual disability. The same clinical picture was seen in pregnant woman exposed to first trimester, can be harmful. Since most of our radiation exposure is through medical treatment, prevention of these problems requires careful use of X-ray in pregnancy and throughout the child bearing years. Chronic Maternal Health problems A series of maternal infectious disorders, high blood pressure affects the circulation to the uterus and may either interface. But there are also some non-infectious and chronic health problems that can threaten the health of the fetus. Hypertension In hypertensive disorders, high blood pressure effects the circulation to the uterus and may either interfere with the development of a normal placenta or cause it to undergo degenerative change. In either case the fetus is deprived of adequate blood supply either causing in utero death or impairing general growth and development. Hypertensive disease is a particular problem in the last trimester of pregnancy and is a major cause of maternal death and fetal loss. Diabetes mellitus The diabetic mother whether the diabetes is chronic or gestational in nature also creates fetal risks. She is much more susceptible to hypertension and to its potential placental circulatory problems. Diabetic women also tend to bear babies who are very large and yet have physiologically immature lungs. Their large size and immaturity can lead to problems to brain damage.

34 1.5.2 Perinatal Hazards In terms of health, the first 28 days of life are the most important period in childhood. This is the time of greatest infant mortality but it is also a period during which sub-lethal damage from perinatal events is frequent. Brain injury suffered during labor, delivery or during the neonatal period causes a large proportion of neurological problems which later manifest themselves as cerebral palsy, deafness and/or intellectual disability. Pre-maturity It is one of the important factors associated with either neonatal mortality or chronic brain injury, abnormalities of birth weight and gestational age. The premature infant has been traditionally defined as either born before 38 weeks or having a birth weight of less than 2500 grams. About 7-10 percent of births are premature but its frequency varies with the sex of the child and with race and socioeconomic status of the mother. The health problems of the premature neonate tend to be proportional to the degree of pre-maturity. There are two primary causes of prematurity :- impairment of potential for normal growth associated with chromosomal abnormalities, exposure to toxins intrauterine infection and restriction of a normal potential due to such factors as multiple pregnancies or placental vascular disease as in diabetics or hypertension. Asphyxia While the roles of perinatal asphyxia and physical trauma as causes of brain damage have probably been exaggerated in the past, these hazards are still important. Asphyxia is a leading cause of death in very small infants, those with birth weights of 1000 grams. On the other hand, the healthy newborn is said to be remarkably resistant to it if there is no prior brain damage. If there has been no evidence, however prolonged perinatal asphyxia can produce either brain damage or death. Common causes are pre-mature separation of the placenta, prolapse of the umbilical cord, difficult labor, depression of the respiratory center due to excessive anesthesia and obstruction of the respiratory airway. Physical Trauma Physical trauma during the birth process can result in traumatic vascular injury. While it has been greatly reduced by modern obstetric procedures, it still occurs particularly in connection with prematurity or difficult labor. Massive brain hemorrhage is usually fatal, but small intra-cerebral hemorrhages can lead to motor abnormalities, seizures and intellectual disability. Herpes infections This is a viral infection of the geriatric that is occurring with increasing frequency in pregnant women. Following initial infection the virus is generally dormant within the maternal tissue until reactivated by a variety of stimuli and resulting in renewed infection. The herpes virus is generally contagious. It is transmitted from mother to infant during childbirth where about half of the newborns are affected. When the maternal infection is recognized close to the time of birth delivery may be by cesarean section. Because of the neonate's immature immunological system, spread of the infection is common, and results in death or serious consequences in about 80 percent of cases. 1.5.3 Postnatal Hazards Post-natal biological factors causing intellectual disability consist of infectious diseases, which affect the brain, cerebro-vascular accidents (most often from head injury), brain tumors, poisons, environmental toxins and severe dietary protein deficiency. Infectious Diseases There are two kinds of infections that can result in permanent neurological problems and intellectual disability - encephalitis and meningitis. Encephalitis is inflammation of the brain, and meningitis is inflammation of the three membranes that line the brain, the meninges. Encephalitis Inflammation of the brain leads to injury to nerve cells (neurons). This may result from an initial invasion of the brain by an infectious agent (primary encephalitis) or following the infection of another organ (secondary encephalitis). The major sources of primary encephalitis are the viruses of mumps, herpes simplex, and infectious mononucleosis. Mumps virus is the most common and can produce death or such permanent neurological deficits as intellectual disability, cerebral palsy and seizures. Among the secondary encephalitis, the most common is measles encephalitis, but it can also be associated with whooping cough. Measles encephalitis is a very rare complication of ordinary measles.

36 The course of the disease is unpredictable, with about 20 percent suffering permanent damage. Meningitis In meningitis, there is infection of the meninges with consequent inflation and symptoms of increased intracranial pressure (fever, bulging of fontanelles, projectile vomiting, alternating periods of drowsiness and irritability). In serious infections associated with high fever, one sees convulsions, stupor or coma. With the development of antibiotics and other drugs, there has been a major reduction in mortality rate in the most serious of the meningitis, bacterial meningitis, but a sizable proportion of children affected in the first year of life are still left with crippling neuromuscular problems, hearing and visual impairments, seizures and cognitive deficits. Cerebral Trauma Among children, accidental injuries are the greatest threat to life. About 40 per cent of all trauma cases in children involve head injuries. Most injuries to the head are simple concussions or mild contusions, and there is usually complete recovery without complications. The head injuries that are more serious are those that involve intracranial bleeding. Bleeding between the outermost membrane covering the brain (and spinal cord), the dural matter, and the brain itself, subdural hematoma, can result in cerebral atrophy and neurological deficit. Fortunately, neither organic dementia nor intellectual deficit, as such, is a common outcome of cerebral trauma. The main symptoms are enuresis, disturbance of sleep patterns, episodically aggressive behavior, and decline in school achievement. High percentage of injuries occurs in children who are tired, hungry or playing in unsupervised or unsafe areas. Risk is high when illness or emotional tension is there in the family. Poisons and Environmental Toxins In the earlier section on pre-natal factors, reference was made to the potentially adverse environment to which a fetus might be exposed through maternal use of drugs. There are also some post-natal dangers to the brain associated with drug use. Glue sniffing has been linked to brain damage, and barbiturate abuse has been related to impairment in cognitive functioning. The most important of the toxic dangers, however, are lead and mercury.

37 Lead Poisoning Lead encephalitis is a complication of lead poisoning. It usually results from prolonged ingestion by the infant or young child of flaking leaded paint, the kind found in dilapidated housing. Daily consumption of only a few small chips for 3 months can produce lead poisoning. Most cases of acute lead encephalitis occur in children ages 1 - 3 years, of whom about 5 per cent die and 50 per cent sustain permanent brain damage. Mercury Poisoning Dramatic evidence of the toxic effects of some metals has also been shown for mercury. Accidental consumption of mercury may cause serious neurological problems involving memory, skin sensation, vision, gait, and emotional stability, cerebral palsy and intellectual impairment. In addition to these effects, mercury consumption by pregnant women may lead to pre-natal damage. Malnutrition One of the most perplexing questions in intellectual disability has been the effect of malnutrition on mental development. It is estimated that at least half of the children in developing countries are moderately or severely undernourished - with basic caloric deprivation as the primary problem. Research efforts to relate malnutrition specifically to intellectual impairment have been continually confounded by the fact that malnutrition usually does not occur alone but rather in combination with other biological and psychological hazards to normal mental development. For example, infectious diseases may be the most important cause of malnutrition. The malnourished child has limited resistance to infection, and the infection itself aggravates nutritional stress by elevating calorie requirements. A study by the National Sample Survey, Government of India, has revealed that among the children, 31 per 1000 in the rural area and 9 per 1000 in the urban area are developmentally disabled. Malnutrition is one of the major causes responsible for higher number of developmentally disabled children in the rural India. This includes malnutrition of pregnant women, infants and young children. All women require good nutrition during pregnancy, especially adolescent girls whose own bodies are still growing. Nutritious meals consisting of items from the five major food groups eaten each day help the fetus grow. These food groups include: vegetables; fruits; breads, cereals and rice; milk, yogurt and cheese; and

38 meat, poultry, fish, dry beans, eggs and nuts. Since foods within each group vary somewhat in nutrition content, pregnant women should vary their choices within each group. A woman should consume about 300 extra calories a day when pregnant. Adequate drinking of water helps the body digest food and absorb essential nutrients. By eating a well-balanced diet, most women can get a good supply of vitamins and minerals needed for pregnancy. However, most doctors will prescribe a pre-natal multivitamin supplement to ensure the pregnant woman receives sufficient iron, calcium, folic acid and other needed nutrients. Poor nutrition and unbalanced diets during pregnancy can cause low birth weight or pre-mature births. Infants who service these conditions are more likely to have intellectual disability, cerebral palsy, epilepsy and respiratory disease.

1.5.4 Prevention of Mental Retardation

If taken suitable action and precautions in the right time, many a time, mental retardation IS preventable. Preventive services should be administered by the physicians, parents and the community and should be efficiently implemented. They should cover both mother and child health care. Child health care begins right from the stage of unborn child to its full development stage up to 18 years of age. Our efforts are towards producing healthy babies without physical defects or mental retardation. A good health delivery system, which has easy access to everyone and gives quality care at minimum cost is very essential.

Prevention Strategies at Various Levels

The old dictum "prevention is better than cure" is also applicable to intellectual disability. More knowledge on the causes of intellectual disability helps its prevention. Three levels of prevention of intellectual disability have been described. The levels of prevention are: ●●●● Primary prevention ●●●● Secondary prevention ●●●● Tertiary prevention

1.5.4.1 Primary Prevention

Primary prevention focuses on the developing fetus. The objective is to reduce the number of children born intellectually disabled or with conditions that could lead 39 to intellectual disability. One of the important strategy can be to provide good teaching to a pregnant woman regarding dangers of drugs, alcohol and smoking. Genetic counseling for couple~ whose children are at risk is another. Research is essential to find:g causes and possible treatments for conditions that can lead to intellectual disability. The effects of rubella, for example, have been largely eliminated through antibody screening and immunization programme.

1.5.4.2 Secondary Prevention

The objective of secondary prevention is to identify and change environmental conditions that could lead to intellectual disability. By screening newborns for PKU, we can begin treatment and prevent intellectual disability. By eliminating sources of lead, we can reduce brain damage from lead poisoning. by providing youngsters from disadvantaged homes with strong preschool programmes, we can begin to counteract the elements that can cause intellectual disability due to environmental factors.

1.5.4.3 Tertiary Prevention

Tertiary prevention focuses on arranging the educational and social environment so people who are born with or who develop intellectual disability can achieve their maximam potential and highest quality of life. Early intervention programmes–start with youngsters who seem to be at risk for intellectual disability at an early age and try to sharpen their perceptual abilities, encourage the use of expressive language, and give practice in classification and reasoning. Some programmes urge parents to continue and extend these activities at home. All attempt to strengthen the thinking processes of young children who are delayed in development, and all succeed to a degree. For prevention of intellectual disability, one must study the causes carefully and take appropriate preventive measures during pre-natal, peri-natal and post-natal period. Possible preventive measures have been suggested along with specific causes.

Steps for Prevention at different Stages of Development

Each developmental stage requires adequate attention to prevent mental retardation. For each stage the required preventive measures are described in a sequential manner.

40 1.5.4.4 Prenatal Prevention Inadequate pre-natal care has been linked to pre-maturity and low birth weight, which is in turn linked to mental retardation. Pre-natal care that will guard the foetus against damage from maternal illnesses and infections and other dangers should be assured for every pregnant women from the very start of the pregnancy. The Pregnant woman is advised: i. To go for regular anti-natal checkups for early detection of abnormalities, illnesses and infections so that prompt treatment and 11 good management plan for delivery can be provided. ii. To maintain good nutrition status: Poor nutrition for both the baby and the mother is linked with impaired brain development and retardation. Malnutrition in the mother can give rise to low birth weight baby who in turn is a high- risk infant for mental retardation. Therefore, anti-natal programmes and child health programmes should ensure good nutrition and health to both the mother and the child. A pregnant woman has to take sufficient amounts of nutritious foods to maintain her health and also supply nutrients to the growing foetus. Thus the food requirement of a pregnant woman increases greatly. The diet should contain adequate amounts of proteins, carbohydrates, fats and minerals to supply the required calories and body building substances. Therefore, the diet should contain adequate amounts of cereals, pulses, green leafy vegetables, milk, eggs, fruits and fresh foods. Lack of these nutrients can give rise to anemia and other nutritional deficiencies. Iron and vitamin supplements may be given in the form of tablets, syrups or injections, to avoid deficiency status in the II trimester of pregnancy. iii. To get preliminary investigations done (like blood and urine), pre-natal diagnosis is essential. This encompasses a number of procedures designed to assess the condition of the unborn baby. a) Ultra sonography. b) radiography. c) Amniocentesis. — to know chromosomal abnormalities — enzyme deficiencies — metabolic disorders — sex of the baby — alphafoeto proteins.

41 If these tests prove that the foetus is normal, the parents can be reassured. If found to be abnormal, the parents are given options for medical termination / treatment, which will prevent the occurrence of a child with mental retardation. Treatment of illness and timely immunization: a) to get prompt treatment for illnesses and infections. b) To get immunization at appropriate time: during the 7th', 8th' and 9th' months of pregnancy a pregnant woman should take injection of tetanus toxoid (TT) to avoid the tetanus infection during delivery and immediate post-natal. It also gives immunity of the fetus and the new born child as the maternal antibodies pass to the fetus via the placenta. 1.5.4.5 Natal and Perinatal Prevention A trained person should conduct delivery under hygienic conditions. Unnecessary meddling of the fetus should be avoided. The baby should be handled gently with care. The umbilical cord should be cut with a sterile knife. In cases of difficult or abnormal labour or delivery, the woman should be taken to the nearby hospital without delay. Ensure the delivery of placenta and control of the uterine bleeding after the delivery of the baby. Mother should be allowed to rest for few hours immediately after delivery. The following suggestions are to be followed: ●●●● Good perinatal care is an important factor in prevention of mental retardation. ●●●● Pregnant woman should be advised to get delivery conducted by trained personnel at home under hygienic conditions or at a health center. ●●●● For all complicated pregnancies and labours the delivery should be conducted at hospitals in order to bring down injury and infection, which are the causative agents of mental retardation in the child. At present survival rate of babies is very good especially the premature and low birth weight babies with good peri-natal care. They also survive as normal healthy babies thus bringing down the percentage of mentally retarded cases. ●●●● All high-risk infants should be well taken care of and should have a long-term follow up for early detection of handicapping conditions and delays in development.

42 1.5.4.6 Postnatal Prevention Neoriatal screening: Some of the conditions of mental retardation like PKU and Hypothyroidism can be prevented from progressing into mental retardation by early treatment. Therefore, it is highly important to detect these at the earliest. This is possible with simple tests of blood and urine examination in a new born and treated immediately. Other metabolic errors also can be detected during the neonatal screening and parents should be counseled regarding mode of inheritance and recurrence risks in avoiding further occurrence of mental retardation due to these causes. High risk infants care and follow up: Intensive care should be immediately available to babies who are at high risk for mental retardation such as pre-maturity, low birth weight, birth asphyxia, babies born of prolonged difficult labour and other complications. There is a need for well-equipped neonatal intensive care units to cater to such services. Even after discharge from hospitals such babies need

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a close follow up to identify delays and abnormalities in development.

This helps us in giving the earliest interventions and corrections, which reduce the severity of handicap. Early stimulation and intervention programmes: These programmes are for children with handicap or developmental delays. The two main components of these programmes are: 1. Directly stimulating the child with enriched environment to enhance development. 2. Teaching the parents the techniques that can be used at home and helping them to have better parenthood. They cover the child's health, nutritional, psychological and educational needs. These programmes prevent further complication and reduce the severity of handicap. Immunization: Mental retardation caused by infections like Diphtheria, Tetanus, Whooping cough, Typhoid, Measles and Poliomyelitis and Rubella can be prevented by active immunization programmes. Immunization confers protection against the specific viral and bacterial infections. To prevent the negative effects of Rh-incompatibility an injection of Rh- immunoglobulin (Rh-IG) must be given to susceptible pregnant women within 72 hours after each delivery, abortion or miscarriage. Early identification and appropriate treatment of infections lessens the complications. Proper environmental and personal hygiene, clean water supply, destruction of insects and animals which carry infections all help in reducing the occurrence of infections and thereby the occurrence of mental retardation.

43 Prevention of accidents and poisoning: Accidents and poisoning can injure the brain and cause irreversible damage and mental retardation. This is one of the preventable causes of mental retardation. However the following steps should be followed. ●●●● People should be made aware of the potential causes of accidents and poisoning and the methods of avoiding them through various "public awareness programmes". ●●●● Safety principles, safety equipment and safety requirements should be made known to general public. ●●●● More rigorous identification and eradication of toxic substances in the environment, such as lead paint, airborne or water borne mercury compounds should be perused. ●●●● Screening programmes to identify the affected children should be emphasized upon for early treatment and prevention of mental retardation. ●●●● Use of alcohol, drugs and teratogens is another major cause of retardation as they have adverse effect on the developing foetus. Therefore, these have to be avoided specially during pregnancy to prevent the occurrence of mental retardation in babies. Nutrition: As mentioned earlier, poor nutrition for both the baby and the mother is linked to impaired brain development and retardation. Malnutrition in the mother can give rise to low birth weight baby who in turn is a high-risk infant to mental retardation. Therefore, antenatal programmes should ensure good nutrition and health to birth the mother and the child. Family planning: The best age the mother is between 20 and 30 years. Having children when younger or older increases the risk of having a mentally retarded child. Pregnancies at very short intervals drawings on the health of the mother leads to complications therefore family size should be restricted and children should be properly spaced. Dissemination of the information: The information regarding prevention of mental retardation should be disseminated to the general public and the various professionals involved creating awareness. Research is needed to frame further developmental strategies for facilitating progress in prevention of mental retardation and developmental delays.

44 Unit 1.6 □□□□ Classification of persons with Intellectual Disability Classification of Intellectual disability 1.6.1 Psychological classification A psychologist measures the intelligence quotient through psychological testing to make a psychological classification of an individual. The intelligence quotient of a person can be calculated by the given equation: $I.Q = \frac{MA}{CA} \times 100$ I.Q = Intelligence quotient-Actual intellectual ability of a person MA= Mental retardation- Mental age of the person as per test finding. CA= Chronological Age -Actual age of a person. Based on the 1980 APA definition, the operational classification for persons with mental retardation is as follows: Level of Retardation

57%	MATCHING BLOCK 30/203	SA	Effect of Vocational Training on Behavioural S ... (D29288122)
IQ Range Mild Mental Retardation 50-BELOW 70 Moderate Mental Retardation 35-49 Severe Mental Retardation 20-34 Profound Mental Retardation BELOW 20 1.6.2 Medical classification Mental Retardation			

has been characterized according to medical symptoms and factors.

It can be classified based on the following causes and symptoms- 1. Infection and Intoxication 2. Mental and physical problems 3. Metabolism and nutrition 4. Mental diseases 5. Unknown factors from birth 6. Genetic disorders 7. Diseases during pregnancy

45 8. Psychosis 9. Environmental factors 10. Other factors **

For more details on medical classification refer to unit 1 (1.3) 1.6.3 Educational classification

In the special education centers in India, the (9)assroom ~ssification in operation is as shown below: .

44%	MATCHING BLOCK 31/203	SA	Ms. Poonam Rani_Ph.D. Education_18-BMU-6294.pdf (D118488397)
Pre-Primary level -Chronological ages 3 - 6 years - Mental ages Up to 5 years Primary level - Chronological ages 7 - 10 years - Mental ages 5 - 7 years Secondary level - Chronological ages 10 – 14 years - Mental ages 7 - 9 years Pre-Vocational level Chronological ages 14 - 16 years 15-below 18 years -			

Mental ages 8 + years Classification by Educational Expectations :- Terminology IQ range Educational expectation

81%	MATCHING BLOCK 33/203	SA	SEID -31 PDF.pdf (D127037695)
Educable IQ 50 to 70 Second to fifth grade achievement III school academic areas Social adjustment that will permit some degree of independence			

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89%	MATCHING BLOCK 36/203	SA	SEID -31 PDF.pdf (D127037695)
the community Occupational sufficiency that will permit partial or total self support Trainable IQ 20 to 49 Learning primarily in the areas of self-help, very limited achievement in areas considered academic 46 Social adjustment usually limited to home an closely surrounding area. Occupational performance primari in sheltered workshop or an institutional setting. Custodial IQ Below20 Usually unable to achieve even sufficient skills to care for basic needs. Will usually require nearly total care an supervision for duration of			

lifetime 1.6.4 Based on intensity of needed supports Intermittent Supports on a needed basis characterized by episodic nature, person not always needing the support (s) or short term supports needed during life span transitions (e.g. Jobless or an acute medical crisis) intermittent support may be high or low intensity when required. Pervasive Supports characterized by their constancy and high intensity, provided to cross environments, Potential life sustaining nature pervasive supports typically involve more staff members and instructiveness than do expensive or time limited supports. Limited An intensity of supports characterized by consistency over time, time limited but not of an intermittent nature,

76%	MATCHING BLOCK 32/203	W	
may require fewer staff members and less cost than more intense levels of			

supports (E.g. Time limited employment training or transitional supports provided during the school to adult period. Extensive Supports characterized regular involvement (e.g. Daily) In at least some environments (such as work or home) and not time limited (e.g. Long term support and long term home living support) 1.6.5 ICF INTRODUCING THE ICF The International Classification of Functioning, Disability and Health (ICF) are a framework for describing and organizing information on functioning and disability. It provides a standard language and a conceptual basis for the definition and measurement of health and disability. The ICF was approved for use by the World Health Assembly in 2001, after

47 extensive testing across the world involving people with disabilities and people from a range of relevant disciplines. A companion classification for children and youth (ICF-CY) was published in 2007. The ICF integrates the major models of disability. It recognizes the role of environmental factors in the creation of disability, as well as the relevance of associated health conditions and their effects. This overview provides a brief introduction to the ICF – its structure, contents, purposes and applications. Aims The ICF is a multipurpose classification system designed to serve various disciplines and sectors – for example in education and transportation as well as in health and community services – and across different countries and cultures. The aims of the ICF (WHO 2001:5) are to : ●●●● provide a scientific basis for understanding and studying health and health- related states, outcomes, determinants, and changes in health status and functioning; ●●●● establish a common language for describing health and health-related states in order to improve communication between different users, such as health care workers, researchers, policy-makers and the public, including people with disabilities; ●●●● permit comparison of data across countries, health care disciplines, services and time; and ●●●● provide a systematic coding scheme for health information systems. The ICF 'has been accepted as one of the United Nations social classifications ... and... provides an appropriate instrument for the implementation of stated international human rights mandates as well as national legislation' (WHO 2001:5- 6). Hence, the ICF provides a valuable framework for monitoring aspects

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of the UN 48 Convention on the Rights of Persons with Disabilities (

UN 2006), as well as for national and international policy formulation. Underlying principles Four general principles guided the development of the ICF and are essential to its application. Universality. A classification of functioning and disability should be applicable to all people irrespective of health condition and in all physical, social and cultural contexts. The ICF achieves this and acknowledges that anyone can experience some disability. It concerns everyone's functioning and disability, and was not designed, nor should be used, to label persons with disabilities as a separate social group. Parity and etiological neutrality. In classifying functioning and disability, there is not an explicit or implicit distinction between different health conditions, whether 'mental' or 'physical'. In other words, disability is not differentiated by etiology. By shifting the focus from health condition to functioning, it places all health conditions on an equal footing, allowing them to be compared using a common metric. Further, it clarifies that we cannot infer participation In everyday life from diagnosis alone. Neutrality. Domain definitions are worded in neutral language, wherever possible, so that the classification can be used to record both the positive and negative aspects of functioning and disability. Environmental Influence. The ICF includes environmental factors in recognition of the important role of environment in people's functioning. These factors range from physical factors (such as climate, terrain or building design) to social factors (such as attitudes, institutions, and laws). Interaction with environmental factors is an essential aspect of the scientific understanding of 'functioning and disability'. THE ICF MODEL In the ICF, functioning and disability are multi-dimensional concepts, relating to:

49 ●●●● The body functions and structures of people, and impairments thereof (functioning at the level of the body); ●●●● The activities of people (functioning at the level of the individual) and the activity limitations they experience; ●●●● The participation or involvement of people in all areas of life, and the participation restrictions they experience (functioning of a person as a member of society); and ●●●● The environmental factors which affect these experiences (and whether these factors are facilitators or barriers). The ICF conceptualizes a person's level of functioning as a dynamic interaction between her or his health conditions, environmental factors, and personal factors. It is a bio psychosocial model of disability, based on an integration of the social and medical models of disability. Ethical use Every scientific tool can be misused, and the ICF is no exception. For all uses of ICF--clinical, research, epidemiological, health and social policy-it is essential that information gathered and analysed must respect the inherent value and autonomy of the individuals from whom the information is gathered. Standard rules about informed consent apply, but more importantly people with disabilities must participate in all aspects of the use of ICF and the application of the data produced. Full participation and transparency of use are most important in the social applications of ICF and, in particular, with the anticipated use of ICF for the development of indicators for monitoring the implementation

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of the UN Convention on the Rights of Persons with Disabilities.

This important human rights document- which embodies precisely the same conceptual refinement of functioning and disability as the ICF-is our moral compass towards the development of social policy and political change needed to achieve the full participation of persons with disabilities. The ethical application of ICF seeks to support and further this mandate for the future.

50 Unit 1.7 Screening, Identification, Characteristics and Needs of PWD 1.7.1 Early Identification and

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Screening Screening is a procedure for an initial identification of persons with mental retardation and for a follow up with assessment. Screening Procedure Many of the screening techniques collected National Institute for the Mentally Handicapped (NIMH), Secunderaba, appeared in RCI. A more systematic process and procedure has been the pooling of a battery of tests on clinical investigations by the NIMH, for identification and screening of persons with mental retardation. They include pre-natal, neonatal and post-natal diagnostic procedures: i) Pre-natal Procedures

A number of prenatal testing procedures such as testing of maternal serum AFP, multiple marker screening, chorionic villous sampling, amniocentesis, and ultrasound and fetoscopy are available to detect the disorders of the fetus. On the basis of the results of screening appropriate corrective steps to prevent intellectual disability should be taken on the advice of a qualified physician. The following screening should be done. ●●●●● Blood tests for the pregnant mother

●●●●●

Hemoglobin levels (Hb %) to detect anemia. ●●●●● Blood glucose levels to detect diabetes. ●●●●● Blood VDRL to detect syphilis. ●●●●● Blood group and Rh typing for blood group incompatibilities. ●●●●● Blood antibody titers to detect neural tube defects in the foetus. ●●●●●

Alpha foeto-proteins to detect neural tube defects in the foetus. ii) Ultrasonography(during pregnancy) Many types of foetal pathology including those associated with intellectual impairment later one can be identified during the second trimester of pregnancy

to detect such disorders as - neural tube defects, abnormal child.

51 iii) Maternal serum AFP (Alpha-fetoprotein) Maternal Serum AFP (Alpha-fetoprotein) screening test is used to detect spina- bifida, Down syndrome and other disorders. It is specially targeted to women under age 35. The test, which measures the amount of alpha-fetoprotein from fetal urine, takes place at 16-18 weeks of pregnancy. A sample of the mother's blood is taken and analyzed for certain chemicals that, together with her age, will determine the individual risk of having down syndrome child, spina-bifida and other disorders. Those found to have an increased risk would be offered an amniocentesis. Results of AFP test take only one weekend the test is safe for both the mother and fetus. iv) Multiple Marker Screening Multiple marker screening measures alpha (AFP) and human chorionic gonadotropin (UE3). It enhances the effectiveness of screening for neural tube defects, trisomy 21, trisomy 18. It is done by a blood test that is offered to women between the 15 and 20 week of pregnancy. v) Fetoscopy Fetoscopy

100% MATCHING BLOCK 37/203

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is done during second trimester of pregnancy in diagnosing certain physical anomalies, metabolic disorders or biochemical abnormalities.

A viewing instrument is inserted into the womb.it is also used to take blood samples. vi)

88%

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Chorionic Villous Sampling where a biopsy of the chorionic villi is performed either transabdominally or vaginally. The sample is then subjected to karyotyping and enzyme determination

94%

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hydrocephaly, microcephaly, hydrencephaly, holoprosencephaly, prosencephaly and some cerebellar lesions. Intra-uterine growth retardation can also be detected through such measurements as foetal biparietal diameter, crown rump length and transverse abdominal diameter. vii) Aminocentesis Aminocentesis indicated in cases of foetal chromosomal aberration, congenital metabolic errors and open, neural tube defects, severe Rh incompatibility and also in cases of advanced maternal age with previous birth history of an abnormal child. Aminocentesis is a Procedure for purposes of early identification and primary prevention for many genetic abnormalities.

97%

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Neonatal and Post-natal Screening and Diagnostic Procedure Blood and urine examinations are conducted in the neonatal period in all suspected cases and with a previous history of mental retardation in the family. Cretinism is 52 another condition which can be diagnosed in the neonatal period and necessary treatment given. ●●●● Apgar Score at one minute after delivery is an index of asphyxia and the need for assisted ventilation. ●●●● Urine screening for metabolic errors - PKU (Phenyle Ketoneuria) ●●●● Blood biochemistry tests for cretinism, rickets, jaundice. ●●●● Blood antibody titres to detect infections. ●●●● Chromosomal analysis for Down Syndrome, deletion of syndromes. ●●●● Neonatal neurobehavioural assessments. ●●●● EEG electroencephalogram for seizure disorder. ●●●● Screening for visual impairments (visual acuity, fundus examination, retinoscopy). ●●●● Screening for hearing impairments(Tympanogram, BERA.) ●●●● Ultra sonogram. ●●●● CT scan (computerized tomography). ●●●● MRI (Magnetic Resonance Imaging) for intra-cranial pathology and structural abnormalities.

APGAR Score APGAR has devised a method of scoring which is of practical value. The score is more accurate index of likelihood of death or neurological residue if it is taken at 5 mins. At one minute after delivery it

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is an index of asphyxia and the need for assisted ventilation.

SI Sign Points no 0 1 2 1 A-Appearance (colour) Blue, Pale Body pink Completely extremities pink blue 2 P-pulse rate (Heart rate) Absent Below 100 Over 100 3 G-Gravity (muscles Limp Little motion Active tone of extremities) motion 4 A-Activity (Response No response Grimace Cough or to catheter) sneeze 5 R - Respiratory effort Absent Slow irregular Good crying 53 ●●●●

100%

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Ultra Sound Examination : The technique can be used to detect displacement of brain midline structures, thickness of brain substance, pathological cavities in the brain. Real-time ultrasound examination of the head can reveal intracranial haemorrhage in the newborn. Biochemical Tests in neonatal screening ●●●●

Biochemical Tests in neonatal screening for identifying metabolic disorders. Blood and urine examinations are conducted in the neonatal period

for identifying metabolic disorders. It is not done as a routine examination but in all suspected cases and with previous history of the intellectual disability in the family. ●●●●●

96% MATCHING BLOCK 43/203 **W**

Electro Encephalography (EEG): EEG is useful not only in epilepsy, but in many other cases of mental retardation and organic brain lesions. In certain cases it also helps in localization of lesions and the severity of a cerebral damage. Incidence of abnormal EEGs is higher in cases of mental retardation associated with epilepsy, encephalitis, severe degree of mental retardation and brain damage sustained before birth or during birth or in the early period of infancy.

●●●●● Computerised Tomography (CT): There are many abnormalities which can be detected by CT scan of the CNS such as, anoxia of tissue, intracranial haemorrhage, hydrocephalus and congenital anomalies like holoprosencephaly, agenesis of corpus callosum, Arnold chiari malformations, congenital cysts, calcifications, etc.

●●●●● Magnetic Resonance Imaging (MRI): This screening helps in identifying a large number of persons with suspected disability in a limited time period. Screening Tools

The NIMH has developed quick Screening Schedule I (Below 3 years) and Screening Schedule II (3 to 6 years) shown in Table 1. Table 1: Screening Schedule I (Below 3 years) SI

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Child's Progress Normal Delayed Development. If No Development not achieved by the period 1 Responds to name / 1-3 months 4 th month Voice 2 Smiles at others 1-4 months 6 th month 3 Holds head steady 2-6 months 6 month 4 Sits without support 5-10 months 12 month 5 4 Stands without 9-14 months 18 th month support 6 Walks well 10-20 months 20 th month 7 Talks in 2-3 word 16-30 3rd year sentences months 8 Eats/drinks by self 2-3 years 4th year 9 Tells his name 2-3 years 4th year 10 Has toilet control 3-4 years 4th year 11

A voids simple 3-4 years 4th year hazards 12 Has fits Yes NO 13 Has physical Yes NO disability-what?

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If the child is found to be delayed in any one of the items given from 1-11 and if he has fits or physical disability then

suspect intellectual disability. Table II : Screening Schedule II (3 to 6 years) SI Item no 1 Compare with other children. did the child Yes No have any serious delay in sitting-:Standing, or walking? 2 Does the child appear to have difficulty in Yes No hearing? 3 Does the child have difficulty in seeing? Yes No 4 When you tell the child to do something, Yes No does he seem to have problems in understanding what you are saying? 5 Does the child has weakness and/or Yes No stiffness in the limbs and/or difficulty in walking and moving his arms? 5 6 Does the child sometimes have fits, become Yes No rigid, or lose consciousness? 7 Does the child have difficulty in learning to Yes No do things like other children of his age? 8 Is the child not able to speak at all? Yes No 9 Is the child's speech in any way different Yes No from normal? 10 Compared to other children of his age, does Yes No the child appear any way backward, dull or slow? If any of the above items is answered "Yes", then suspect intellectual disability. Table III: Screening Schedule III (7 years and above) SI item no 1 Compared with other children, did the child have Yes No any serious delay in sitting, standing or walking? 2 Can the child not do things for himself like Yes No eating, dressing, bathing and grooming? 3 Does the child have difficulty in understanding Yes No when you say do this or that? 4 Is the child's speech not clear? Yes No 5 Does the child have difficulty in expressing without being asked what the child had seen/heard? 6 Does the child have weakness and/or stiffness in Yes No the limbs and/or difficulty in walking and moving his arms? 7 Does the child sometimes have fits, becomes rigid, Yes No or lose consciousness? 8 Compared to other children of his age, does the Yes No child appear any way backward, dull or slow?

56 If any of the above items is answered "Yes", then suspect intellectual disability. 1.7.2 Characteristics of Intellectual Disability Intellectual disability occurs before age 18, and is characterized by delayed development in intellectual functioning and adaptive behavior. The intellectual disability may vary from mild to profound. Adaptive behavior includes skills that people learn so that they can function in their everyday lives.

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This delayed development is reflected in low performance across academic and other skill areas, as well as significantly lower scores on measures of intelligence and adaptive behavior, when compared with students who are not identified with intellectual disabilities.

A score of approximately 70 or below in an intelligence test is considered to be "below average" intellectual functioning. Students with intellectual disabilities have a measured IQ that is lower than 98% of the school-age population. A standardized test of adaptive behavior is used to determine if the child has deficits in conceptual, social, and practical skills that are significantly below average. Attention and Concentration ●●●●● Difficulty focusing and maintaining attention on academic tasks. ●●●●● Short, but intense attention span; tasks will either bore or hold attention of student for long periods of time; student can seem off task. ●●●●● Easily distracted by even a minimal level of noise. ●●●●● Disorganization accompanied by snap decisions; often loses things; careless errors. ●●●●● Difficulty juggling multiple task demands or abrupt change in direction. ●●●●● Distorted sense of time; unaware how long it will take to do something. ●●●●● Get tired or overloaded quickly; need frequent breaks when studying. ●●●●● Hyperactivity and excessive movements may accompany the inability to focus. Memory ●●●●● Cannot quickly retrieve names from memory ●●●●● Difficulty memorizing strings of numbers or letters ●●●●● Frequently lose or forget things

57 ●●●●● Often will forget basic information such as the year, their age, friends' names, or names of places. Oral Language ●●●●● Difficulty with sequencing when telling a story ●●●●● Difficulty with oral directions ●●●●● Difficulty pronouncing words ●●●●● Difficulty expressing ideas orally, even when they seem to understand ●●●●● Difficulty comprehending while reading aloud ●●●●● Unable to concentrate on and to comprehend spoken language when presented rapidly, which causes great difficulty in taking class notes. Language Skills ●●●●● Difficulties associated with short-term memory, syntax, and auditory discrimination ●●●●● Decoding and encoding difficulties ●●●●● Difficulty reading aloud; slow in oral performance ●●●●● Difficulty producing comprehensible responses ●●●●● spelling difficulties Social Skills ●●●●● Difficulties in interpreting social cues that may result in lowered self-esteem or cause students to have trouble meeting people or working cooperatively with others. ●●●●● Unable to distinguish subtle changes in tone of voice. ●●●●● Difficulty in recognizing the difference between sincere and sarcastic comments. Categories of mild, moderate, severe and profound levels of intellectual disability are defined on the basis of IQ scores. Mild Intellectual Disability A mild intellectual disability is defined as an IQ between 50 and 70. ●●●●● Can independently participate in most leisure activities within their communities

58 ●●●●● May have important relationships with the people in their life ●●●●● May struggle in certain social situations ●●●●● May marry and raise a family with support ●●●●● May have a job suited to their skills ●●●●● May live and travel independently with support ●●●●● May need help to handle money and to plan and organize their daily routine ●●●●● May learn to read and write in appropriate educational setting ●●●●● Likely to develop reading, writing, and math skills at a basic level Moderate Intellectual Disability A moderate intellectual disability is defined as an IQ between 35 and 50. ●●●●● Will have important relationships with the people in their life ●●●●● May learn to navigate their community and travel with support ●●●●● Will have difficulty planning trips and handling money independently ●●●●● Will recognize environmental print (e.g. signs, logos, sight words) in daily life ●●●●● Will need visual prompts such as daily schedules and pictures of routines ●●●●● Will need support in their daily lives ●●●●● May display independence in certain daily living activities, such as dressing and bathing Severe or Profound Intellectual Disability A severe intellectual disability is defined as an IQ between 20 and 35. A profound intellectual disability is defined as an IQ below 20. ●●●●● have important relationships with the people in their life ●●●●● May have little or no speech and will rely on gestures, facial expressions, and body language to communicate needs or feelings ●●●●● Will require functional communication systems (e.g. low or high tech augmentative communication devices) in order to express their wants and needs ●●●●● Will need visual prompts such as daily schedules and pictures of routines

59 ●●●● Will require extensive support with daily living activities throughout their life. 1.7.3 Needs of PwID People have different abilities and develop at different rates. Some people find learning new skills or information difficult. This could be because they have an intellectual disability. A person has an intellectual disability if they have both the following before they are 18 years of age: An IQ below 70 (average IQ is 100) Significant difficulty with daily living skills including looking after themselves, communicating and taking part in activities with others. Intellectual disability can be mild, moderate or severe and factors such as personality, coping strategies and the presence of other disabilities (motor, social or sensory) will influence a person's requirement for support with daily living. Needs depend on individual factors Arbitrary categories of mild, moderate, severe and profound levels of intellectual disability are defined on the basis of IQ scores. These levels give some guide to the level of support someone might need but the way a person functions in their life also depends on other factors including: ●●●● Personality, ●●●● Coping skills, ●●●● Other disabilities - for example, physical, social or sensory, ●●●● The amount of support offered by family, friends and the community, ●●●● What is demanded of them in different situations. People with a mild intellectual disability A mild intellectual disability is defined as an IQ between 50 and 70. Generally speaking, a person with a mild intellectual disability: ●●●● participates in and contributes to their families and their communities, ●●●● has important relationships in his/her life, ●●●● works in either open or supported employment,

60 ●●●● may live and travel independently but will need support and help to handle money and to plan and organize their daily life, ●●●● may marry and raise children with the support of family, friends and the service system, ●●●● May learn to read and write. People with a moderate intellectual disability A moderate intellectual disability is defined as an IQ between 35 and 50. Generally speaking, a person with a moderate intellectual disability: ●●●● has important relationships in his/her life, ●●●● enjoys a range of activities with their families, ●●●● friends and acquaintances, ●●●● understands daily schedules or future events if provided with pictorial visual prompts such as daily timetables and pictures, ●●●● makes choices about what s/he would like to do, eat, drink etc. ●●●● may learn to recognize some words in context, such as common signs including 'Ladies', 'Gents' and 'Exit', ●●●● may develop independence in personal care, ●●●● will need lifelong support in the planning and organisation of their lives and activities. People with a severe or profound intellectual disability A severe or profound intellectual disability is defined as an IQ below 35. Generally speaking, a person with a severe or profound intellectual disability: ●●●● recognizes familiar people and may have strong relationships with key people in their lives, ●●●● has little or no speech and relies on gestures, facial expression and body language to communicate, ●●●● Requires lifelong help with personal care tasks, communication and accessing and participating in community facilities, services and activities.

61 Remember A person with an intellectual disability may need assistance with daily living skills such as self-care, communication and community access and participation. Categories of mild, moderate, severe and profound levels of intellectual disability are arbitrarily defined on the basis of IQ score and factors such as personality, presence of other disabilities and social support also play important roles in how the person functions in his/her daily life you're not sure whether a person is able to understand you, assume they and then monitor their understanding and adjust your language communication style accordingly. Always demonstrate respect for person and communicate in ways that acknowledge the age of the person and the value of their contribution. 1.8 Check Your Progress 1. Define Intellectual disability.

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- 2. Briefly describe intellectual disability in your own word.
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- 3. Describe historical perspective of intellectual disability.
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- 4. What is the biological basis intellectual disability ?
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62 5. How do you classify the etiological factors of intellectual disability?

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..... 6. What are the influencing factors before
conception?

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..... 7. Enlist the prenatal causes of intellectual disability?

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..... 8. Enlist the post natal causes of intellectual
disability?

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..... 9. What is prevention?how do you classify
prevention?

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..... 10. What are the prevention strategies for
intellectual?

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..... 11. Write classification of intellectual disability.

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63 12. Write psychological Classification.

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..... 13. Write educational classification.

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..... 14. Discuss about ICF.

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..... 15. What is screening?

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..... 16. Describe two medical screening procedures.

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..... 16. Name any two Screening tools.

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..... 17. Describe characteristics of [persons with
intellectual disability.

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64 18. Explain the needs of PWID.

..... 1.9 Let Us Sum Up In this unit, we have seen the historic perspectives of the concept of intellectual disability... Intellectual disability is mistaken for mental illness or varied social perceptions ranging from devil to godchild. In early centuries, they were killed or abandon, later they were looked after in institutions, simply meeting their survival needs. Training them to live independently, recognizing their potentials was a development in 1700s initiated by Itard on the "wild boy of Aveyron". Later various acts for the disabled persons came about and normalization processes were initiated. Persons with intellectual disability are classified based on degree of retardation. Medical classification takes into account etiological factors, psychological classification consider IQ scores and educational classification includes current level of functioning 1.10 References 1. EDUCATING EXCEPTIONAL CHILDREN: AN INTRODUCTION (2007) S. K. Mangal by PHI Learning private limited, New Delhi. 2. Hallahan, D.P. A Kauffman, J.M (1991) exceptionalchildren, Introduction to special Education, Allyn and Bacon.Boston. 3. Smith, D.D and Lucksson, R (1992) Introduction to special Education. Teaching Iran age of challenge, Allyn and Bacon Boston. 4. Kanpur, M (1997) Mental health in Indian schools, Sage Publications India Pvt Ltd. 5. Ashman, A and Elkins, J. (Eds) (1994) Education of Educating Children with Special needs,Preutic Hall, New York. 65 6. NIMH Secundrabad (1989), Hand book for the Trainers of the Mentally Retarded Persons Publications - NIMH Secundrabad. 7.

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Unit-2 □□□□□

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Assessment Structure 2.1 Introduction 2.2 Objectives 2.3 Concept, Meaning, Definition and Purpose of Educational Assessment 2.3.1 Defenition of Assessment 2.3.2			

Purposes of Educational Assessment 2.4 Methods of Assessment - Observation, Interviews and Rating Scale, Methods of Assessment 2.4.1 Observation a) Purpose of observation b) Types of observation 2.4.2 Interview 2.4.2.1 Types of Interview 2.4.2.2 Advantages of Interview 2.4.2.3 Disadvantages of Interview 2.4.3 Rating Scale 2.4.3.1 Types of Rating Scale 2.4.3.2 Advantages 2.4.3.3 Limitation 2.4.4 Testing 2.4.5 Experimentation 2.4.6 Clinical Investigation 2.4.7 Case Study 2.5 Types And Approaches of Assessment - NRT, CRT, CBA & Teacher Made Test 2.5.1 Types and Approaches of Assessment 2.5.1.1 Norm Reference Tests (NRTs) a) Advantages of norm referenced assessment b) Disadvantages of criterion referenced assessment 2.5.1.2 Criterion-referenced assessment (CRTs) a) Advantages of criterion referenced assessment b) Disadvantages of Criterion referenced assessment 67 2.5.1.3 Curricular Based Assessment (CBA) a)Definition b)Procedure followed in developing CBA c)Relationship between CRT and CBA 2.5.1.4 Teacher Made Test (TMTs) a)Advantages of TMTs b)Limitation of TMTs 2.6 Areas of Assessment-Medical, Psychological, Educational Behavioural & Ecological 2.6.1 Medical Assessment 2.6.1.1 Prenatal Stage 2.6.1.2 Neonatal and Post natal Screening and Diagnostic Procedures 2.6.2 Psychological Assessment 2.6.2.1 Level of Intelligence 2.6.2.2 Adaptive Behaviour 2.6.3 Educational Assessment 2.6.3.1 Need for Educational Assessment 2.6.3.2 Tools for Educational Assessment 2.6.4 Behavioural Assessment 2.6.4.1 Rational of Behavioural Assessment 2.6.4.2 Assessing Behaviours 2.6.5 Ecological Assessment 2.7

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Documentation of Assessment, Result Interpretation and Report writing Implication of all the above for inclusion 2.7.1

Concept of Documentation 2.7.1.1 The Importance of Documentation 2.7.1.2 Methods of documenting results 2.7.2 Interpretation 2.7.2.1 Level of Interpretation of Assessment 2.7.3 Report Writing 2.7.3.1 Purpose of a report 2.7.3.2 The essentials of good/effictive report writing 2.7.4 Inclusive Education and Assessment 2.7.4.1 Assessment Issues in General Education
68 2.7.4.2 New approaches to assessment in inclusive settings
a) Team assessment b) Cooperative learning assessment c) Peer assessment of class presentation d) Group assessment e) Peer tutoring assessment f) Play-Based assessment g) Porlfolios and assessment h) Performance assessment i) Modifying Teacher-Made Test 2.7.4.3 Some Adaptations during Assessment 2.8 Check your progress 2.9 Let us Summ up 2.10 Reference 2.1 Introduction:

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Assessment, in general, refers to a systematic process of gathering information about an individual'

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level of performance in order to prepare a programme plan. Assessment can be formal

and informal. Perhaps one of the most valuable tools available to the special education teacher is assessment, the process of using tests and other formal and informal means of measurement to make educational decisions. Special educators need a wide variety of information about their students. Regular education is designed to meet the needs of average learners, while special education services are designed to meet the individual needs of students with severe school performance problems. Their instructional plans must be highly individualized, which means that their teachers must have precise information about what the students needs in instructional terms and that is where assessment comes in. Special education teachers need a working knowledge of assessment to effectively and efficiently address student needs and to provide a full range of appropriate educational services. Assessment is technically different from evaluation and measurement. Evaluation involves decision making about student performance and teachings strategies whereas, measurement is evaluation expressed in quantitative terms (Woolfolk, 2001). Assessment is needed at the beginning of the programming and sometimes during and after the programme implementation.

69 We

have discussed the concept of assessment and also the purposes of assessment, but it is also essential to know means and modes of assessment. Precisely information comes from the methods and tools. The methods indicate how to conduct the assessment. Let us recall the example of arithmetic competency. A teacher might gather information about a student's arithmetic competency by observing classroom performance, surveying the notebooks, by asking certain questions, by assigning specific worksheets. All of these procedures indicate that assessment can be done in different ways. Let us now study the various modes

of

assessment. Educational assessment helps to find out abilities of the student and plan teaching programme accordingly. To plan the educational programme we have to collect various data using various methods. There are various types and approaches of assessment like Norm referenced tests, Criterion reference tests, Curriculum bases assessment and teacher made tests so on. We need to know the assumptions and scope of each type of test otherwise we may tend to overuse or under use. and thus jeopardizing the very purpose of assessment. This unit is going the present the various types and approaches of assessment.

We have discussed the purposes for which assessment is carried out. To call a child mentally retarded, ie., for the purpose of diagnosis, a comprehensive assessment is to be done which consists of medical assessment, psychological assessment, educational assessment, behavioural assessment and finally ecological assessment. After the diagnosis, the child is referred to an appropriate educational programme for intervention. So educator should be aware about the areas of assessment. Documentation is a vital process in any programme. It makes the programme more system dependent than a person dependent. It helps in reviewing and evaluating a programme objectively, thus leading to quality in the programme and a scope for improvement. In the area of special education it is all the important as the children have unique needs and the programming requires multidisciplinary team involvement. Further, the services are not only provided in schools but also in varied settings. All these need to have systematic records and plans for action. In this unit we will see the important of documentation and methods of documentation. This unit is also intended to orient you the various aspects of result interpretation and report writing. 2.2

Objectives: After going through this unit the reader should be able to: ●●●● Demonstrate the understanding of meaning of assessment ●●●● Explain the purposes of assessment

70 ●●●●

Apply the various methods of assessment in their practical work. ●●●●

Explain the rational and relative merits and demerits of CRT & NRT ●●●● Explain the various aspect of CRA and Teacher made test ●●●● Understand that there is a need for carrying out different areas of assessment depending on the purpose. ●●●● Understand that a comprehensive assessment which includes medical, psychological and educational assessment is required for diagnostic purpose. ●●●● Understand the various tools for assessing various areas like medical, psychological and educational. ●●●● Understand the importance of ecology for programme planning. ●●●●

Demonstrate the understanding of meaning of documentation, its important and methods of documentation. ●●●●

Know about the interpretation and its levels ●●●● Explain the significance of report writing for different purposes ●●●●

Identify the points to be kept in mind while writing reports for educational planning ●●●● Tell the kinds of administrative decision to be taken at the context of children with mental retardation ●●●● Explain the meaning of inclusive education and changing trends in assessment in inclusive set up ●●●● Discuss the adaptation of assessment in inclusive education

2.3 Concept, Meaning, Definition and Purpose of Educational Assessment 2.3.1 Definitions of Assessment Assessment involves the systematic collection, organization and interpretation of information about an individual to decision to be made about him/her (Sundberg and Taylor, 1962).

71 Assessment as the me of various instruments (test, inventories, observation and so on) utilized in identifying skill levels and ascertaining progress (Logan, 1977). Educational

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assessment refers to the process of gathering and analyzing information in order to make instructional , administrative and / or guidance decisions about, or for an individual (Wallace, Larsen and

Elkinson, 1992).

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Assessment is any of variety of procedures used to gather information about the student performance (Linn

and Gronlund, 2000).

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Assessment is the process of gathering information to monitor progress and make educational decisions if necessary (

Overton, 2004). There will be abundant definitions of assessment but all agree that it is a systematic process, which requires gathering of information, and it has purpose. The purpose is to make a diagnosis and programme planning. In the context of education the purpose is to make an educational management. 2.3.2 Purposes of Educational Assessment
 Anyone who is involved in the assessment process should know clearly the purpose for which he is conducting the assessment. This is very important as it decides the type of assessment tools and means of gathering information for decision making. There are many purposes of assessment. They are: ●●●● Initial screening and identification, ●●●● determination and evaluation of teaching programmes and strategies (pre- referral intervention), ●●●●

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Determining eligibility ●●●● determination of current performance level and educational need, ●●●● decisions about classification and programme placement, ●●●●

Development of educational programmes (including goals, objectives and evaluation procedures). ●●●● Evaluation of the effectiveness of the Individualized Educational Programme. ●●●● Monitoring Student Progress
 72 Initial screening and identification ●●●● The students who require special attention or special educational services are initially identified through assessment procedures. The procedures involve either informal procedures such as observation or error analysis or formal procedures such as achievement or intelligence tests. In other words, assessment is used to identify the children who warrant further evaluation. ●●●● Assessment is also used to screen children who are considered to be "high risk" for developing various problems. These children would not have yet developed deficiencies requiring special education, but they do exhibit certain behaviours that suggest problems in future. Identifying such children allows continuous monitoring of problem areas and designing of stimulation programme if required to prevent the problem. Assessment for initial identification purpose therefore is used to identify individual who might need further detailed assessment or who might develop problems in future. Further, it identifies individuals who with some type of immediate remedial programme might be able to cope with the problem. Evaluation of teaching programme and strategies (pre-referral) One of the important roles of assessment is to determine appropriate programme and strategies. For this purpose, information is used in four ways. ●●●● First, prior to the referring of a student to special education programme, it can assist regular teacher in determining what to teach and the best method to teach. ●●●● Second, it serves as a method of evaluating the effectiveness of the particular teaching programme or strategy. Many a time a formal referral for special education can be avoided if assessment information is used in this way. That is assessment information can be used to develop and evaluate pre-referral intervention programming. For example, a student X is getting poor marks in subjects as he makes a lot of spelling mistakes. Before making a formal referral to special education services, thinking that the student may be learning disabled, the regular teacher may assess and analyze the work product (spelling errors) of the student and provide a remediation programme. If student shows progress, further referral to special education services can be avoided.

73 ●●●●● Third, in determining appropriate programmes and strategies, assessment can provide pre-referral information to document the need for a formal referral. As explained above, if pre-referral intervention fails to remediate the spelling problem, then there is a need for referring the student for special education programmes. ●●●●● Fourth, the pre-referral intervention information can be incorporated into the individual education programme for student who are eligible for and who ultimately receive special education. Determining Eligibility Educational assessment is performed to establish whether a student qualifies for special education, to determine whether the student has a school performance problem related to a handicap. To receive special services, student must meet eligibility requirements established by state department of education, USA, based upon P.L. 94-142. A Student's intellectual, academic, sensory, and other abilities are analyzed to establish the severity of any disability. If the student's performance and other data meet the standards, the student is eligible for special services. In addition, the school may receive federal and state government support to help pay for the provision of services. Assessment at this level is more in depth than that done for screening. Individual tests are given in major areas of school achievement, in social skill development, in intelligence, and in other related areas. Useful information is collected in various settings and from a variety of sources. Determining of current performance level and educational need The assessment of current performance level of a student in subjects or skills is essential to state the need for special education programme. This information helps the teacher or examiner: ●●●●● to identify subject(s) or skill(s) that need special assistance. ●●●●● to identify strengths and weaknesses of students. ●●●●● to select appropriate strategies and procedures. ●●●●● to identify general areas in which the student needs additional help. ●●●●● To determine possible remedial approaches for the students.

74 Decision about classification and programme placement The assessment data is used for classification and placement of students with special needs in appropriate special educational programmes. Theoretically, individuals are classified to indicate similarities and relationships among their educational problems and to provide nomenclature that facilitates communication within the field (Taylor, 1993). Based on assessment information students are classified and suitable placement decisions are made. For example, a 6 year old child who is diagnosed to have mental retardation needs a placement in special education programme which provides education to children with mental retardation. Development of Educational Programme (Individual or Group) The most important use of assessment information is to determine the goals and objectives, and strategies to teach children who are identified to have special educational needs. As each individual child's needs are different, we have to plan educational programme that meets the needs. A systematically planned individualized educational programme is a blueprint for teachers to follow. The plan also outlines the duties of special and regular educators and support personnel Evaluation of the effectiveness of the Individualized Educational Programme Evaluation procedures are also specified in Individualized Educational Programme along with goals, objectives, methods and materials. Using these procedures, the teacher has to periodically monitor the progress made by the student. The monitoring of the programme gives feedback (positive or negative) to both teacher and student. Based on the type of feed back, the teacher either changes her plan or continues the same plan or select a new activity. For example, on periodic evaluation if the child shows improvement, the teacher will continue with her plan, if no improvement is shown she may have to make changes in 1EP. Monitoring Student Progress The reason for assessment is to monitor the progress of the exceptional student during the program. Information is gathered about the immediate effects of instruction. A variety of procedures documented the level and kind of achievement of states goals and objectives. Of particular interest is any information used to make programme modification. Informal assessment procedures and a blend of assessment and teaching are particularly helpful at this level.

75 2.4 Methods of Assessment - Observation, Interviews and Rating Scale Methods

of Assessment The assessment process involves collection of data through various modes. This is essential as the assessor or teacher aims at collecting information in all the areas of development of a child, which helps the teacher/assessor in making appropriate decisions. The assessment information can be collected from primary sources and secondary sources. Primary sources are those which give us direct information. The information given by the student, the teacher's observation are the primary sources. Gathering information from any sources other than observing and interviewing the individual is secondary sources, e.g. parents, teachers, family members, case files, test reports etc. Primary sources are more reliable, as they provide direct immediate information. Secondary sources augment the information gathered from the primary sources. Whether both are required it depends on the situation. Therefore, they are not mutually exclusive but complimentary to each other. Common methods of assessment are as given below: ●●●●● Observation ●●●●● Interview ●●●●● Rating Scale ●●●●● Testing ●●●●● Experimentation ●●●●● Clinical Investigations ●●●●● Case Study 2.4.1

Observation Observation, as a fundamental technique of data collection, refers to watching and listening to the behavior of other persons over time without manipulating and controlling it and record findings in ways that allow some degree of analytical interpretation and discussion. Thus, observation includes broadly selecting, recording and encoding behavior for empirical aims of description. (a) Purpose of observation Mehrens and Lehman (1984) suggest the following advantages:

76 1) Frequent observation of a student work can provide a continuous check on progress and can detect errors as they arise and take corrective action quickly 2) Observational techniques are not so time consuming or threatening for the student as are achievement tests and 3) Observational data provide teachers with valuable supplemental information much of which could not be obtained in any other manner. 4. One major purpose of observation is to capture and study human behavior as it actually happens. 5. Another purpose of observation is to provide a graphic description of real life that cannot be acquired in other ways. 6. Another purpose of observation is exploration. When the investigator observes human behavior in a real life setting, he gets a good chance to explore those variables which were important but overlooked. (

b) Types of observation On the basis of the ability of observational data to generate useful and researchable information, 1. Systematic observation: Systematic observation is one which is done according to some explicit procedures as well as in accordance with the logic of scientific inference. 2. Unsystematic observation: Unsystematic observation is a type of causal observation made by the investigator without specifying any explicit objective inference. On the basis of role played by the investigator: 1. participant observation: As its name implies, in participant observation the investigator actively participates in the activities of the group to be observed. Here the investigator already be the member of a group or organization and decide to observe it under one or more situations. 2. Non-participant observation: Non-participant observation is the observation in which the investigator observes the behavior of the other persons in a natural setting but does not remain a

77 participant in the activities being observed. Non-participant observation is usually structured and therefore the observer preplans the likely nature of the natural setting. 2.4.2

Interview: Information is also gathered regarding the student's social skills, and the management of student in various environments and situations through interviewing parents, family members and others and the student himself. The procedure for interview is different from that for the questionnaire, but both have the same aim, and it is to obtain data regarding the respondents with minimum bias and maximum efficiency. Interview is a face to face situation or over telephone between the interviewer and the respondent, which intends to elicit some desired information from the latter. Thus an interview is a social process involving at least two persons, the interviewer and the respondent. 2.4.2.1 Types of Interview There are 2 types of interview, namely, formal interview and informal interview. A formal interview may be defined as one in which already prepared questions are asked in a set order by the interviewer and answers are recorded in a standardized form. It is also known as structured or patterned interview. An informal interview is one where there are no pre-determined questions nor is there any pre set or of the questions and it is left to the interviewer to ask some questions in a way he likes regarding a number of key points around which the interview has to be built up. As most things depends upon the interviewer, the situation remains unstructured and therefore such an interview is also known as an unstructured interview. 2.4.2.2

Advantages of Interview 1. An interview allows greater flexibility in the process of questioning. 2. It facilitates the investigator in obtaining the desired information readily and quickly. 3. It facilitates the investigator in being sure that interviewees are themselves interpreted and answered the questions. This increases the validity of the conclusion arrived.

78 2.4.2.3 Disadvantages of Interview 1. Validity and dependability of verbal responses: In an interview, the interviewees verbally answer the questions asked by the interviewers. Social scientists have grave doubts whether a person actually behaves the way he processes to behave. 2. Time: The interview takes much time in its completion because each respondent or interviewee is interviewed individually and the records of the verbal interaction of each respondent is kept individually. 3. Recording information: How to record information being given by the interviewee is also a problem in interviewing. No foolproof system of recording has yet been worked out to every body's satisfaction. 2.4.3 Rating Scale In observation or in other techniques of data collection, as well the researcher needs to assess the attributes of individuals or objects. Rating scale is helpful tool in this regard and is much used. Barr, David and Johnson have defined rating scale as a "term applied to an

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expression of opinion or judgment regarding some situation, object or character".			

According to Lokesh Koul, it can be defined as

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a "Scale with a set of points which describe varying degrees of the dimension of an attribute being observed".			

Ratings can be done across a scale that may be 3 point, 5point, 7point or more. Experienced researchers opined that too narrow a range may fail to reflect inter- individual differences whereas rating across too wide a range may be complicated. That is why most researchers construct their scale in 5 point or 7point continuum. 2.4.3.1 Types of Rating Scale A Rating Scale can be categorized into several types depending on the mode of rating. Guildford has classified it according to the following categories: Ø Numerical Scale Ø Graphical Scale

79 Ø Standard Scale Ø Rating by cumulative points Ø Forced choice rating Numerical Scale: Numerical Scale is one in which rating is done according to a set of numerates or a set of descriptors. In the later case the rater need not use numerals in rating. The researcher assigns the appropriate numbers afterwards. In that case no number is presented to the rater. Example : Response Category Assigned Number Strongly Disagree 1 Disagree 2 Indifferent 3 Agree 4 Strongly agree 5 It is advisable to avoid 0 or negative numerals (-1, -2 etc.) for case of scoring and for avoiding confusion in the rate. Graphic Rating Scale: In a graphic rating scale, various cues were presented to the rater graphically along a line or line segments placed either vertically or horizontally. The cues correspond to different degrees along a continuum. The rater ticks at the place which he thinks appropriate. The rater need not deal with numbers which makes the task easy for some raters. The appeal of visual presentation is better as well as the example: How effective was the presentation of the teaching learning material in the class:

80 Standard Scale: Standard scale is one in which the rater is presented with some standards with pre - established scale values. These standards usually consist of objects of the same kind. As an example the Man-to -Man Scale and Portrait Matching, which are based upon the principles of the standard scale. Rating by Cumulated Points Rating scales based upon cumulated or summated points are the most common. Here the person's total score is the sum of individual ratings or points assigned to all items of the scale, Such points may be weighted or un-weighted. Forced Choice Rating Scale In the forced choice rating scale the rater is given a set of attributes in terms of verbal statements for a single item and he decides which one or ones represent the individual being rated most appropriately and accurately. The items of the force choice scale may have several alternatives -two, three, four or five. 2.4.3.2 Advantages 1. Rating Scales have a much wider field of application like teacher ratings, personality ratings, -classroom transactional analysis etc. 2. It is quick, interesting and easy to apply. 2.4.3.3 Limitations 1. Error of Central Tendency: It is the general tendency of the raters to avoid the marginal terms and to rate near the average. 2. Error of leniency: Most of the raters rate inappropriately for a person whom he likes and vice- versa. Very effective Effective Average Ineffective Very ineffective

81 3. Halo effect: It is almost a universal tendency to rate the specific trait of a person in terms of the general impression about him. 4. Reliability and validity of rating scale is low. 2.4.4

Testing Testing the child and knowing the ability of a child yourself is always recommended as it provides first hand information. For example, instead of asking a parent whether her child can read and write words, or numerals, you test the child yourself using appropriate materials to check. If we depend on parents for information, we may miss out on identifying specific problems/content which in turn hinders further learning. To explain further, the parent may say that her son is able to read and write numerals upto 10. When you ask the boy to read the numerals by pointing not sequentially, he may read incorrectly, but, he could say orally 1-10 in sequence. If we had taken the parents information on face value, we would have selected the content for teaching numerals from 11 to 15 or 20 as an objective, which is inappropriate as per the child's ability. On the other hand, what is required is that, the boy should be taught to read the numerals independently when presented not sequentially upto 10. Hence, it is necessary always to test the child directly by the teacher/assessor to know the current performance level of the child. However, there may be some activities, for which the teacher may not be able to test the child directly (eg. Taking bath, behaviour of a child during social functions in the family, in the community, interaction with friends and neighbours) and has to collect information from family members. While selecting a test it is important to see whether it is valid for the purpose it is being used, reliable, objective, simple, cost- effective and ecologically valid or not. Lastly but most importantly, the test should be compatible to the child's abilities.

2.4.5 Experimentation Sometimes, we may not get information either from observation, interview or testing. For example to understand the efficacy of social rewards and material rewards, the teacher may observe the student's performance under two conditions- one, involving contingent presentation of social rewards and the other with material reward. Finally the teacher may draw necessary conclusions depending on the student's performance. However, experiments are not as simple as exemplified here. They require systematic

82 planning and stringent analysis of the information. If properly planned, experiments provide information on cause - and -effect relationships.

2.4.6 Clinical investigation This method generally refers to medical investigation. Therefore, it has got less relevance in special education. Examples of this are CT scan, EEG, MRI, Thyroid Profile, Chromosomal Analysis, Serum Estimations, Hearing and Vision Tests etc. However, the data provided by these investigations may have indirect bearing on certain classroom activities. Report on vision will certainly help teachers making decisions on the seating arrangement, colour and presentation of the teaching- learning material: illumination of the class. Similarly, student's EEG indicating epilepsy will help the vocational instructor protect the child from accidents in work area.

2.4.7 Case Study Case Study utilizes all or some of the above methods to record the significant events and put them in a chronological order. It is the method of behaviour investigation in which we try to study the behaviour of an individual in all the essential aspects by analyzing the past record,, present position and future possibilities regarding his felt problem or otherwise guidance functions. The data arranged so will give meaningful information about the causality of specific conditions and problems with reference to the individual. The preparation of a case study is not the work of a single individual but the combined venture of social worker, teacher, parents, medical professional, psychologist and others professional as required.

2.5 Types and Approaches of Assessment-NRT, CRT, CBA & Teacher Made Test 2.5.1

Types and Approaches of Assessment Assessment has assumed lot of importance in key areas of life, as they have the potential to provide comprehensive and systematic information about the individual along a given dimension of behavior. Assessment is done for various purposes including estimation of intelligence, profiling aptitude, behavior and specific skills and so on. Following are the types of assessment.

83 ●●●● Norm Reference Tests (NRT) ●●●● Criterion Reference Tests (CRT) ●●●● Curriculum Based Assessment (CBA) ●●●● Teachers' Made Tests (TMT)

2.5.1.1 Norm Referenced Tests (NRT) Norm Referenced Assessment or Norm Referenced Testing (NRT) is the more traditional approach to assessment. These tests and measurement procedures involve test materials that are standardized on a sample population and are used to identify the test takers ability relative to others. It is also known as formal assessment. Norm referenced assessment is defined as a procedure for collecting data using a device that has been standardized on a large sample population for a specific purpose.

Every standardized assessment instrument will have certain directions that must be followed. These direction specify the procedure for administering the test and ways to analyze and interpret the results and reporting them. Examples of the more commonly known formal assessment devices are the Wechsler Intelligence Scales for children Revised (WISC-R), The Illinois Test of Psycholinguistic Ability (ITPA), The Stanford-Binet Intelligence Test and the Peabody Picture Vocabulary Test — Revised (PPVT-R) and Peabody Individual Achievement Test (PIAT). (

a)

Advantages of norm-referenced assessment Norm referenced tests are widely used in special and remedial education for many reasons. ●●●● The decision of categorizing the children as exceptional or special is mainly based on the test results of NRTs. ●●●● It is easy to communicate test results to parents and others unfamiliar with tests. ●●●● Norm-referenced tests have received the most attention in terms of technical data and research. They are specifically useful in problem identification and screening. ●●●●

To get a reliable rank ordering of the pupils with respect to the achievement we are measuring. ●●●● To identify the pupils who have mastered the essentials of the course more than the others.

84 ●●●● To select the best of the applicants for a particular programme. ●●●● To find out how effective a programme is in comparison to other possible programme. (b)

Disadvantages of criterion referenced assessment The use of norm referenced tests data for the purpose of educational programming is questioned in many instances for the following reasons. ●●●● Information obtained from norm-referenced testing is too general to be useful in everyday classroom teaching. Many educators disregard the prognosis and interpretative types of data provided by standardized tests because the information is often not directly applicable to developing daily teaching activities or interventions. What does knowing a child's WISC-R score or grade equivalent in reading specifically tell a teacher about what and how to teach? For instance, what is important is to know whether the child needs to learn initial consonants or is he having difficulty with comprehension. ●●●● NRTs tend to promote and reinforce the belief that the focus of the problem is within the child. It is because the primary purpose of NRTs is to compare one student with another. However, although a child may differ from the norm, the real problem may not be within the child but in the teaching, placement or curriculum. Educators must begin to assess teacher behaviours, curriculum content, sequencing and other variables not measured by norm referenced tests. ●●●●

It is a mechanical process ●●●● It cannot help assessing the other required aspect as it failed during assessment. ●●●●

It failed to collect information in totality as individual may not respond in good. ●●●● There is a chance of exaggerated or sub average information. 2.5.1.2

Criterion-referenced assessment (CRTs) Criterion-referenced assessment is concerned with whether a child is able to perform a skill as per the criteria set, or not. In contrast to norm referenced assessment, which compares one persons performance to others, criterion referenced assessment compares the performance of an individual to the pre-established criteria.

In criterion-

85 referenced test, the skills within a subject are hierarchically arranged so that those that must be learned first are tested first.

Glaser introduced the term criterion reference test (CRT) and defined it is a measure which assess student achievement in terms of a criterion standard thus provide information as to the degree of competence attained by a particular student which is independent of reference to the performance of others (Glaser, 1963),

In maths, for example addition skills would be evaluated (and taught) before multiplication skills. These tests are usually criterion referenced because a student must achieve competence at one level before being taught at a higher level. (a)

Advantages of criterion referenced assessment The criterion-referenced test results are useful : ●●●● To identify specific skills that need intervention. ●●●● To determine the next most logical skill to teach as the implications for teaching are more direct with criterion referenced tests. ●●●● To conduct formative evaluation, that is, the performance of the student is recorded regularly or daily when the skills are being taught. ●●●●

It permits direct interpretation of progress in terms of specified behavioural objectives. ●●●● It facilitates individualized instruction ●●●● It enables the teacher to check on the student's progress at regular intervals. ●●●● It eliminates pressures on the teacher to " teach to the test." ●●●● It enables teachers to compile a comprehensive record of each child's development. ●●●● To identify the master learners and non- master learners of a class. (b) Disadvantages of criterion-referenced assessment ●●●● CRT tells only whether a learner has reached proficiency in a task area but does not show how good or poor is the learner's level of ability. ●●●● Task included in the criterion referenced test may be highly influenced by a given teachers interest or biases, leading to general validity problem.

86 ●●●● It is important for only a small fraction of important educational achievements. On the contrary promotion and assessment of various skills is a vary important function of the school and it requires norm referenced testing. ●●●● CRTs are difficult to obtain as they require detailed specification of objectives or out comes in behavioural terms. 2.5.1.3 Curriculum-Based Assessment (CBA) The concept of curriculum based assessment is not new and has been employed for a number of years. CBA has been developed as a means to cope with low- achievers and children with special needs in regular schools. Further, it fits into the non-categorical model that is assessment is focused on testing curriculum-based skills and not on testing for labeling purpose. The CBA aims to identify children’s educational needs and the most appropriate forms of provision to meet those needs. Sality and Bell (1987) describes educational needs as “behaviours which a person lacks which are necessary in order to function effectively and independently both in the present and in the future”. The starting point for conducting CBA is the child’s classroom. It is the suitability of this environment and the child’s interaction with it that is assessed and not the child. (

a)
Definition CBA has been defined by Blankenship and Lilly (1981) (quoted in Sality and Bell. 1987; pg.35) as the practice of obtaining direct and frequent measures of a student’s performance on a series of sequentially arranged objectives derived from the curriculum used in the classroom. It helps in finding out the current level of a student in terms of the expected curricular outcomes of the school. In other words, assessment instrument is based on the contents of the student curriculum. Some types of CBA are informal, while others are more formal and standardized. (

b)
Procedure followed in developing CBA ●●●● The first stage in the process requires that the curriculum be defined as series of tasks which are sequenced and expressed in the form of behavioural objectives.

87 ●●●● Placement in the curriculum helps to identify which skills have been learned and those which need to be taught in the future. It pinpoints exactly where a child is on the curriculum. ●●●● Selection of suitable teaching methods, materials and patterns of classroom organization for teaching. ●●●● Evaluating children’s progress - relates to the selection of teaching methods, patterns of classroom organization and choice of curriculum. ●●●● Curriculum Based Assessment can therefore, be seen as a procedure which sets up situations where links are established between various teaching approaches and pupil progress. (

Souree: Sality and Bell (1987) pg.36) (c)
Relationship between CRT and CBA Curriculum based measures are a kind of CRTs but they differ from the core CRTs by having direct link with the curriculum taught in the classroom. In other words, the items that constitute the CRTs are taken directly from the curriculum. For example, both the Madras Developmental Programme System (MDPS) and the Grade Level Assessment Device (GLAD) are CRTs but only the latter is a curriculum based measure, as it provides a direct link to the curriculum taught at a specific grade. Curriculum expressed in the form of behavioural objectives. Selected teaching methods and patterns of classroom organization Placement on the curriculum Evaluation

88 2.5.1.4
Teachers’ Made Tests (TMT) While formal intelligence and achievement tests can be useful for gaining extra finding for students with diverse abilities, and in some instances for assisting with programming, they often do not help teachers discover what a child already knows and what a child needs to learn in relation to the curriculum. In order to successfully program for any student, teacher must first know the ‘starting point’ fro which they can teach. The best way for teachers to discover what their students know and can do is through teacher- based assessment/tests. There are some

commercially produced assessments available for teachers to use: however, the most effective assessments for the classroom are often those developed by individual teachers themselves. The basic philosophy of the teacher made tests is that the teacher’s decisions are important in deciding the criteria. Defined this way, all the informal measures could be teacher made CRTs. Teacher-made tests are written or oral assessments that are not commercially produced or standardized. In other words, a test a teacher designs specifically for his students. Teacher-made tests can consist of a variety of formats, including matching items, fill~in-the-blank items, true-false questions, or essays. (

a)

Advantages of TMTs ●●●● Provide teachers with the means to gather evidence about what their students know and can do. ●●●● Help instructors identify students' strengths and weaknesses. -Keep tabs on student learning and progress. ●●●● Help teachers plan and conduct future instruction. ●●●● Motivate and shape learning and instruction. ●●●● Guide students toward improving their own performance. ●●●● Gauge whether students are mastering state level educational standards. ●●●● Determine if students are prepared for the high-stakes tests.

89 (b) Limitation of TMTs ●●●● They are often ambiguous and unclear ●●●● They are either too short or too lengthy ●●●● They do not cover the entire content ●●●● They are usually hurriedly conducted Inclusive classrooms are those which primarily compare a child's progress with his/ her own past performance in a variety of different areas across the curriculum. In that case these are the most helpful types of assessments for teachers. A combination of curriculum based assessment and intelligence assessment can be helpful in giving teaching and learning some appropriate direction. 2.6 Areas of Assessment - Medical, Psychological, Educational, Behavioural & Ecological 2.6.1 Medical Assessment Clinical assessment is a part of assessment in the process of diagnosis of persons with mental retardation. It is carried out to identify the cause of mental retardation, refer to further investigations to confirm the cause and other anomalies and to plan and evaluate treatment.

The individual's current health, vision and hearing status are generally assessed by medical members of the assessment team. Medical assessment may include a health history, physical examination and any necessary laboratory tests. For example, if it is suspected that a person may have mental retardation due to genetic problems, to confirm he is referred to necessary laboratory tests. Following medical can be done to diagnose the mother and child as 'at risk'. 2.6.1.1 Prenatal Stage i.

Blood Tests in the Mothers ●●●● Hemoglobin levels (Hb%) to detect anemia. ●●●● Blood glucose levels to detect diabetes. ●●●● Blood VDRL to detect syphilis.

90 ●●●● Blood group and Rh typing for blood group incompatibilities. ●●●●

Blood antibody titers to detect specific infections. ●●●●

Alpha foeto- proteins to detect neural tube defects in the foetus.

ii. Ultrasonography (During Pregnancy) iii. Maternal Serum AFP (Alpha- fetoprotein) iv. Multiple Marker Screening v. Chorionic Villous Sampling vi. Amniocentesis vii. Ultrasound viii. Fetoscopy 2.6.1.2 Neonatal and Post-natal Screening and Diagnostic Procedures ●●●● APGAR Score. ●●●●

Urine screening for metabolic errors- examples. PKU (phenyl ketoneuria). ●●●● Blood biochemistry test for cretinism, Rickets, Jaundice etc. ●●●● Blood antibody titers to detect infections. ●●●● Chromosomal analysis for Down Syndrome, Deletion syndromes etc. ●●●● Neonatal neuro-behavioural assessments. ●●●● EEG (Electro-encephalogram) for seizure disorder. ●●●● Visual Screening for visual impairments (visual acuity, fundus examination, retinoscopy etc.). ●●●● Auditory screening - for hearing impairment (Tympanogram, BERA etc.) ●●●● Ultrasonography. ●●●● CT Scan (Computerized tomography). ●●●● MRI (Magnetic Resonance Imaging) for intracranial pathology and structural abnormalities. 2.6.2

Psychological

Assessment Psychological assessment is the process of systematic collection, organization and interpretation of information about a person and situations, and the prediction

91 of the person's behaviour in a new situation. Psychological assessment

encompasses assessment of the three major aspects of the mind namely, cognition, conation and affection.

Psychological assessment involves understanding of the causes of the problem and the potential solutions for the problem. The purpose of psychological assessment is to evaluate an individual or group of persons in relation to a specific issue or problem. These may include intellectual functioning, learning disabilities, special abilities, scholastic achievement, personality functioning, emotional and social areas and questions of normality and abnormality. The psychologist develops hypotheses based upon information or past behaviour, present behaviour and prediction for future behaviour as defined by given situations incorporated in assessment information. Two major criteria are considered for the assessment of children with mental retardation : i) Level of Intelligence ii) Adaptive Behaviour 2.6.2.1 Level of Intelligence Definition: The widely accepted and most commonly used definition of Intelligence is as follows: "

Intelligence is the aggregate or global capacity of an individual to act purposefully, to think rationally and to deal effectively with the environment" - David Wechsler (1975). Level of intelligence is assessed by intelligence test (whether it may be individual or group test) is psychological in nature. Intelligence test provides IQ (Intelligence Quotient) which is the index of mental maturity and cognitive functioning. Intelligence assessment has an important role in mental retardation,

as sub-average intellectual functioning is one of the criteria of diagnosis. Intelligence is estimated only by applying intelligence scales. Based on its content intelligence scales are divided into verbal and performance / non verbal scales. Though there are group tests that can be administered on many at ones, individual tests are preferred for intelligence

92

testing, which requires observations of the individual characteristics such as attention, problem solving skills, motivation. Some of the commonly used tests are shown below:

Showing commonly used intelligence scales in India Verbal Scales Non- Verbal Scales Performance Tests • Binet - Kamat Test of • Raven's Progressive • Seguin From Board Intelligence (Kamat, Matrices Test - norms Three normative data 1967) by Deshpande et. al. arc available (Bharat (2002) Raj, 1971; Verma et. al. 1973; Ramachandran, 1985). • Stanford Binet • MISIC – Performance • Gessell's Drawing Test Intelligence Scale Scales (Malin, 1971) (Verma et al. 1972; (Kulshreshtha, 1971) Venkatesan, 2002). • Malin's Intelligence • Draw – A-Man Test Scale for India (Pathak, 1951) Children (MISIC) – Verbal Scales (Malin, 1971) 2.6.2.2

Adaptive Behaviour Definition The adaptive behaviour in general refers to the way in which an individual functions in his or her social environment. The American Association on Mental Retardation defines adaptive behaviour as, "the effectiveness or degree with which the individual meets the standards of personal independence and social responsibility expected of his/her and culture group."

Assessment of Adaptive Behaviour The behaviour of an individual changes regularly, depending on the types of social situations to which the individual has to respond. Many behaviours which are appropriate in one setting could be totally inappropriate in another. The time and place and some times the age determines the appropriateness of a behaviour. The behaviour by itself is not 'good' or 'bad'. For example, sleeping in the bedroom versus classroom. Sleeping, which is an essential biological need becomes an inappropriate behaviour in the classroom, whereas, the same behaviour in the bedroom becomes an appropriate behaviour. The mentally retarded persons are known to exhibit inappropriate behaviour due to skill deficits or inability to perceive the appropriate behaviour for a given situation. Hence, the purpose of measurement is to determine what areas need special help, or special training in a particular situation. Adaptive behaviour assessment determines the current level of functioning of the individual. It reflects the strengths of the individual as well as the weaknesses. Hence, the primary reason for measurement is an effort to help the individual to learn to improve themselves and to function within the socially acceptable norms. Adaptive behaviour assessment, which is based on the direct reporting of observable behaviours gives specific information on the assets and deficits of the individual. The reason for the deficits or not doing a task may fall into the following categories. a) The individual may never have had the experience or opportunity to carry out those particular tasks or behaviours. b) The individual may have certain physical limitations which prevent the performance of those behaviours. c) The individual may be totally under-motivated for those particular behaviours because

of certain cultural patterns or experiences. Adaptive behaviour scales / Tools for assessment of adaptive behaviour the adaptive behaviour, which projects our behaviour in the personal and social areas, reflects our ability to respond to the environment. Thus adaptive behaviours come under the broad domains of functional independent skills, personal and social responsibility, and independent living skills. These elements combine to form an organized behavioural pattern of the individual. Some of the popular adaptive behaviour scales used for assessing the mentally retarded persons are:

94 SI. No. Name of the Scale Approach Age Group Remarks 1 Vineland Social Maturity Normative Applicable for 0- Yields social Scale (VSMS; Malin, 15 years; but is quotient (SQ). 1968; bharatraj, 1992) used with any Provide a profile age group of of adaptive suspected cases behavior of mental domains retardation Indicates just the target areas. 2 Madras Developmental Criterion Not defined from One of the first Programming System age point of view- test of its kind in (MDPS) – (Jeyachandran but appears to be India. Useful for & Vimala, 1975) applicable for Individualized age 3 years and Programme above, as the Plan. items reflect content from primary level and upwards. 2.6.3 Educational Assessment Educational assessment is a central aspect of evaluation of special education. Educational assessment is the measurement of student performance before and after instruction and includes reading, mathematics, spelling, writing and scholastic subjects in the school curriculum or skills required for independent living. The information coming from psychological test reports will only tell us whether certain prerequisites necessary for academic achievement are present or not. But to know the exact level of academic level, processing error if any. we need details educational reports.

95 2.6.3.1 Need for Educational Assessment ●●●●● To determine strengths and weaknesses in academic achievement ●●●●● To screen students who may have deilcits in academic achievement ●●●●● To identify, classify, and place students with deficits in achievement ●●●●● To plan instructional programmes and develop intervention activities ●●●●● To develop IEPs ●●●●● To evaluate student progress ●●●●● To monitor program effectiveness. To assess a child, two major types of testing are done i) Norm Reference Test (NRT) and ii) Criterion Referenced Test (CRT). Both has been discussed earlier. 2.6.3.2 Tools for Educational Assessment Some of the Western Achievement Tests used for children with learning problems include; ●●●●● Peabody Individual Achievement Test (PIAT) ●●●●● Wide Range Achievement Test (WRAT) ●●●●● Kaufman Assessment Battery for Children (K-ABC) ●●●●● Brigance Diagnostic Inventories ●●●●● Bender Visual Motor Gestalt Test ●●●●● Developmental Test of Visual Motor Integration ●●●●● Peabody Picture vocabulary Test ●●●●● Woodcock Johnson Psycho educational Battery. Some of the suitable screening and assessment tests for use by teachers developed in India include: ●●●●● Diagnostic Test of Learning Disabilities (S. Swarup & D. Mehta) ●●●●● Behavioural Checklist for Screening the Learning Disabled (Swarup & Mchta) ●●●●●

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CHAPTER 1.2 assessment tools.docx (D155146787)

Grade Level Assessment Device for Children with Learning Problems in Primary Schools (J. Narayan) ●●●●●

Arithmetic and Diagnostic Test for Primary School Children (Ramaa, S.)

96 2.6.4

Behavioural Assessment It facilitates understanding of whole range of behaviours including the skill behaviours and problem behaviours. The assessment explains the behavior as a function of environmental conditions (e.g. stimulus, positive and negative consequences). and provides a meaningful link between the skill behaviours and problems behaviours. Example, taking others 1 objects without permission (i.e. problem behaviour) may be due to lack of language skills (i.e. skill deficit). Restlessness in class may be linked with inability to follow instructions.

At milder level they interfere with teaching- learning, in extreme cases they a potential reason for stigmatization, institutionalization. Taken together, profile of skill behaviours and problem behaviours also suggest possibility of associated developmental disorders such as autism, ADSH etc. Therefore, assessment of both skill behaviours and problems behaviours is required for programme planning. 2.6.4.1

Rational of Behavioural Assessment ●●●●● This approach postulates that behaviours are learned. It means every behavior develops with practice and experience. For example, shelf help skill, academic skills, academic skills are learned in informal and formal situations, respectively. ●●●●● Behaviours are likely to increased when they are rewarded. Fro example, when a child is appreciated for taking bath of doing his homework, he is more likely to repeat that particular behavior. ●●●●● Behaviours are likely to decrease when they are not rewarded or punished. ●●●●● Behaviours occur with various intentions, for example, certain behaviours fetch us materials, attention/ social approval of others, or keep us occupied, or let us escape from a situation. ●●●●● The key to change the behaviours is to study what triggers the behaviours (i.e. antecedents) and what maintains or reduces the behaviours (i.e. the consequences wuch as rewards, punishment procedures), and what benefit (i.e. the function) the child derives through this behavior. ●●●●● Antecedents provide information on the reason, time, place and person triggering the behaviours. While consequences include the present ways of management of the behavior.

97 2.6.4.2

Assessing Behaviours Behavioural assessment can be done through informal methods such as observation and interviewing and formal methods such as rating scales. The main problem with informal method is comprehensive assessment is not possible. Secondly, the observer's presence might change the course of the behaviours. Lastly, particular behavior may not occur when we want to observe. Otherwise, observation is the convenient, inexpensive method. Formal assessment can be done using the following scales given below:

Sl. No.	Name of the Scale	Approach	Age Group	Remarks
1	Behavioural Assessment Criterion Meant for 3-18	Designed to	Scales for Indian Children	years older assess both skill with Mental Retardation – persons with MR and problem (BASIC – MR; Peshawaria & Venkatesan, 1992). in older groups Indicates in case of sever corresponding retardation. age for groups of skill behaviours
2	Behavioural Assessment Criterion Meant for	Designed to	Scales for Adult Living persons with	assess both skill Mental Retardation – mental and problem (BASAL-MR; Peshawaria et al., 2000) 18 years old
3	Problem Behaviour Checklist Criterion	Age group not	Assess problem (Arya et al., 1990)	specified behavior in hme and school setting.

98 2.6.5

Ecological Assessment This approach stresses the importance of curricular items based on environment - instead of the "watered down curriculum" This approach emphasizes the inclusion of those content areas necessary for independent living in his/her environment. It gives emphasize the assessment of environment of the CWSN rather than child with mental retardation. An ecological inventory involves analysis of multiple levels of environments before functional skills are identified. The first level of analysis is to identify the curriculum domain(s). Domains are settings rather than content areas. There are four curriculum domains: (a) vocational, (b) leisure/recreational, (c) domestic, and (d) community utilization. The next level is to identify natural environments with each domain, followed by identification of sub environments within each natural environment. As a next step, the planner identifies activities within each sub- environment and then skills within each activity. These include such areas as language, motor, arithmetic, self-care, and social skills. However, their occurrence is measured within a social ecology (ie., within the four domains). Domestic Environments: The team considers the student's life in and around his / her actual home. Team members identify specific areas within and around the home (e.g. bedroom, bathroom, yard) where greater students participation is desired. Vocational Environment: For young children the vocational domain is usually in the home and school environments where children may have chores and class or school jobs. Community Environments : These include transportation system, streets and sidewalks, and all businesses, services, and facilities in the community. For young children, school environments would have priority over other community environments. Therefore, children might receive instruction related to riding the bus and crossing streets. Others would be based on family needs. Leisure Environments:

99 This will often overlap with environments previously identified because leisure activities occur in all these environments. Selection would reflect student interests and preferences. It may also be highly dependent upon interests and priorities of family members and typical peers, since they ultimately enable the student to access the environments. This would lead to the decision making on what the retarded child - ●●●● Can already do ●●●● What can be done by him with training and/ or adaptation ●●●● What he cannot do at all Once environments in which the student will participate are identified, the next steps in designing an individualized, ecology curriculum are to identify priority activities and routines and to identify priority skills.

Relevance ●●●● Assessing the large group students within very short time ●●●● To develop functional curriculum ●●●● Activity based IEP ●●●● Helps in normalization process ●●●● Make positive awareness among the community members ●●●● Community involvement ●●●● To select appropriate vocational skills for training or independent living

100 2.7

90%	MATCHING BLOCK 61/203	SA	SEID -31 PDF.pdf (D127037695)
Documentation of Assessment, Result Interpretation and Report Writing - Implication of all the above for Inclusion 2.7.1			

Concept of Documentation

Whatever is the educational facility in which the student is being educated; appropriate documentation is of utmost importance. Right from birth history and diagnosis to disability certification, school admission, assessment, curriculum planning, implementation and evaluation, future planning, vocational training and placement leading to economic independence - all have to have records at each stage.

Documentation simple means systematically storing information collected from various sources using appropriate procedures for predetermined purposes. 2.7.1.1 The Importance of Documentation Children's learning is enhanced Children become even more curious, interested, and confident when they think about the meaning of what they have done. The processes of preparing and displaying examples of the children's experience and effort provides a kind of debriefing or revisiting where new understandings can be clarified, deepened, and strengthened. Children also learn from and are stimulated by each other's work in ways made visible through the documents displayed. A display documenting the work of one child or of a group often encourages other children to become involved in a new topic and to adopt a new method of doing something. Children's ideas and work are taken seriously Careful and attractive displays can convey to children that their efforts, intentions, and ideas are taken seriously. These displays are not intended primarily to serve decorative or show-off purposes. An important element in the project approach is the preparation of documents for display by which one group of children can let others in the class working on other parts of the topic learn of their experience and findings.

101 Documentation encourages children to approach their work responsibly, with energy and commitment, showing both delight and satisfaction in the processes and the results. Children's learning made visible Documentation provides information about children's learning and progress. The focus is on how children making meaning, of how they come to understand. While teachers often gain important information and insight from their own first-hand observations of children, documentation of the children's work in a wide variety of media provides compelling public evidence of the intellectual capability and competence of young children. Documentation uncovers the learning process as it highlights children's theories, interests and relationships. Conversation or dialogue is used to present children's words as serious attempts to understand concepts and ideas. Teachers plan and evaluate with children Continuous planning is based on the evaluation of work as it progresses. As the children undertake complex individual or small group collaborative tasks over a period of several days or weeks, the teachers examine the work each day and discuss with the children their ideas and the possibilities of new options for the following days. Planning decisions can be made on the basis of what individual or groups of children have found interesting, stimulating, puzzling, or challenging. Experiences and activities are not planned too far in advance, so that new aspects of work can emerge based on children's interests and be documented. Teachers reflect on the work in progress and the discussion that surrounded it, and consider possible new directions the work might take When teachers and children plan together with openness to each other's ideas, the activity is likely to be undertaken with greater interest than if the child had planned alone, or the teacher had been unaware of the challenge facing the child. The documentation provides a kind of ongoing planning and evaluation that can be done by the team of adults who work with the children.

102 Teacher research and progress As teachers examine the children's work and prepare the documentation of it, their own understanding of children's development and insight into their learning is deepened. Documentation provides a basis for tweaking teaching strategies, and a source of ideas for new strategies, while deepening teachers' awareness of each child's progress. Using information gained through documentation, teachers are able to make informed decisions about appropriate ways to support each child's development and learning. Documentation explains how one activity was pivotal in understanding an issue, connecting to previous learning, or provoking a new inquiry. Documentation helps teachers promote a positive exchange of ideas. Documentation highlights the issues or problems that emerge during a study or activity. Parents' appreciation and participation Documentation makes it possible for parents to become more aware of their children's experience in the school. Parents' comments on children's work can also contribute to the value of documentation. Through learning about the work in which their children are engaged, parents may be able to contribute ideas the teachers may not have thought of. The opportunity to examine the documentation of a project in progress can also help parents to think of ways they might contribute their time and energy in their child's classroom. There are many ways parents can be involved in documentation within the classroom: listening to children's intentions, helping them find the materials they need, making suggestions, helping children write their ideas, finding and reading books.

2.7.1.2 Methods of Documenting Results

Various methods of documenting evaluation results are in practice in education of children with special needs.

103 IEP format The IEP form has a provision to document evaluation results after a specific duration or time period. The teacher indicates the evaluation procedure and the criteria to be achieved in IEP. As specified in the plan, the student is evaluated, then the performance of the student is compared with the set criteria indicated in specific objective to measure the progress made by the student. Checklists used for assessment and programming Activity checklists are used as an alternative method to document progress in students by the educationists. The teachers who use the checklists as basis for selection of content for teaching students, also can use them to note the mastery of activities. Task analysis checklist Task analysis checklists are extensively used in pre and post instructional assessment of students with mental retardation. The task analysis checklist is a blue print of content of a task to be taught. It pinpoints objectively the performance level of a student and guides teacher in planning instruction systematically. Daily/weekly recording of the progress of student can be noted which helps in summarizing the results at the end of instruction. Also, it depicts the progress of a student at a glance. Graphs Graphing provides a visual representation of student progress and may take many forms. Progress towards a goal may be checked daily or weekly by the teacher or student. The following are some of the advantages of maintaining graphs. a) Graphing the progress provides a continuous visual indication of progress made by the student towards a specified objective. b) They are so sensitive that they indicate small changes, which were not apparent to teacher or student. d) Apart from indicating the progress made by student, it shows the rate of achievement. Constructing graphs for daily recording for all students is time consuming for teaching. However, cumulative records may be developed by teachers.

104 Work samples Samples of student's work during instruction can also help in comparing the performance of a student. Areas such as handwriting, written work in language, arithmetic, and work samples are better evaluative devices to decide the mastery of learning. Anecdotal records Anecdotal records are brief written records of students' behaviour or incidents. They should be factual descriptions of student behaviour or incident and should be used for recording information about unanticipated behaviour. We keep hearing from special educationists making remarks that "X" spoke a word to call the attention of other child which he did not do earlier, picked up on his own tiffin box before going to the dining place, etc." Such kind of descriptions will make teachers think and understand the student better in providing instruction. Progress Report: Progress report is another format used for recording the achievement of students periodically. A class teacher generally records the performance/ achievement of students for giving feedback to parents/family members.

2.7.2 Interpretation

Giving meaning to different outcomes of the training programmes is essential to perceive the training package. Interpretation is

a process of perceiving the pros and cons of training programmes. Interpretation helps the educative, the parents and other professional associates with the training programme to understand are relevant factors influencing the training programme.

2.7.2.1 Level of Interpretation of Assessment

■■■■■ Level-I: Interpretation during the initial assessment
■■■■■ Level-II: Interpretation during the training programme
■■■■■ Level-III: Interpretation after the completion of training programme

Level-I: Interpretation during the initial assessment When an individual training programme is decided for a student, it is essential to collect information about the student's

background, student's present performance,
student's ability and resources to be mobilized to accelerate the training programme.

105 Information collected from all the above factors must be interpreted to see all possible positive factors that could be integrated for the training programme. ●●●● Interpretation of Personal Data ●●●● Interpretation of Student's Ability ●●●● Interpretation of Student's Performance ●●●● Interpretation of Resources Interpretation of Personal Data ●●●● Prenatal, Natal, Post-natal History ●●●● Education History ●●●● Medical History ●●●● Immunization Details\ ●●●● Developmental History Interpretation of Student's Ability It is essential to understand the student's ability in terms of intelligence and aptitude. Assessment also should focus to understand the interest and attitude of the student for different training programmes. The student's

overall ability and specific ability must be assessed and interpreted to decide specific task for training. Interpretation of Student's Performance Student's performance must be understood from different angles. Usually the performance is elicited by using a behavioural scale during assessment. Other than the result of the behavioural scale, the past opportunity given to the student must be noted. The background information of the student like the family income, education, involving in training, and exposure and socio-cultural background must be understood for giving a conclusive statement on performance. Interpretation of Resources Data must be collected to understand the resources

available for development of the student and training to the student. For example, toilet training to a ten years mentally retarded boy, it is essential to know a few aspects like:

106 ●●●● The type of toilet used by the family ●●●● The person would be involved in training ●●●● The cultural believe for toileting ●●●● Cleaning system after toileting etc. Developing teaching materials for the student must be based on the resources of the parents, if the parents are affordable to purchase highly costly materials then it will be worthwhile to prescribed such materials. On the other hand, the poor people could be advised to develop teaching materials in local available materials with less expenditure. Level-

II:
Interpretation during the training programme " It is essential to see the speed of training, and other relevant factors influencing training during different phases of the programme. " Understanding the result, the methods, the efficiency of materials, and the usefulness of techniques is essential to enhance the training programme. " Hence, it is essential to interpret the intermittent improvement, and other associated factors for training programme. "

It must noted that, interpretation during the training programme would help to bring changes in

the training programme as per the requirement. Level-III: Interpretation after the completion of training programme After the completion of training programme, it is essential to review and understanding the various factors influenced the training programme. Interpretation of the overall result, specific result i.e. result in each skills, the methods used form training programme such as: a) play way method, b) structured method, c) project method and techniques used for training programme. It is essential to understand the whole scenario of the training programme. It also give idea for deciding the further training programme to be given to the student. 2.7.3

Report Writing

The

dictionary meaning of 'report' is to give a spoken or written account of something providing official information or evidence (Oxford Dictionary, 2005). A report can be defined as a testimonial or account of some happening. Report is a

107 self-explanatory statement of facts relating to a specific subject and serves the purpose of providing information for decision making and follow up actions. It is a systematic presentation of ascertained facts about a specific event / subject. Report is a summary of findings and recommendations about a particular matter / problem. Report is for the guidance of higher authorities. Reports facilitate timely decisions and follow up measures. In today's world, reports play a crucial role.

2.7.3.1 Purpose of a report: writing to be read A key thing to keep in mind right through your report writing process is that a report is written to be read, by someone else. This is the central goal of report-writing. A report which is written for the sake of being written has very little value. Before you start writing your report, you need to have in mind the intended audience. In the narrowest of possibilities, your report is meant for reading by yourselves, and by your advisor/instructor, and perhaps by your evaluation committee. This has value, but only short-term. The next broader possibility is that your report is readable by your peers or your juniors down the line. This has greater value since someone else can continue on your work and improve it, or learn from your work. In the best case possibility, your report is of publishable quality. That is, readable and useful for the technical community in general. In special education, there are number of reports written for numerous purposes by varied professionals. Writing report for administrative decision ●●●●● Diagnosis and certification ●●●●● IQ assessment ●●●●● Placement in appropriate schools ●●●●● Eligibility to various benefits and concessions offered by the government ●●●●● Access to suitable adaptive devices for independent mobility, communication and learning ●●●●● Establishing rights. Writing reports

for educational programming This report is solely done by the teacher at the initial stage, formative stage and summative stage for promotion to next level or for future use.

A report that is periodically written by all the teachers in regular or special school is the progress

108 report. For a student with special needs, make sure that your report is not only quantitative (percentage or other form of numerical values) but also qualitative, narrating the progress in each domain/subject as the case may be.

Writing reports for alternative

placement As notated by Raymonds (2008), the law demands that every child should have a careful assessment of strengths and needs with respect to participation in general education curriculum., goals and objectives set to enable the student to show progress in that curriculum and finally decisions on where the services are to be provided for maximum benefit to the student. These placement decisions are very carefully made by the team and reviewed periodically.

Writing reports for referral

A child may come to you referred by a professional or others or you may have to refer the child for further assessment or programmes. When

cases are referred for certification or services, there should be a proper format and system so that the efforts are documented. This will also ensure receiving feedback from the referred agency.

Referrals are made in the beginning at the time of initial team assessment, during the implementation of the educational programmes and later on the completion of school

admission. Proper reporting is required for referring the child to the other professional. 2.7.3.2 The essentials of good/effective report writing

are as follows- 1.

Know your objective, i.e., be focused. 2. Analyze the niche audience, i.e., make an analysis of the target audience, the purpose for which audience requires the report, kind of data audience is looking for in the report, the implications of report reading, etc. 3. Decide the length of report. 4. Disclose correct and true information in a report. 5. Discuss all sides of the problem reasonably and impartially. Include all relevant facts in a report. 6. Concentrate on the report structure and matter. Pre-decide the report writing style. Use vivid structure of sentences.

109 7. The report should be neatly presented and should be carefully documented. 8. Highlight and recap the main message in a report. 9. Encourage feedback on the report from the critics. The feedback, if negative, might be useful if properly supported with reasons by the critics. The report can be modified based on such feedback. 10. Use graphs, pie-charts, etc to show the numerical data records over years. 11. Decide on the margins on a report. Ideally, the top and the side margins should be the same (minimum 1 inch broad), but the lower/bottom margins can be one and a half times as broad as others. 12. Attempt to generate reader's interest by making appropriate paragraphs, giving bold headings for each paragraph, using bullets wherever required, etc. 2.7.4 Inclusive Education and Assessment The Individuals with Disabilities Act Amendments of 1997 (IDEA 97) defines inclusion as the participation of children and youth with disabilities in the general education classroom and the general curriculum with appropriate aids and services. Inclusion means full inclusion of children with diverse abilities (that is, both giftedness and disabilities)

in all aspects of schooling that other children are able to access and enjoy. It involves 'regular' schools and classroom genuinely adapting and changing to meet the needs of all children as well as celebrating and valuing differences (Loreman and Deppeler 2011). The related concept of full inclusion refers to full membership in the general classroom with the full supports necessary to make inclusion successful (Sailor et al., 1993). The term full supports describes the importance of providing necessary support services in general education classrooms to ensure a quality educational programme. Why do we modify assessment for students with disabilities in inclusive settings? ●●●● Experts expect that inclusion will result in school classrooms composed of much more diverse groups of students (Putnam et al., 1995). As a result teachers need to develop new instructional methodologies and assessment procedures that respond to the greater diversity of student needs.

110 ●●●● Although assessment in inclusive settings requires changes, many current evaluation practices work equally well in inclusive and noninclusive educational settings. For ego Many curriculum based assessment procedures such as teacher made testing, grading of homework assignments, grading of classwork already occur in the same way in most classrooms. In fact, teachers should use established assessment procedures whenever possible as long as they meet the increasingly diverse needs of the students. 2.7.4.1 Assessment Issues in General Education ●●●● When asked about inclusion, many general education teachers may feel that required modifications for students with special need lead to a watered-down curriculum. ●●●● Special education teachers often express concerns about the emphasis in general education on testing as a means of accountability. This causes pressure on general educators to make sure that their students perform well on tests. Because students with special needs tend to perform poorly on tests, general educators may be hesitant to accept inclusion due to fears about a negative impact on the testing performance of the total class. Educators who are teaching students with special needs in inclusive settings are still in the process of developing the best possible solutions to these issues and concerns. 2.7.4.2 New approaches to assessment in inclusive settings (a)

Team assessment: One of the most useful assessment approaches in inclusive classroom is team assessment, which is a process that involves all teachers in the evaluation process, not just special education teachers in particular who concern about testing and grading students with disabilities are. ●●●● Successful inclusion depends in part on the willingness of teachers to modify their measurement procedures are all different (Tiegerman-Farber & Radziewicz, 1998). ●●●● If most of the teachers are willing to collaborate as coteachers in developing and implementing new assessment techniques that benefit all students while accommodating the needs of students with disabilities.

111 ●●●● One of the team assessment elements that teachers should consider is how well the members of the assessment team work together. ●●●● Active participation of all team members in gathering and interpreting assessment data is a key element. All the team members should help interpret assessment data. The benefit of team assessment is more complete evaluation of student needs within the most appropriate educational environment. ●●●● Team assessment requires a substantial amount of time, professional commitment and interpersonal communication (Coufal, 1993). (b) Cooperative learning assessment Cooperative learning is an instructional strategy that works well in inclusive settings. Research studies by Pomplan (1997) and Carlson et al. (1988) provide further evidence to support the use of cooperative learning in inclusive classrooms. These studies suggest that nonroutine, open ended tasks maximize the participation of students with disabilities in heterogeneous cooperative groups. When teachers use cooperative learning, they are responsible for ensuring that appropriate assessment takes place. The steps in assessing cooperative learning are as follow: ●●●● Specify the objectives ●●●● Develop the assignment ●●●● Determine grading criteria ●●●● Explain the assignment and share the grading criteria with the students ●●●● Monitor the efforts of the cooperative groups ●●●● Interfere and provide support as necessary ●●●● Evaluate the results Teachers may use several assessment strategies to evaluate results, including the following: ●●●● Observing group performance as it occurs ●●●● Interviewing individual students and groups of students ●●●● Evaluating individual and group performance on class work and homework. ●●●● Grading teacher-made tests given to individuals or groups.

112 (c)

Peer assessment of class presentation: Any activity done by a student can be evaluated by peers as well as the teacher. One way to encourage group interdependence and to foster peer assessment is to structure classroom activities / presentations so that all members must learn the activity / material being presented. ●●●● The rating system should include items for assessing the quality of the presentation, the interest generated by the presentation, the organization, creativity, originality and peer participation. (d) Group assessment: ●●●● In real life the success of an organization many a time depends upon the team performance rather than the success of an individual. For this reason, cooperative learning assignments in school should require group reports, exhibits, performances and presentations in which the students work together and are graded as a group. ●●●● Group celebration should occur at the end cooperative learning lessons after completion of assessment and grading. Group celebrations give students the opportunity to salute their success and reflect on how well they collaborated to achieve their learning goals. ●●●● Recognizing the learning efforts of group members and their contribution to the learning of others is an important element in rewarding group interdependence. (e) Peer tutoring assessment: ●●●● Peer tutoring is an instructional strategy in which a student tutor teaches another student in a tutor-tutee relationship designed to promote academic learning and social skill development. ●●●● Successful peer tutoring involves planning, tutor training, teacher support and assessment. Some teachers assess the progress of tutees by having complete daily progress sheets. (f) Play-Based assessment: This method is highly recommended for assessing all the developmental areas and there is a highly likelihood that the child will demonstrate his/her true abilities in this setting. Play-Based assessment yield information to develop a plan for intervention to make the recommendations for goals or out-comes for the child and family and assessment team.

113 Psychologist Diane Ashton describes the following categories of play: ●●●● Solitary play (all ages): The child plays alone. This type of play is not necessarily an indicator of immaturity. High-level play may occur. ●●●● Onlooker play (all ages): The child watches other people play. This type of play appears to be a passive process whereby the child observes the play levels of other children. The examiner should use caution in interpreting this type of play. ●●●● Parallel play (1-3 yrs.): Two children pursue similar activities but do not always engage in eye-contact or social behavior. Children play alongside each other. ●●●● Associative play (2-3 yrs.): Children engage in same or similar activity and may exchange toys or make occasional comments to each other. This type of play lacks organization. ●●●● Cooperative play (4-5 yrs.): This type of play is organized play with cues, rules and individual functions well defined. There are specific play assessment instruments that might be used by the practitioner. Eg.- play observation scale (Rogers, 1986) which describes a 10-step hierarchy that focuses on language, cognitive and social aspects of play. (

g) Portfolios and assessment: A student portfolio is a systematic collection of student work and related material that depicts a student's activities, accomplishments and achievements in one or more school subjects. Performance assessment: It is an ongoing process that captures the many activities and accomplishments associated with reflective teaching and learning that occur in portfolio-based instruction. By evaluating progress using a collection of authentic samples of student work, portfolio assessment provides an ongoing record of student performance and mastery of specific competencies (Vavrus, 1990). Usefulness of portfolios for the students with special needs: ●●●● Portfolios encourage individualization in response to the special learning needs of each student.

114 ●●●● Portfolio assessment enhances student motivation. ●●●● It promotes mastery learning. ●●●● It is an ideal way to evaluate the skills of students with special needs. Process & Product portfolios: ●●●● A process portfolio documents the stages of learning and provides a progressive record of student growth. ●●●● A product portfolio demonstrates mastery of a learning task or a set of learning objectives and contains only the best work. Advantages of portfolio assessment: ●●●● Providing flexibility in measuring how students accomplish their learning goals. ●●●● Enabling teachers and students to share the responsibility for setting learning goals and for evaluating progress toward meeting those goals. ●●●● Providing a process for structuring learning in stages. ●●●● Enabling measurement of multiple dimensions of student progress by including different types of data and materials. Disadvantages of portfolio assessment: ●●●● Requiring extra time to plan an assessment system and conduct the assessments. ●●●● Gathering all of the necessary data and work samples can make portfolios bulky and difficult to manage. ●●●● Scoring portfolios involves the extensive use of subjective evaluation procedures such as rating scales and professional judgments and this limits reliability. (h) Performance assessment: ●●●● Performance assessments provide greater realism of tasks in the following forms: 2. Solving realistic problems. 3. Oral or psychomotor skills without a product. 4. Writing or psychomotor skills with a product.

115 ●●●● Restricted performance tasks are highly structured and limited in scope. Extended performance tasks are typically poorly structured and broad in scope. Strengths 1. Provides a more natural, direct and complete evaluation of some types of reasoning, oral and physical skills. 2. Provides greater motivation for students by clarifying goals and making learning more meaningful. 3. Encourages the application of learning to "real life" situations. Limitations 1. Requires considerable time and effort to use. 2. Evaluation must frequently be done individually, rather than in groups. (i) Modifying Teacher-Made Tests: Teacher made tests frequently fail to give students with behavior and learning disabilities the opportunity to demonstrate what they have learned. This occurs because students with disabilities may have deficit in attention, memory, organization, reading or writing that hinder performance on teacher-made tests. For these reasons teachers need to incorporate test design accommodations that minimize the effect of attention and memory problems. Test design accommodation includes the following: Test Directions- In some situations, students with special needs may receive poor marks on a test due to difficulty in following the test directions rather than lack of competency to perform the test content. Teachers can minimize this problem by using cues include color coding, using symbols etc. Response Modes- Teachers may need to modify the response modes of test items for students with written or verbal communication difficulties. For ego Students can record responses on an audiocassette or can give oral exam.

116 Test items- Teachers can improve student performance by doing these things: ●●●● Keeping the response choices as brief as possible. ●●●● Avoiding potentially confusing choices such as all of the above or none of the above. ●●●● Limiting the number of choices to no more than four items. 2.7.4.3

Some Adaptations during Assessment: ●●●● Avoid long talks before tests. ●●●● Provide an example of expected correct response. ●●●● Seat students in a quiet place for testing ●●●● Place a testing sign on the classroom door to discourage interruptions. ●●●● Avoid threatening to use a test to punish students for poor behavior. ●●●● Give a practice test. ●●●● Give a retest if needed. ●●●● Do not threaten dire consequences for failure. ●●●● Grade on percentage of items completed. ●●●● Have students regular test with the class and the adapted test in resource room or in a separate room. 2.8 "Check Your Progress" 1. What do you understand by assessment?

117 2. What are the key components in the definition of assessment?

----- 3. Explain the purposes of assessment.

----- 4. How do you collect assessment data?

----- 5. Testing is the part of assessment process? Explain.

118 6. Develop a observation checklist for assessing the classroom behavior of the children with mental retardation.

----- 7. Explain the rational of CRTs and NRTs in special education.

----- 8. Differentiate the CRTs and NRTs

----- 9. Mention briefly the group of informal assessment measures in special education.

119 10. How can you develop a curriculum based assessment in inclusive setup?

----- 11. Define Intelligence. Name two intelligence tests commonly used for children with mental retardation.

----- 12. Make a list of various educational assessment tools.

----- 13. Write the different pre natal and post natal medical screening procedures.

120 14. Write the rationale of behavioral assessment

----- 15. What is documentation? Discuss the importance of documentation.

----- 16. How will you interpret at the initial assessment?

----- 17. List out the principles of report writing.

121 18. Write some adaptations could be followed during the assessment in inclusive setup.

----- 2.9

Let us Sum up ●●●● Each child with mental retardation

is unique in nature. Special education can identify the unique need of each child through proper assessment and plan intervention activities as per the requirement. Assessment is a pivotal and the first step of rehabilitation programme for the children with Mental Retardation. ●●●● Assessment is collection and organization of information for making administrative and instructional decisions. ●●●● Assessment is carried out for various purposes such as (a) screening and identification, (b) determining and evaluation of teaching programmes and strategies, (c) determination of current level performance and educational needs, (d) classification and programme placement, (e) development of IEPs and (f) evaluation of the effectiveness of intervention programme. ●●●●

Assessment

will utilize several methods ranging from observation to testing and experimentation. Observation is the most inexpensive method. Testing and clinical investigations are relatively costly and provide more objective information. Sometimes, external tools such as screening measures, schedules and scales are necessary to conduct assessment. ●●●●

There are different types of assessment. Based upon the manner of data collection it is formal and informal assessment and based upon the construction of test assessment could be Norm Referenced Assessment (Test) (NRT) and

Criterion Referenced Assessment (Test) (CRT). ●●●● NRT helps more in administrative decisions whereas the CRT helps more in instructional purpose. ●●●●

Most of the psychological test such as Developmental Test, Intelligence Test

122 and Aptitude Test are NRT in nature whereas most of the behavioural scale used in Special Education are CRT in nature. ●●●●

The different areas of assessment are clinical assessment, psychological assessment, educational assessment behavioural assessment and ecological assessment. ●●●● Clinical assessment is a part of assessment in the process of diagnosis of persons with mental retardation. It is carried out to identify the cause of mental retardation, refer to further investigations to confirm the cause and other anomalies and to plan and evaluate treatment. ●●●●

Psychological assessment is the process of systematic collection, organization and interpretation of information about a persons and his situation. It encompasses assessment of the three major aspects of the mind namely, cognition, conation and affection. ●●●●

Intelligence is the aggregate or global capacity of an individual to act purposefully, to think rationally and to deal effectively with the environment. Intelligence tests, developmental schedules and adaptive behavioural scales are used in measuring the intelligence. ●●●● Educational assessment helps to find out abilities of the student and plan teaching programme accordingly. Norm referenced tests and criterion referenced tests are used in educational assessment. ●●●●

Behavioural assessment is

systematic repeated recording of predefined behavioural parameters of individuals, with a purpose of either identifying functional stimuli that maintain certain behaviours or demonstrating systematic behavioural changes as a function of planned intervention. ●●●● Ecological Assessment

stresses the importance of curricular items based on environment - instead of the "watered down curriculum". This approach emphasizes the inclusion of those content areas necessary for independent living in his/ her environment. It gives emphasize the assessment of environment of the CWSN rather than child with mental retardation. ●●●●

Documentation is a

vital process in any programme. It makes the programme more system dependent than a person dependent. Educators employ various methods for documenting evaluation data. They are IEP form, activity checklists, task analysis checklist, graphs, work samples and anecdotal records.

123 ●●●●

Interpretation is

a process of perceiving the pros and cons of training

programme. There are 3 levels of Interpretation ●●●● Level-I: Interpretation during the initial assessment ●●●● Level-II: Interpretation during the training programme ●●●● Level-III: Interpretation after the completion of training programme ●●●●

Reports are generated for various purposes. Some of the important purposes for which reports are generated include administrative decisions, educational programming, referrals and for alternative placement. ●●●● Experts expect that inclusion will result in school classrooms composed of much more diverse groups of students (Putnam et al., 1995). As a result teachers need to develop new instructional methodologies and assessment procedures that respond to the greater diversity of student needs. 2.10

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Assessment at Pre-school and School Level Structure 3.1 Introduction 3.2 Objectives 3.3 Importance of assessment at pre-school and school level 3.4 Developmental and Adaptive Behaviour Assessment 3.5 Assessment Tools at preschool level: -Upanayan, Aarambh, Portage, MDPS, FACP 3.6 Assessment Tools at school age :- MDPS, BASIC-MR, GLAD, Support Intensity Scale 3.7 Documentation of Assessment, Result Interpretation

and Report

writing : 3.8 "Check Your Progress" 3.9 Let us Sum Up 3.10 References 3.1 Introduction : Assessment methods and tools are very much essential for educational purpose. It may vary with age group because with the age the sensory motor coordination, social, perceptual emotional, communicational skills also varies which affect the learning outcome of a child. 3.2

Objectives : After going through this unit the reader should be able to - 1. Understand the importance of

assessment at preschool and school level. 2. Understand the developmental and adaptive behaviour assessment. 3.

Explain and demonstrate tools at preschool level Upanayan, Aarambh Portage, MDPS. FACP and

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school level (MDPS, BASIC-MR, GLAD SIS). 127 4. Understand documentation of assessment result interpretation and report writing implication of class level assessment & its relation to inclusion with resource support. 3.3

Importance of assessment at preschool and school level Preschool children This group usually comprises of children from birth to six years. Though there are special programmes in India to target this group, currently

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there are no State policies or standard guidelines on assessment and intervention programmes. In this scenario, it is justified to look-up at the best practices available worldwide. The Individual with Disabilities Education Act (1997) of US require that every child identified

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disabilities at this stage will be assessed by a multidisciplinary team to establish relative strengths and needs in all

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areas of development and identify appropriate services; secondly, a family directed assessment of resources, priorities, and concerns

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of the family and identification of resources and support system to meet them. Further the assessment should be able to predict the expected outcome for both the child and family, and precisely state what intervention programmes are required to achieve the outcome. In this context it is pertinent to note that preschool assessment should gather information on both the child and the family.

Within the existing resources, early childhood assessment can be conducted if the teacher had the following competencies : ●●●● Basic understanding of causes and prevention of disabilities in general and mental retardation in particular. ●●●● Knowledge of human growth and development including the stages of development, facilitating factors, inhibiting factors, hazards of development, and intervention. ●●●● Knowledge of existing developmental, (e.g. GDS, DST etc.), educational (e.g. Arambh) and other assessment tools (e.g. Portage, Upanayan) meant for this group. ●●●● Knowledge of family functioning models and relevant assessment scales (Persha & Rao, 2003; Peshawaria et. at., 1995). ●●●● Awareness about existing Policies, Provisions and Service Providers as applicable to the region to which the child belongs.

128 School level This group comprises of children between 6 to 15 years. Hence assessment is required on the following :- 1. Intelligence assessment on standardized scales. This information will be helpful from the point of diagnosing mental retardation, estimating disability so that appropriate social benefits are extended to. 2. Adaptive behaviour assessment on norm-referenced scales (preferably, on

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VSMS) and / or criterion scales (e.g. MDPS). 3. A detailed educational assessment, preferably based on the functional approach (e.g. the functional assessment checklists for programming). 4.

Assessment of problem behaviours, as indicated (e.g. BASIC-MR, BASAL-MR). 5. Depending on the need and educational setting,

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assessment can be conducted formally (e.g. grade level assessment tool by Narayan, 1994) or informally (e.g. teacher made curriculum-based tests). At school level,

particularly when it comes

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for placement in regular schools, the assessment should go beyond the individual with disabilities. It is also important to

understand the environmental variables such as, attitudinal barriers, physical barriers, peer support, attitude and enthusiasm of the teachers and administrators. 3.4 Developmental and Adaptive Behaviour Assessment From the information about the pattern of development of any individual, early identification can be possible. Screening tools are also helpful to identify person with a specific condition within a large population. The screening procedure is less costly and less time consuming to determine the pattern of development in a child within his developmental stage or not. More over

it is important to note that being positive on screening does not necessarily mean that the same result should come on assessment.

Suppose developmental screening has indicated general developmental delay suggestive of mental retardation but the same result may not come up on IQ

assessment. There are several screening tools meant for identification of mental retardation, which are as follows :-

NIMH development screening schedule : This tool was developed by Saroj Arya (1991) to screen preschool children for disabilities in general and mental retardation in particular. The schedule consists of ten key items on development that are passed by 90% of the children between the specified age group. The tool is established to have sound validity, reliability, and predictive power. The tool is meant for use in rural areas as well as in urban setting. NIMH screening schedules (National Institute for the Mentally Handicapped, 1989) : There are three schedules under this group meant for age group below 3 years, 3 to 6 years, and 7 years and above. The number of items / questions on which information has to be obtained varies from 8 to 13 per schedule. Administration of each schedule may not take more than five minutes. Though the psychometric properties particularly the predictive power of these schedules is not known, they are widely used in mass screening and the feedback is satisfactory. Developmental screening test (DST) : This test was developed by Bharatraj (1977).

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This provides a measure of mental development based on social adaptive behavioural skills, communicative skills and motor skills		

from birth to 15 years.

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This can also be used with any age group of suspected cases of mental retardation. This tool shows good correlation with standardized IQ measures; therefore it is used whenever standard intelligence testing is not		

possible. Administration of this screening takes thorough training, and is primarily used by psychologists and developmental therapists. Gessell's drawing test : Verma et al. (1972) adapted this test in Indian setting. This test consists of some simple geometrical shapes, which the student has to draw. This test is applicable from 1½ year to 8 years. Very recently some more items have been added which has enhanced

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its applicability up to the age of 12 years (Venkatesan, 2002). It takes about ten minutes to apply and interpret the test		

provided the child is cooperative Developmental assessment tools Other than the screening tools, early identification can be done by acquiring information about the development pattern of the individual. We know that development follows a specific pattern, which means that there is an expected age range for every developmental task. When we compare the individual's development with that of the expected norms, we can answer the following questions : whether development was normal, or any deviations were indicated; if the developmental deviation was specifically restricted to one area or generalized. This information can be attained by observation of the child, and also by interviewing the parents. Some of the important developmental milestones are shown in Table 1.

130 Table 1 : Normal Milestones of Development S. No. Developmental Milestone Mean age by which it is attained
 1. Smiles at others 4 months
 2. Holds head erect 4 months
 3. Puts objects into mouth 4 months
 4. Rolls from back on to stomach 6 months
 5. Makes sounds "anna", "da da da" etc. 7 months
 6. Sits without support 8 months
 7. Responds to name 10 months
 8. Stands by holding on to an object 10 months
 9. Holds object with thumb and index finger 10 months
 10. Stands without support 10 months
 11. Walks without support 15 months
 12. Tells own name 18 months
 13. Drinks by self from glass 21 months
 14. Shows body parts when named 24 months
 15. Speaks in small sentences 30 months
 16. Unbuttons clothes 36 months
 17. Differentiates big and small 36 months
 18. Can button clothes 40 months
 19. Combs hair 48 months
 Source : National Institute for the Mentally Handicapped, Secunderabad. A careful analysis of the developmental tasks will indicate that whether the child is having specific delay or a generalized delay suggestive of mental retardation. However, sometimes it may more areas of development it usually suggests mental retardation. However, sometimes it may not be possible to remember all necessary milestones hence we may miss some while observing of interviewing. Therefore, it is better to use developmental scales for they contain all necessary questions about development and also provide normative comparisons. Besides the developmental scales mentioned above, Developmental Assessment Scales for Indian Infants (DASII), an Indian adaptation of Bailey's Infant Scales for Development by Pramila Pathak (1970; 2009), are also widely used for assessment and intervention.

131 Developmental assessment is mandatory in assessing mental status because it is one of the criteria of any diagnostic system. That is, it is essential for both intellectual and adaptive behavioural deficits should be during the the developmental period (i.e. before the age of 18 years). Further, intelligence testing cannot be done accurately at younger age groups (i.e. below age 3 years), and in very severely and profoundly retarded children. Sometimes, sensory-motor, communication deficits, lack of formal training and education etc. will also interfere with intelligence testing. Therefore, it is a common practice that wherever intelligence testing is not applicable or feasible, developmental assessment is done to estimate developmental quotients did interpreted the same way as intelligence quotient (IQ) to ascertain the severity of mental retardation. Another reason why developmental assessment is preferred that developmental tasks are not influenced by formal education or lack of it unlike the tasks given under intelligence testing. Lastly need for developmental assessment is also indicated by the fact that internationally the construct of mental retardation is changing to reflect it also as a developmental and intellectual disability. However, it must be noted that developmental assessment is not a substitute to intelligence testing, as both depend on entirely different assumptions. Assessment of adaptive behaviours :- Adaptive behaviour is defined as the effectiveness or degree with which the individual meets the standards of personal independence and social responsibility expected of his age and cultural group (Grossman, 1983, P-159). This expectation differ from age to age. According to the American Association on Mental Retardation (AAMR) the deficits in adaptive behaviour during the childhood years may reflect deficit

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in academic learning, judgement and reasoning in dealing with the environment and social skills in group activities and interpersonal

relationship. So it can be considered as a feature of mental retardation. Classification of persons with mental retardation based on the support system required with reference to the adaptive behaviour deficits is an emerging trend globally. Therefore, assessment of social and adaptive behaviour is an important aspect in assessment of mental retardation. Similarly, behavioural problems and communication deficits are common to mental retardation. Therefore, assessment of all these aspects is important for a comprehensive plan. AAIDD recognizes adaptive behaviour as a collection of three skill areas explained below, and a significantly sub average functioning in the following three areas is necessary identify mental retardation (Luckasson et. al. 2002) :

132 ●●●●●

Conceptual skills -

language and literacy; money, time and number concepts; and self-direction. ●●●● Social skills - interpersonal skills, social responsibility social problem solving and the ability to obey laws and to avoid being victimized. ●●●●

Practical skills -

activities of daily living (personal care), occupational skills, healthcare, travel/transportation schedules/routines safety, use of money, use of the telephone.

Assessment of

adaptive behavior to determine the support system is not common in India, where IQ levels are transformed into disability percentages. But now globally the trend is to define support system based on the extent of deficits in adaptive behaviors. Then the question comes what are supports? Supports are resources and strategies necessary to promote the development, education, interests, and personal well being of a person with intellectual disability. Supports can be provided by a parent, friend, teacher, psychologist, doctor, or by any appropriate person or agency. The AAIDD views that providing individualized supports can improve personal functioning, promote self- determination, and enhance the well being of a person with intellectual disability. Supports also lead to community inclusion abilities. Focusing on supports as the way to improve education, employment, recreation, and living environments is an important part of a person-centered approach to provide care to people with intellectual disability. To extend the support system, an individual's need for supports be analyzed in at least nine key areas, which are

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human development, teaching and education, home living, community living, employment, health and safety behavior, social behavior and protection and advocacy.

Between intelligence problems and adaptive behaviour deficits, credit is given to the latter in conceptualizing mental retardation as it directly reflects quality of independent living. To Give the importance of adaptive behaviour as a diagnostic criterion and its role in independent living, assessment is done to obtain two questions : 1) whether the adaptive behaviour is significantly below average? 2). If yes, what are the relative strengths and deficits of the individual? Answer to the first question comes from norm- referenced assessment, while criterion - references and behavioural tools are for the other. Answer to the second question emphasizes the fact that measurement of adaptive behaviour is a nonbiased assessment of culturally different students, as it recognizes cultural and ecological influences on daily living activities. Some of the commonly used scales are listed in Table 2.

133 Table 2 : The adaptive behaviour scales used in India S. No. Name of the Scale Approach Age Group Remarks 1. Vineland Social Normative Applicable for 0-15 years; Yields social Maturity Scale (VSMS; But is used with quotient (SQ) Malin, 1968; any age group of Provide a profile of Bharatarj, 1992) suspected cases of mental adaptive behaviour retardation domains. Indicates just the target areas 2. Madras Criterion Not defined from age the One of the first tests Developmental point of view of age but of its kind in India. Programming System appears to be applicable Useful for (Jeyachandran & for age 3 years & above, individualized Vimala, 1975) as the items reflect programme plan content from preprimary level and upwards.

Adaptive behaviour scales / Tools for assessment of adaptive behaviour The adaptive behavior, which projects our behavior in the personal and social areas, reflects our ability to respond to the environment. Thus adaptive behaviors come under the broad domains of functional independent skills, personal and social responsibility, and independent living skills. These elements combine to form an organized behavioral pattern of the individual. Some of the popular adaptive behavior

scales used for assessing the mentally retarded persons are :- The Adaptive Behaviour Scales (ABS) : The scale was developed in 1969 by Nihira et. al. to be used for client assessment and

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individual program planning and assessing the total programming needs of groups of clients for research purposes. It can be used to

make assessment of mentally retarded, emotionally maladjusted and developmentally disabled persons of all ages from childhood for

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adulthood. It is divided into two parts : Part-I, is concerned with matters described as adaptive behaviour and comprises ten domains with a total of 66 items.

The domains

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are independent functioning, physical development, number and time, domestic activity, vocational activity, self direction, responsibility, and socialization,

Part-II of the scale is concerned with what are called maladaptive behaviours. These are grouped into 14 domains. They include violent and destructive

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behaviour, untrustworthy behaviour, withdrawal, stereotyped behaviour, inappropriate interpersonal manners, unacceptable vocal habits, unacceptable 134 habits, self abusive behaviour, hyperactive tendencies, sexually aberrant behaviour, psychological disturbances and

use of medication. . The ABS is designed for use by someone who knows the individual being assessed. Thus it can, for example, be completed by a case worker or teacher. The assessor records responses to the item on the questionnaire, and no special training is necessary to complete it. The Vineland Social Maturity Scale (VSMS) : This was developed by

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Edgar A. Doll in 1935, and has been revised several times since its first publication. It was

intended to be used

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for program evaluation and research. The scale was designed to assess the social competence of

individuals of ages from birth to 25 years and above. The Indian adaptation of VSMS, by Fr. A. J. Malin, has an age range of birth to 15 years.

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There are eight domains with 89 items, grouped age wise self-help general; self help eating, self help dressing, self direction, occupation, communication, locomotion, and socialization.

The

information is collected by a trained examiner from an informant who is familiar with the client. Scoring of the items gives the information on social age from which the social quotient could be calculated. 3.5 Assessment Tools at preschool level : The age of three to four years is the time when the child attends a preschool, thus, a mentally retarded child with higher chronological years may educationally fall in the preschool years (3-4 years). The child is showing skills exhibited by a preschooler and, therefore, needs educational instruction appropriate for a preschooler. There are several assessment tools available at preschool level. a) Upanayan

Upanayan is a systematic, structured, early-intervention programme for the training of children with developmental delays and / or mental retardation. It was developed at Madhuram Narayanan Centre for Exceptional Children, Chennai. The programme was developed and designed to suit the Indian socio-economic conditions and cultural milieu. The programme has been developed considering diverse needs of children with any developmental delay besides mental retardation. This approach provides early intervention irrespective of the diagnostic labeling. Upanayan programme are designed for two groups of children : (1) birth to two- years; (2) two-years to six-years. Upanayan enables the family members particularly the mother to be the trainer or educator of the child. Another unique feature of this programme is that it combines traditional wisdom of child-care from India and other parts of the world with intervention. Programme for babies from birth to two-years of age comprises five developmental 135 areas; motor, self-help, language, cognition, and socialization. Under each of the above areas, 50 discrete behavioral skills have been identified as the optimal ones to cover the daily activities of a child of this age group. The activities have been planned to train children in the various skills in the household setting of an average Indian home. Programme for children from two to six years includes advanced skills set under each

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of the 12 areas, which are as follows : gross motor, fine motor, mealtime activities, dressing, grooming, toileting, receptive language, expressive language, socialization, reading, writing

and number work. As part of the Upanayan Programme the centre has also developed a computer-aided programme of development training for children with mental retardation (0 to 2 years) in making friends, reaching out teaching how to clap, learning to blow, learning to balance and standing on one's own legs. b) Aarambh Current research on education of persons with mental retardation indicates that children with mental retardation can be part of the inclusive education system provided curriculum adaptation, evaluation methods are compatible to the individual needs. Even when the resources are available, children with special needs do not adjust to the inclusive setting they are not prepared for it. By the time it is realized valuable time, which was important for preparing base for future learning, is lost. Research directed towards early detection and intervention confirms that early-learning is very influential on later-learning. Precisely in this backdrop, "Aarambh", a package

for inclusive education at preschool level was developed at The National Institute of

Mentally Handicapped (NIMH) (Rao & Narayan, 2002) with funding support from UNICEF. It provides a customized curriculum, instruction for adaptation in teaching method each content and disability at preschool level. This package is meant to provide early childhood special educational inputs between 3 to 6 years i.e. before entering into the school system. The package consists of the following :- 1. Curriculum calendar 2. Teacher manual 3. Policy maker booklet 4. Activity cards The curriculum calendar specifies what objectives of learning to be involved in its monthly activities. Teacher manual helps the teacher to make programme plan in regular school so that the existing infrastructure and resources are well utilized.

136 An information booklet for the policymakers is added to draw a roadmap for making

the inclusive model of covering the children with special needs. There are 225 activity cards to cover the knowledge required daily; and information for a child to interact with parents, family members and the community. The cards indicate the process of various activities through conversation, games, songs, story-telling, creativity and finally prepare the child for skill demonstration. Field studies indicate that this scale is being widely used in early childhood special education in India. c) Portage Guide

David EL Shearer found the Portage Project in 1969 to provide services to young children identified with disabilities within a rural community (Shearer and Shan; 1972). By early 70's the project offered home-based services that supported parents as their children's first, most valuable and influential teacher. This family-guided model supports parents and family in implementing an individualized educational plan and through basic routines and activities that the parent and child engage in on a daily basis. Specific play-based activities offered and utilized to meet child's goals and to improve parent-child interactions. Developmental assessment tools are also used for targeting skills, behaviors and progress. The outcomes ultimately helped children to prepare for school and overall success. The ultimate goal of this project is to create and enhance quality programme which promote the development of education of all children with disabilities and their families through a home or relationship-based early intervention programme.

This project is guided by the following four core values :- 1) Strength-Based : a focus on the strengths of children, families, and programmes. 2) Ecological : consideration of the larger environment in which children, families and programs exist. 3) Family Focused : families and programs are the decision makers. 4) Relationship Based : most effective work is through relationships based upon trust that supports each individual and forms the basis of the program implementation (CESA 5, 2003).

This project has been adapted widely across the developing countries including India. Commonly known as Portage, "The

Portage Basic Training Course for Early Stimulation of Preschool Children in India"

was adapted in India by Tehal Kohli in 1987. This adaptation is an outcome of UNICEF supported pioneering project of its kind titled, "impact of home-centre based training programmes to 137 reduce developmental deficits of disadvantaged young children under ICDS scheme in Chandigarh". Portage as a tool provides age norm references besides giving the flexibility to choose programme as per the child's condition.

Components of the Portage Material are as followed :- 1) Portage Checklist by Bluma et al (1976) lists sequential behaviours from birth to six years of life. The Indian version, adapted by Kohli, contains 575 checklist items encompassing infant stimulation, socialization, language, self-help cognitive and motor domains. 2) Curriculum cards to observe each of the behaviours on the checklist. Each card includes a behavioural description of skill and suggests material and curriculum ideas for teaching it. 3) Activity charts. 4) Reactions of mothers towards portage training : It notes the mothers' satisfaction level

with the programme. d)

Madras Developmental Programming Systems (MDPS) This scale earlier know as "Madras Scale" was developed by Jeyachandran and Vimala (1968). It underwent three editions including a revision before it acquired its present

form

and the

name, "Madras Developmental Programming Systems" (MDPS) in 1975. The scale was revised five more times till 1992.

The scale is first of its kind in India in

individualized programme planning in training persons with

mental retardation. It consists of 18

domains with each containing 20 times. The 18 domains encompass the following broad areas :-

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Motor : (Gross Motor, fine motor) Self-help skills : (Eating, dressing, grooming, toileting) Communication skills : (Receptive language, expressive language) Social interactions Functional academic skills : (Reading, writing, arithmetic, time, money) Domestic behavior Community orientation Recreation and leisure time activities Vocational activities 138 Each

item is scored with alphabetic code ('A' means performs; 'B' means yet to perform), and a colour code ('Blue' means performs; 'Red' means yet to perform). Specific patterns are also used to indicate if a skill, which was not performed at baseline, is achieved after training. The patterns vary depending on which quarter the assessment was done. Being a criterion-referenced scale it provides scope for periodic assessments and evaluation. Items from each domain are also identified to represent different educational levels including preprimary, primary, secondary and prevocational. Some salient features of the scale are as following :- ●●●● Item selection is based on developmental stages and life situations. ●●●● All the 360 items are positive statements which are observable and measurable. ●●●● All the items have functional relevance. ●●●● The items proceed from simple to complex. ●●●● The scale has sound psychometric properties such as reliability, validity and practicality. e) Functional assessment checklist for programming (FACP) Latest among the approaches to curriculum development, the functional approach emphasizes that educational goals should be functional, age appropriate and community - referenced. Need for his approach arises in the context that curricular content, at times, does not provide a meaningful link between learning situation and practical situation. Functional curriculum ensures that the activity taught is directly applicable in real situation. Suppose a teacher may decide to teach spellings only for those words that require reading and writing in general correspondence. Accordingly, the teacher shall teach the spellings for name of the student, grocery items, sign boards than typically beginning with alphabet. Similarly, training for holding food is done with real food than holding beads and blocks. Thus, a functional programming aims at leading the student towards reduced dependence on others and provide maximum personal, social and occupational competency. The following checklists, based on functional curriculum, are extensively used in India in both individualized training and group teaching :-

Functional Assessment Checklists for Programming (Narayan et. al., 1994) This checklist is developed by the Department of Special Education, NIMH. There are separate checklists for different age groups - Preprimary (3-6 years), Primary-I (7-10 years), Primary-II (9-14 years), Secondary (11-14 years), Prevocational-I and Prevocational-II (both 15-18 years), and Care Group (those who are profoundly retarded). The items vary from one checklist to another. The domains covered are, personal, social, 139 academics, occupation and recreational. The checklist provides the guidelines as how to promote children from one class to another. If the curriculum is mastered the individual will have necessary competency to undergo vocational training and function independently in adult life. 3.6 Assessment Tools at school age : The years between five to ten are the years of primary schooling. During this period, significant changes in the sphere of physical, intellectual, emotional and social aspects takes place. Language, communication, reasoning thinking, problem solving capacities develops rapidly. The various assessment tools at this age are :- i) MDPS - Mentioned earlier ii) BASIC MR -
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Behavioural Assessment Scales for Indian Children with Mental Retardation (BASIC-MR) are used for assessing the current level of behaviour and for programme planning with children		

between 3-18 years of age.

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BASIC-MR comprises two parts - Part A and B. Part A has 280 items which provide information		

regarding the current level of skill behaviours in seven functional areas -
motor skills,
activities of

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daily living, language, reading-writing, number-time, domestic-social and prevocational-money. With respect to each item, one

has to see whether or not the child can do the task as specified in the item independently; if not, what sort of help he needs. Depending upon the child's performance, the child is given a score as described below :-

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Each child with retardation may show different levels of performance on

the items of

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the BASIC-MR, PART A. The six possible levels of performance under which each item can be scored are as follows. The record booklet is used to enter the scores obtained by the child on each item. Level One : Independent (Score 5) - If the child performs the listed behaviour without any kind of physical or verbal help, it is marked as 'independent' and given a score of 5. Level Two : Clueing (Score 4) - If the child performs the listed behaviour only with some kind of verbal hints, it is marked as 'clueing' and given a score of 4. Level Three : Verbal Prompting (Score 3) - If the child perform the listed behaviour with some kind of accompanying verbal statements, it is marked as 'verbal prompting' and given a score of 3. 140 Level Four : Physical Prompting (Score 2) - If the child performs the listed behaviour only with any kind of accompanying physical or manual help, it is marked as 'physical prompting' and given a score of 2. Level Five : Totally dependent (Score 1) - If the child does not perform the listed behaviour at present, although he can be trained to do so; it is marked as 'totally dependent' and given a score of 1. Level Six : Not applicable (Score 0) - Some children may not be able to perform

the

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listed behaviour at all, owing to sensory or physical handicaps. Wherever an item is marked "not applicable", it gets a score of 0.

Part B has 75 items which provide information regarding the current level of problem behaviour in the child. With respect to each behaviour, it is noted whether the child never shows the behaviour (0), shows it occasionally (1) or frequently (2).

Table 3 : Showing domains of

BASIC-MR

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BASIC-MR Part A : Skill behaviour domains 1. Motor 2. Activities of daily living 3. Language 4. Reading-writing 5. Number-time 6. Domestic-social 7. Prevocational-money 8.

Social-communication Part B :

Problem 1.

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MANISHA autism PAPER.docx (D124681370)

Violent and destructive behaviours 2. Temper tantrums 3. Misbehaves with others 4. Self-injurious behaviours 5. Repetitive behaviours 6. Odd behaviours 7. Hyperactivity 8. Rebellious behaviours 9. Antisocial behaviours 10. Fears 141

iii) GLAD -

Grade level assessment device for children with learning problems in schools (Narayan, 1994) :

This tool was the first of its kind in India, which was developed in the backdrop that there were no wholesome scales to assess the learning problems. Even those existing did not meet the variation across State and Central schools syllabi. Some of the main objectives with which this tool was developed are as following :- ●●●● Development of a schedule for assessing children to find out their class equivalence in academic performance in India. ●●●● Developing a manual for use by the teacher. The tool has two formats : Format-I and Format-II. Format-I contains test booklets of class I to IV given in the form of worksheets.

Each class contains worksheets in

Hindi, English and Mathematics. Item include tasks requiring verbal and written responses to questions.

Analysis of students performance gives clue to the teacher regarding the student's style of learning and problem solving. The salient feature of this scale is that the test items are based on minimum levels of learning (MLL) prescribed by the National Council on Educational Research and Training (NCERT). Further, items have the uniform endorsement of syllabi of various Central Boards and a State Board where MLL was taken the standard. But wherever MLL were not prescribed as in the case of LKG and UKG, item endorsed by different boards, and published books were considered in the same order. Thus this tool satisfies the assessment needs of children coming from different school syllabi across India. Since the test items reflect the standard curricula, it is also an example for curriculum based assessment tool. The tool has established criterion validity, content validity face validity, test-retest reliability. Format-II is meant for teacher's observation regarding the student's performance on Format-I and certain personal details of the student.

It contains three sections. Section- I deals with personal details, family history, school history etc. Section-2 requires the teacher to note information on sensory-motor skills, which will be useful for medical referral. Section-3 indicates the possible errors for each subject so that when they are noted the teacher can understand the processing deficits involved in specific

subject. Finally the summary sheet provides for a brief overall picture of the child, which includes matrix that shows the child's class of functioning in terms of independent, functional and frustration levels. Coding facilities are provided so that the class levels in which the student is tested can be noted in terms of his or her performance. The salient features are as follows :-

142 ●●●● Overall information can be used to identify learning problems with reference to curriculum. ●●●● It is possible to ascertain the grade levels in Hindi, English and Mathematics. ●●●● Information obtained can be used in diagnosis and management of specific learning disabilities in primary class levels. ●●●● It is reliable, valid, and easy to administer and interpret. ●●●● Has relevance to all parts of India, as it is based on MLL, and also the Central and a State Board

Syllabi. iv) Support Intensity Scale :- It is a unique scientific assessment tool designed to measure the level of practical support required by the people with mental retardation in order to lead a normal, independent life in society. The scale has two components :- ●●●● A manual explains how to administer the instrument. ●●●● A set of pre printed forms rate the respondent on the intensity of supports required in medical, behavioural and life activity areas. The support means resources and strategies - including individuals, money or tangible assets, assistive devices, of environments that enable people with developmental disabilities live normal lives in regular community settings. The Supports Intensity Scale measures supports required by an individual in 75 life activities

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in the areas of home living; community living; life-long learning; employment, health and safety; social interaction; and protection and advocacy. The

Supports Intensity Scale also measures 15 exceptional medical needs and 13 behavioural support needs of the individual being tested. The rationale here is that certain medical conditions and challenging behaviours predict that a person will

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require increased levels of support, regardless of his or her relative intensity of support needs in other life areas. The

Supports Intensity Scale is conducted as a semi-structured interview by a qualified interviewer with preferably two or more respondents that know the individual well. The interviewer should be a professional who has completed at least three months and have had recent opportunities to observe the person function in one or more environments for substantial periods of time.

143 The Supports Intensity Scale has been normed on a sample of 1306 people between the ages of 16 and 70+ identified with mental retardation or other developmental disabilities. The SIS sample was drawn from 33 states and 2 Canadian provinces and the data was collected between spring 1999 and fall of 2002. Benefits of SIS Scale :- ●●●●● Provides direct, reliable, and valid measurement of supports requirements in 57 life activities. ●●●●● Ranks results by frequency, daily support time, and types of support needed. ●●●●● Evaluates impact of 15 medical and 17 behavioural conditions on overall support needs. ●●●●● Presents percentile ranking of persons needs based on national field test data. ●●●●● Provides graphic plot of information recorded, including visual display of areas of high intensity vs. low intensity of supports needs. ●●●●● Supplements adaptive behavior measures by revealing exactly what practical supports are required to perform a task (Adaptive measures identify the skills of an individual has to do a task). The authors of the Supports Intensity Scale are :- James R. Thompson, Brian Bryant, Edward M. Camplell, Ellis M. (Pat) Craig, Caroyln Hughes. 3.7

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Documentation of Assessment, Result Interpretation and Report writing : Implication of class level assessment

and its relation to inclusion with resources support. Different assessments can be used for further recommendation and further action. There are various assessment result which alone or combinations of different result is needed for decision making. The comprehensive report leads to evaluative purpose. Ø Writing report for administrative decisions alike. ●●●●● Diagnosis and certification. ●●●●● IQ assessment.

144 ●●●●● Placement in appropriate school. ●●●●● Eligibility to various benefits and concessions. ●●●●● Establishing rights. ●●●●● Access to suitable adaptive devices for independent mobility, communication and learning. Ø Writing reports for educational programming.

The teacher must remember following points for writing educational programming :- ●●●●● Objectivity ●●●●● Use ●●●●● Clarity ●●●●● Authencity ●●●●● Unbaised ●●●●● Uptodate ●●●●● Simplicity ●●●●● Precise ●●●●● Provision of support documents where applicable. Ø Writing report for referral :- ●●●●● Referral at the time of initial assessment ●●●●● Referral during the educational programme ●●●●● Referral for admission to regular / special school ●●●●● Referral on completion of school educational.

Interpretation of educational assessment has two major purposes :- ●●●●● Placement decision ●●●●● Programme planning

Placement decision :- Due to intellectual impairments coping in regular classes is difficult. In the light of inclusive education, placement of the child should be with the childs pear and be based on chronological age.

145 According to Salvia and Ysseldyke (2007), general educators believe that children with developmental delay needs more support or special assistance to achieve desired outcome with the help of class level assessment or grade level assessment, - the teacher has to take into account the consistency of responses over a period of time and select the right recommendations for referral and amount and nature of support needed. Programme Planning :- The assessment by the teacher is continuous and it reflects current level of functioning at a given time and progress as a result of instruction. Recently the model of class level assessment or curriculum based assessment for monitoring progress is response to instruction (Horner, Sugai and Horner 2000). It basically focuses on effective instruction. In inclusive settings, it helps the teacher to decide, how much the student benefits from core instruction (which is provided to all students), how much enhanced instruction is needed in addition to the core instruction and in what near intensive instruction is to be planned. The assessment data which will include - preliminary assessment, specific assessment to plan annual god, individualized educational programme (IEP), date of behaviour analysis, record of parent teacher meetings, visits to inclusive classes as a resource teacher, team meeting with principal, detail information of the students profile like learning style, rate of learning, interests, needs, supportive classmates or teachers give a clear picture of the student in the class. So, to achieve the goal of education, perfect recording of assessment, supporting parents, cooperation of teachers, proper referral, modified instructions, innovative teaching strategies, alternative evaluation system can be used as a support system for the child in inclusive set up. 3.8 "Check Your Progress" (i) What are the importance of assessment at preschool and school level?

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146 (ii) Why developmental assessment is necessary in mental retardation?

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..... (iii) What is adaptive behavior? Reason out the importance of assessment of adaptive behaviour in the field of mental retardation?

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..... (iv) Describe two important assessment tools in preschool level.

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..... (v) Describe one curriculum based assessment tool used in school level assessment. Define its importance in inclusive educational set up.

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..... 3.9 Let Us Sum Up The needs of individual vary with the age thus different methods of assessment are needed. During preschool age the basic skills such as cognitive, motor, sensory perceptual skills develop at rapid speed. So, the pre-requisites for most of the adaptive behaviours and conceptual skills are still in progress. The assessment tools should be like that to evaluate these pre-requisites of a child.

147 The assessment of school level is to impart for diagnosis and placement in proper educational set up. So the tools at this level are to assess the overall academic and adaptive skills which are necessary for independent living. Developmental assessment is an important aspect of early identification of mental retardation. Assessment of adaptive behavior is needed to define effectiveness of the person to

meets the standards of personal independence and social responsibility expected according to the age and culture. Assessment tools used in preschool level are

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Upanayan, Arambh, Portage, MDPS, FACP and assessment tools in school level is MDPS, BASIC-MR, GLAD and Support Intensity Scale. Documentation of assessment

is important for evaluative purpose, educational programming purpose and referral purpose. The educational assessment has two major purpose – placement decision and programme planning. So, for overall development of a child depends upon had perfectly the date of assessment is used through analysis and what types of modification is needed for his educational upliftment in inclusive educational system. 3.10

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Unit - 4

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Assessment at Adult and Vocational levels Structure 4.1 Introduction 4.2 Objectives 4.3 Significance of Assessment for Independent living of PwIDs. 4.4 Assessment for Transition from School to Work. 4.5 Assessment Tools for Independent Living - BASAL-MR, V APS. 4.6 Provisions & Schemes of MoSJE for Vocational Skill Development 4.7 Documentation of Assessment, Result Interpretation and Report Writing– Implications of Assessment, Outcomes for Community Living. 4.8

Check Your Progress 4.9 Let us Sum up 4.10 References 4.1 Introduction

Assessment in special education is the most crucial step towards planning the programme for a person with intellectual disability (PwID). Assessment aims at assessing the potentiality of an individual with intellectual disability and helps at preparing him/ her towards independent living following the result of assessment.

The information gained through the assessment process have to be utilized meaningfully for the programme planning for independent living of PwIDs.

Education is a mean to independent living and economic independence to everyone including persons with disabilities. To achieve this, vocational training and placement is imperative.

The persons with intellectual disability have also the right to get meaningful employment for their livelihood. Special Educators asses and plan a training programme which focus on transition from school to work. Transition from school to work means scientifically plan transfer of a student from school to world of work with requisite 151 skills.

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Effect of Vocational Training on Behavioural S ... (D29288122)

Comprehensive transition from school to work planning and implementation require participation from all relevant school, parents and the children with intellectual disability Very often, comprehensive transition planning requires restructuring and rethinking of professional roles. Refining professional roles is not enough, participation of

the family members of the persons with intellectual disability and the community must also be encouraged. Service delivery of persons with intellectual disability is typically initiated by a referral, subsequently screening tests are conducted and a rigorous assessment process follows using standardized tools, which are appropriate to the culture and society. National and International tools are used to assess different domains of adaptive behavior and independent living of people with intellectual disabilities. Rehabilitation has gained the due importance on the agenda of the Central Government. The Government has planned and implemented a lot of schemes, programmes and projects which are supported by an 'infrastructural network' of the Disability Division in the MoSJE. MOSJE assure several provisions and schemes for vocational competency development of these people on behalf of government. Finally a comprehensive report is necessary to mobilize the community. Collecting information through assessment report is necessary to make the community more accessible in resource mobilization. 4.2

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Objectives After going through this unit, you will be able to : ●●●●●

Demonstrate knowledge and information about the significance of assessment for PWID's independent functioning including it's aim, principles, approaches and future perspective. ●●●● Demonstrate knowledge and information regarding the importance and stages of transition from school to work along with the assessment procedure. ●●●● Use Indian assessment tools for independent living like BASAL-MR and VAPS. ●●●● Enlist the various provisions and schemes of MOSJE for vocational rehabilitation. ●●●● Discuss and implement the documentation of assessment and by enlisting the component write report on assessment, also use the

95%	MATCHING BLOCK 104/203	W
outcomes for community living. 152 4.3 Significance of Assessment for Independent living of		

PwIDs. Assessment: Concept

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Assessment is a process of collecting data for the purpose of making decisions about			

learners. Assessment information is used to make decisions about what learner have learned, what and where they should be taught, and the kind of services they need. Assessment is an integral part of the learning process, required in order to:

- Judge performance, measured against intended learning outcomes.
- Determine whether progression to the next level is appropriate.
- Provide useful feedback, which indicates attainment and also areas for improvement.
- Identify what has not been understood, thus helping to inform evaluation of teaching methods and approaches.

An

assessment in special education is the process used to determine a child's specific learning strengths and needs, and to determine whether or not

a child is eligible for special education services. Assessment in

special education is a process that involves collecting information about a student for the purpose of making decisions.

Assessment,

also known as evaluation,

can be seen as a problem-solving process (Swanson & Watson, 1989) that involves many ways of collecting information about the student. According to Gearheart and

Geatherat (1990' cited in Pierangelo and Giuliani, 2006),

assessment is "a process that involves the systematic collection and interpretation of a wide variety of information on which to base instructional/intervention decisions and, when appropriate, classification and placement decisions.

Assessment is primarily a problem-solving process."

Considering independence, independent living, rehabilitation as our primary goals; assessment of adaptive behavior/functional abilities becomes very important as this is the first step in the process of planning a programme for a person with special needs.

The importance of assessment should never be underestimated.

In special education, you will work with many professionals from different fields. You are part of a team, often referred to as a multidisciplinary team

that tries to determine what, if any, disability is present in a student. The team's role is crucial because it helps determine the extent and direction of a person's personal journey through the special education experience.

153 Consequently, the skills you must possess in order to offer a person the most global, accurate, and practical assessment. The development of these skills should include

a good working knowledge of the following components of the assessment process

in order to determine the presence of a suspected disability. ●●●●

Collection : Process of tracing and gathering information from many sources of background information on a person. ●●●●

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Analysis : Processing and understanding of patterns in person’s educational, social, developmental, environmental, medical, and emotional history. ●●●● Evaluation : Evaluation of person’s academic, intellectual, psychological, emotional, perceptual, language, cognitive, and medical development in order to determine areas of strength and weakness. ●●●● Determination : Determination of the presence of suspected disability and the knowledge of the criteria that constitute each category. ●●●● Recommendation : Recommendations concerning educational placement and program that needs to be made to the school, teachers and parents.

Functional Abilities and Its Assessment Comprehensive assessment of functional ability is the basis for developing a rehabilitation programme. Functional ability measures a person’s ability to perform ADL’s as well as instrumental activities of daily living. ADL’s include activities performed to meet basic needs, such as personal hygiene, dressing, and toileting, eating and moving. ADL’s also include activities that are necessary for independent living, such as the ability to shop for and prepare meals, use the telephone, clean, manage finances and travel, as one grows older. The significance of assessment is much more than merely testing an individual. It involves gathering information in many ways like testing the individual directly, observing him/her in various environments and interviewing family members and others significant in his/her life. Informations collected through these means are analyzed to make decisions related to the purpose for which the assessment is carried out. Vocational Assessment has very important role to guide the PWIDS in rehabilitation process which is the ultimate goal. A PwID becomes independent only through proper rehabilitation.

154 Through vocational assessment the special educator finds out the skills, performance and interest of the persons with Intellectual Disability which helps in planning and executing the planned vocational training programme in individual and group setup. Vocational assessment can be broadly defined as the “Process of obtaining information about worker’s skills and performance in order to make appropriate training decisions” (Bellamy, Horner and Inamn, 1979).

Vocational assessment is a comprehensive process that systematically utilizes work in

real or simulated as the focal point for assessment and vocational exploration, the purpose of which is to assist individuals in vocational development.

It also incorporates medical, psychological, social, educational, vocational, cultural and economic data in selecting goals for vocational training and rehabilitation. To enhance the independent living of PwIDS the mode of assessment should be functional in nature. Purposes of functional vocational assessment for persons with intellectual disability are : ●●●●

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Provides information on work readiness skills. ●●●● Helps to identify suitable jobs in the community. ●●●● Provides information on jobs selected. ●●●● Identifies areas in which training is needed. ●●●● Emphasizes on-the-job training. ●●●● Evaluates work related skills and work behavior. ●●●● Targets employment for all trainees who are assessed. ●●●● Extends support for job retention Aim of Vocational Assessment The main aim of vocational assessment is to

help in assessing the individual’s skills and capacities and in pin-pointing the strengths and weaknesses for eventual vocational programming. Vocational assessment needs to address four major issues namely: a) Eligibility for services. b) Vocational potential - which involves assessment of intellectual ability, academic achievement, aptitudes and interests.

155 c) Social adaptation and level of psychological and emotional functioning, and d) Evidence of problems that require treatment. Principles of Vocational Assessment Some of the important principles of vocational assessment are as follows:

●●●● The vocational assessment must be ecological. ●●●● Vocational assessment must be carried out in settings where in individuals' response can be evaluated in relation to naturally occurring environmental cues in a situation. ●●●● The assessment instruments should have predictive validity for determining the individual's ability. ●●●● Vocational assessment must include both quantitative and qualitative components. ●●●● Vocational assessment should focus on work related skills and behavior that could impede the employment opportunities. ●●●● Vocational assessment must proceed from global to specific measures as the individuals prepare for gainful employment. Initially, a baseline assessment should be done using criterion referenced norms to obtain information about the individual's vocational potentialities. Then, formative assessment should focus on information related to vocational training Programme. The final stage encompasses on-the-job evaluation. Relevance of

Vocational Assessment Education is a means to independent living and economic independence to everyone including persons with disabilities. To achieve this, vocational training and placement is imperative. When a student is around 15 years of age, preparation for suitable vocation should be the focus of curriculum planning so that when he is 18 years, he will be ready for a vocation. The various

assessment relevant to vocational training and placement include. ●●●● Adaptive behavior ●●●● Ability and current level of functioning ●●●● Aptitude ●●●● Occupational ●●●● Transition

156 ●●●● Ecological ●●●● Life skills ●●●● Family resources and concerns Choice of vocation is dependent on abilities, interests and aptitude. Psychologists play a major role in finding out aptitude of the persons with intellectual disability. There are also tools for occupational assessment and life skill assessment and life skill assessment. As school curriculum focuses on academic and functional skills, transition assessment to vocational training is also a development in recent years. Transition assessment focuses on adaptive behavior, life skill measures, knowledge and skill related competencies. (Cronin & Patton, 2007). What is important is how the test results are interpreted. For a person with intellectual disability, one should consider, job skills, job related skills and generic skills. For example, job skill may be the direct job to be performed, say 'lift operator' in a public building. This will include operating of the lift as required by the users and managing/reporting problems if and when it occurs, maintaining log book and relevant register and so on. The job related skill may be to be on time, related social skills of routine pleasantries and courtesy with people who use the lift, maintaining will groomed, acceptable appearance, and so on. The generic skills refer to prerequisites such as time, travel and money management skills. The assessment report should generate this information systematically so as to appraise the abilities of the candidate in reference and plan a programme to groom him suitably. The vocational assessment profile will include the aptitude of the candidate and will list more than one job skill that he may be suitable for. It is imperative that the vocational assessment report holds information on the health issues if any, about the candidate, benefits and concessions that he is receiving and details regarding registration in employment exchange/special employment exchange. Interpreting the vocational assessment should be with the vocational options in perspective. The avenues may be open employment, sheltered employment or supported self employment, depending on the ability of the student, family resources and plans for the trainee and the ecological details. The vocational training may be through regular vocational education programmes such as the industrial training institutes (ITI), vocational rehabilitation centers (VRCs) or special institutes meant for persons with mental retardation, both, Government and non-government, community based rehabilitation (CBR) programmes is another major avenue for vocational training. Therefore the teacher has to carefully interpret the assessment information by assembling all pertinent information to fit the person in the correct vocational setting for training.

157 As rightly noted by Polloway, Patton and Serna (2007), students must be provided with opportunity to become aware of and explore various occupational options that are potentially available to them. This is possible only by wish interpretation of the assessment reports by the teachers. Approaches of Vocational Assessment Since vocational assessment greatly influences vocational training and rehabilitation, professionals have become increasingly concerned about the use of appropriate assessment strategies. Broadly there are two types of assessment approaches; namely: the traditional and contemporary assessment approaches. Traditional assessment approach measures abilities and prior learning assuming that already learned traits can predict subsequent learning and performance. Traditionally, vocational assessment relied upon standardized techniques, like, intelligence test, measures of aptitudes, interests and norm-referenced instruments to obtain profiles of vocational potential. Contemporary Approach to Vocational Assessment Contemporary approach include three newly developed areas to vocational assessment of intellectually disabled persons. These are assessment of adaptive behavior, survival skills and process assessment approach. Adaptive behavior refers to a wide range of appropriate behaviours in diverse social contexts. The survival skills refer to those vocational and social behaviours which facilitate to obtain and maintain employment. Process approach emphasizes the importance of direct assessment of actual competencies in contrast to product approach of relying on measures to infer performance. Future Perspective The successful placement of Intellectually Disabled individuals into an integrated work setting depends upon a multitude of inter-related personal and situational variables and hence it is imperative to assess a wide range of personal skills and vocational attributes. Professionals are faced with the task of devising vocational assessment package 158 that adopts the best of both traditional and contemporary approaches. The package should provide information that is maximally useful for : a) Identification of target population. b) Programme planning for vocational training. c) Placement and gainful employment. d) Monitoring worker progress. e) Programme evaluation. The vocational assessment package should be simple and time and cost effective. Some of the important areas which can be used as framework for vocational assessment of intellectually handicapped persons include general mental ability, skill levels, language and communication, adaptive behavior, daily living skills, social competence, level of independence and level of integration. These parameters can be measured by use of relevant assessment techniques which would serve the purpose of vocational planning, monitoring progress and evaluating programme effectiveness, information about occupational interests and aptitudes will be useful in matching a person with job that is not only feasible but is also of interest to the employee. In this way vocational assessment can be sensitive to the interaction between skill level and job requisites, thus providing more relevant information for vocational training and vocational rehabilitation. Improving quality of life for handicapped individuals should be overriding concern all of human service programmes and measures of life-style satisfaction should be the prime yardstick to evaluate success in vocational rehabilitation. 4.4 Assessment

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for Transition from School to Work Transition from school to work

Transition from school to work means scientifically plan transfer of a student from school to world of work with requisite skills.

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Effect of Vocational Training on Behavioural S ...
(D29288122)

Comprehensive transition from school to work planning and implementation require participation from all relevant school, parents and the children with intellectual disability Very often, comprehensive transition planning requires restructuring and rethinking of professional roles. Refining professional roles is not enough, participation of

the family members of the persons with intellectual

159 disability and the community must also be encouraged. Transition for any children with Intellectual disability involves several key components such as: ●●●● An appropriate school programme. ●●●● Formalized plans involving parents and the entire array of community that are responsible for providing services and. ●●●● Multiple, quality options for meaningful post-school training and gainful employment.

91%

MATCHING BLOCK 111/203

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Effect of Vocational Training on Behavioural S ...
(D29288122)

Transition plans may begin with a parent, school or an agency responsible for providing post school vocational services.

There are several models of transition from school to work. They are : ●●●● Office of Special Education and Rehabilitation Services (OSERS) model of transition. ●●●● Wehman, Kregal and Barcus - 1985 Transition model. ●●●● Pathways model of transition. ●●●● Halpern's revised transition model (1985). ●●●● NIMH Vocational Transition model for persons with Mental Retardation (Intellectual Disability) The most practiced transition model in Indian context is NIMH Vocational Transition model for persons with Mental Retardation (Intellectual Disability), developed by National Institute for the Mentally Handicapped, Secundrabad. This model states that transition plan is very important stage and role of special educator is also essential in planning and exhibiting the proper transition programme for the overall development of the persons with intellectual disability. The flow chart of NIMH Transition Model has focused on four stages of vocational transition and employment of persons with intellectual disability. The stages are :
160 Ø School Instruction Stage Ø Planning for Transition Ø Placement in Employment Ø Ongoing Support Services
School Instruction

52%

MATCHING BLOCK 113/203

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Effect of Vocational Training on Behavioural S ...
(D29288122)

Stage Systematic school instruction is the foundation of vocational training and related employment. The children with Intellectual Disability are being taught daily living skills through functional curriculum from pre-primary to pre-vocational levels. The functional curriculum

equips the children with intellectual disabilitywith related/required work readiness skills.

81%

MATCHING BLOCK 114/203

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Effect of Vocational Training on Behavioural S ...
(D29288122)

The main objectives of school based curriculum are : ●●●● It develops work habits, positive attitudes, value toward work and daily living skills. ●●●● It provides instructions and guidance for establishing and maintaining relationship at home, school and at work. ●●●● It develops the work

related skills among the persons with Intellectual disability to be placed in the community. ●●●● The students with intellectual disabilitycomplete their education through functional curriculum from pre-primary to pre-vocational with the age range from 3 years to less than 18 years. After completion of stipulated training in particular class/group, decision will be taken for promotion (After achieving more than 80% task prescribed in the

100%

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particular group the student could be promoted to the higher class).

Planning for Transition - This stage consists the community assessment, vocational assessment and individualized transition plan. Community assessment consists of : (i) Analysis of community (SWOT analysis i.e. Strength, Weakness, opportunity and threat analysis), (ii)

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Effect of Vocational Training on Behavioural S ...
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Identification of employment opportunities, (iii) Working out strategies to enlist jobs in community,

and (iv) Job identification within their own community (if possible).

162 Vocational assessment involves : (i) Family assessment of persons with mental retardation, (ii) Generic skill assessment, (iii) Specific skill assessment of the persons with intellectual disability.

Individualized transition plan focus mainly on : (i) Job analysis, (ii) Job matching, and (iii) On job training of the persons with intellectual disability. Placement in Employment The students with intellectual disability are prepared for a job

86% MATCHING BLOCK 116/203

SA Effect of Vocational Training on Behavioural S ... (D29288122)

right from the beginning of their schooling. As they reach the final stage, the search for the real job starts. The training continues in simulated job setting and job sites. By the end of the training, as they leave school, the students with intellectual disability are placed in actual sites. It can be in one of the following types of employment

such as open employment, supported employment, sheltered/group employment and self/home based employment. Ongoing Support Services The role of special educator does not get over once the persons with intellectual disability placed in the actual job site. Even the role gets more important as the persons with intellectual disability who has been placed on real job setup where he/she has to face the new challenges such as expectations of the employer, getting involved with the co- workers etc. Hence, ongoing support services is very essential for

89% MATCHING BLOCK 117/203

SA Effect of Vocational Training on Behavioural S ... (D29288122)

the new employees to continue on-the-job are given importance in this model.

the special educator should observe the persons with intellectual disability on the real job sites and provide additional support as and when it is required to cope up with the new situation. The special educator should also provide necessary skill training to succeed in the carrier through proper counseling to special employee, employer and the co-worker. Gradually reduce the level of support to make the persons with intellectual disability/special employee independent at their work setup/job site, which will enhance the quality of life of the persons with intellectual disability and become an earning member of the family and society.

97% MATCHING BLOCK 118/203

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Planning for Vocational Transition : the Process This is the important phase of a transition model. Transition programme would have no meaning without specific planning. 163 Formal individualized student plans It is essential to develop a formal, individualized transition plan for every student with intellectual disability. Formal plan should specify the objectives to be acquired. The plan should include annual goals and short term objectives that reflect skills required to function on the job, at home and in the community. Transition plan should be comprehensive in scope. In addition to specific job skill training, students must also be prepared to use community services effectively, manage money, and travel to and from work place independently. Plans must take care of all these skill areas to meet the comprehensive needs of the students and at the same time should be individualized. Each individual requires a different set of post-school services. Transition plans must also be longitudinal in nature. Participation of all individuals and agencies involved in the transition process during the initial development

and

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the plan is required till the final placement. The plan initially should be for a longer period and should then be modified once in a year. ☐☐☐☐ Consumer input Wherever appropriate, the person with ID should be consulted for his views and options as he is the consumer of the plan proposed. When the person with intellectual disability is not capable of making decision, the parent or primary caregiver becomes the consumer to represent the student concerned, Therefore, parental involvement in vocational transitional plans is important. They should be made aware of the employment alternatives available to their children. They must acquire knowledge and skills required to participate effectively in transitional planning. Systematically planned parent education programs will improve the effectiveness and duration of parent involvement. Parent education meeting should be conducted by the school personnel for the purpose of enhancing parental involvement. The meeting should. ●●●● Orient the parents to the community agencies providing post-school services to handicapped youth. ●●●● Familiarize parents with specific responsibilities of special education, vocational education and vocational rehabilitation in the vocational transition process. ●●●● Prepare parents to work with various agencies to develop transition plans and to apply for future services. 164

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94%

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Inter-agency co-operation It refers to coordinated efforts across different agencies like schools, rehabilitation services and vocational training centers so as to ensure the delivery of appropriate, non-duplicated services to each student (Morton et al. 1983) However, it is a difficult attempt. Since agencies differ widely in their opinion, services continue to be duplicated. Solutions to these problems are yet to come up. ☐☐☐☐ Employment outcome Employment outcome is the outgrowth of appropriate secondary special educational programme and a meaningful transition plan. As a result of the implementation of individualize transition plan the trainee should be in a position to work in open employment, supported employment, sheltered employment or self-employment setup. It is essential that communities should provide different vocational alternatives, in order to make transition programme a success. ☐☐☐☐ Necessity of follow-up services Though outcome stage is the final stage in the transition model, the responsibility of the special educator does not end with this. In order to monitor the transition effectively, it is the essential to follow-up the individuals-who are placed on jobs in regular interval. It is also essential to ensure job retention by the person concerned. Here, we have to collect information about the student's perception of his/her present job status, parents' satisfaction and the employer's evaluation of his/her work performance. The follow up services in addition to helping the students in retaining the job will help the professional in gathering information about the effectiveness of the transition programme. 4.5

Assessment Tools for Independent Living - BASAL - MR, V APS

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Assessment Tools and methods vary depending on the purpose for which assessment is to be carried out and the type of the data that has to be gathered.

Service delivery for the persons with intellectual disability is typically initiated by the referral, subsequently screening tests are conducted and a rigorous assessment process follows using standardized tools, which are appropriate to the culture and the society. Each tool has

165 its strengths and benefits, and potential utility depending upon the assessment criteria and subject eligibility. Assessment in special education is the most crucial step towards planning and programme for adult. Tools to assess different domains of adaptive behavior are widely used across all countries including India. BASAL-MR - Behavioural Assessment Scale for Adult Living-Mental Retardation.(ReetaPeshawaria, D.K. Menon, Don Bailey et al., 2000) This scale has been developed at National Institute for the Mentally handicapped Secunderabad. This tool is developed for assessing the adaptive and maladaptive behavior of the adult persons with Intellectual Disability (Mental Retardation) above 18 years old. BASAL-MR gives a profile of skill behaviours and problem behaviours, while the problem behavior checklist is meant to measure only the problem behaviours of the adult person withIntellectual Disability. The tool is a standardized assessment tool and used widely in country. The underlying assumptions of BASAL-MR are the same, they recognize that certain skill behaviours and problem behaviours are unique to specific groups. BASAL-MR contains the following domains/areas :

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Part : A ●●●●● Personal care ●●●●● Food management ●●●●● Household tasks & responsibility ●●●●● Community & Leisure ●●●●● Sexuality ●●●●● Work ●●●●● Functional literacy ●●●●● Social-communication

Part - B ●●●●●

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Physical harm towards others ●●●●● Damages property 166 ●●●●● Misbehaves with others ●●●●● Temper tantrums ●●●●● Self-injurious behaviours ●●●●● Repetitive behaviours ●●●●● Odd behaviours ●●●●● Inappropriate social behaviours ●●●●● Inappropriate sexual behaviours ●●●●● Rebellious behaviours ●●●●●

Hyperactivity ●●●●● Fear Administration of BASAL-MR (Pat A) The following points need to be followed while administering the Scale : 1. Read each item within every domain in the scale to assess whether the given adult with Intellectual Disability can or cannot perform that item. 2. As far as possible, use direct observational techniques rather than interview techniques to determine actual performance of the adult, i.e. how will the adult can or cannot perform the said item. 3. It is essential that the user should complete the behavioural assessment of the adult using the scale within a single session. Two or more sessions may be required to assess the adult on certain items on the scale. 4. The user needs

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to administer all the items within a given domain for each and every adult being assessed on the BASAL-MR. 5. The

items within each domain of the BASAL-MR (Part A) have been classified as far as possible on increasing level of difficulty. However, the user is advised to administer all the items on the scale. The present scale doesn't only focus on normal ways to perform an activity but also effective ways to accomplish the task. 6. Use the scale for each adult. Enter the performance of the adult and the score obtained on the scale for all the four occasions.

167 7. The user must refer to the glossary where ever the item in the scale is marked with an asterisk (*). This will help clarify issues related to the administration of certain items. As the user gains experience in the use of the items the need for referring to the glossary will decrease. 8. The user must refer to the material in Chapter VI, where ever the item in the scale is marked with an (#) and use the material while administering BASAL-MR (Part A). Scoring

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of BASAL-MR (PART-A) Each adult with Intellectual Disability may show different levels of performance on every item on the BASAL-MR (Part A), the six possible levels of performance under which each item can be scored are as follows:

Scoring: Adult Performance

79%

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Each adult with Intellectual Disability may show different levels of performance on every item on the BASAL-MR (Part A). The six possible levels of performance under which each item can be scored are as follows : Use

appropriate boxes in the scale

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to enter the scores obtained by the adult on each item. Level Two : Independent (Score 5) If the adult performs the listed behavior without any kind of physical or verbal assistance or clueing/ modelling. It is marked as independent and given a score of 5, Level Two : Clueing/ modelling (Score 4) If the adult performs the listed behavior only with some kind of verbal hints (

example, up, down, right, left, etc.) or gestural clues (example, pointing with fingers, shaking forefinger to hint "no" or having to show him how to do and then only he does, etc.), it is marked as "clueing/modelling" and given a score of 4. To continue the previous example, even after the trainer's verbal instruction to "undress" if the adult is unable to perform, and requires additional verbal clues such as (pull, open, bend etc) in order to perform the activity, then the adult's performance is at the level of clueing.

168

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Level Three : Verbal prompting (Score 3) If the adult performs the listed behavior only with some kind of accompanying verbal statements (

example, "keep holding paper with left hand as you cut", "Now cut in into small pieces" etc.)

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MATCHING BLOCK 127/203

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it is marked as verbal prompting and given a score of 3. Level Four: Physical Prompting (Score 2) If the adult performs the listed behavior only with any kind of accompanying physical or manual help (

example, requires physical help in untying shoe lace, removing shoes from feet, etc.)

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MATCHING BLOCK 129/203

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it is marked as physical prompting and given a score of 2. Level Five : Totally dependent (Score 1) If the "adult does not perform the listed behavior currently although he can be trained to do so (

example, others have to place order in the restaurant and the adult makes no attempt to place order in the restaurant on his own),

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it is marked as totally dependent and given a score of 1. Level Six : Not Applicable (Score 0)

If an adult is not able to perform the listed activity due to physical or sensory handicaps. For example an adult mentally retarded individual with visual impairment will not be able to read train timings or play computer games. Similarly the item "Plays basketball" may not be applicable to an adult mentally retarded individual with cerebral palsy were his upper limbs are grossly affected it is marked as not applicable and given score of 0. Table : Scoring of the Items Responses Scoring Not Applicable 0 Totally Dependent 1 Physical Prompting 2 Verbal Prompting 3 Clueing/Modeling 4 independent 5
169 Administration of BASAL-MR (Part B) The BASAL-

100%	MATCHING BLOCK 132/203	SA	Suman Madan (19-BMU-6111) EDUCATION.docx (D148140404)
MR (Part B) is to be administered individually on each			

person withIntellectual Disability. The trainers/user should go through the entire scale and familiarizes with the meaning of each item before beginning to administer the scale. The following points need to be considered while administering the scale ; 1. Administer BASAL-MR (Part B) as also the (Part A) on the adult withIntellectual Disability. Do not presume or assume whether a particular person has or does not have behavior problems. 2. Read

68%	MATCHING BLOCK 133/203	SA	Research Work Suraj.pdf (D30233331)
each item within every domain in the scale and assess whether the given person with Intellectual Disability has or does not have, the stated			

problem behavior. 3. As far as possible, use direct observation techniques rather than interview techniques to determine if the client has or does not have the stated problem behavior. 4. It is not essential to complete the behavioural assessment of the person using BASAL-MR (Part B) within a single session. Depending on the nature of problem behaviours observed or reported, adults may have to be assessed over few sessions of observation. In some cases, where direct observation of problem behaviors is not possible, information can be elicited using interview method and supplemented from key informants such as parents/caretakers. 5. Enter the performance of the individuals and the score obtained as you administer the scale for all four occasions that you assess and evaluate the client during the year. Scoring

87%	MATCHING BLOCK 136/203	SA	SEID -31 PDF.pdf (D127037695)
of BASAL MR (Part B) The following is the criteria of scoring which need to be used for BASAL-MR (Part B) 1. For			

the

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given person with Intellectual Disability, check each item of the scale and rate them along a three point rating scale, viz. never, occasionally or frequently.			

a) If the stated problem behaviour has "never" been observed or reported in the person, then give a score of 0. b) If the stated problem behavior occurs sometimes, that is,

64%	MATCHING BLOCK 135/203	W	
once in a while or now and then, it is rated "Occasionally" and given a score of 1. c) If the stated problem behavior occurs quite often or, habitually it is rated as "frequently" and given a score of 2. 170 Thus, for each item on the BASAL-MR (Part B) an adult with Intellectual Disability may get any score ranging from 0 to 2 depending on the frequency of that problem behavior. Enter the appropriate score obtained by the person for each item in the			

appropriate boxes. 2. The maximum possible score for a person on BASAL-MR (Part B) is 240. 3. Add

69% MATCHING BLOCK 137/203 SA Research Work Suraj.pdf (D30233331)

the individual scores of the person on each item within a domain and express it as 'obtained score' for that domain. Convert it into percentage for each domain. 4.

Calculate the total 'obtained score' for all the twelve domains and express it as Grand Total 'obtained score' for BASAL-MR (Part B). A lower score indicates fewer/less behavior problems. 5. Convert the total obtained score into percentages by

75% MATCHING BLOCK 140/203 SA Suman Madan (19-BMU-6111) EDUCATION.docx (D148140404)

dividing the total obtained score with the maximum possible score i.e. 240 and multiply by 100. 6.

Administer the BASAL-MR (Part B) according to the above procedure on four occasions each time along with BASAL-MR (Part A). a) The first or initial assessment of the person is done before starting the teaching or training/management programme. This is called as baseline assessment. b) Repeat the next three assessments at the end of every three months i.e. one quarter or after a predetermined interval as per policy. 7. Enter the obtained scores, percentages, grand total scores and percentages attained by the person at the end of each assessment of evaluation in the appropriate boxes. NIMH - VAPS (

100% MATCHING BLOCK 138/203 W

NIMH Vocational Assessment and programming system for persons with Mental Retardation) -

In Indian content the first assessment tool for vocational assessment was developed by the National Institute for the Mentally Handicapped, Secundrabad. The name of the scale is "

100% MATCHING BLOCK 139/203 W

NIMH Vocational Assessment and programming system for persons with Mental Retardation.

This vocational assessment tool was developed by A.T. Thressia Kutty in 1991. By using this tool conducting the vocational assessment is simple, easy and cost effective. Here assessment of the persons with Intellectual Disability is conducted in systematic manner.

171 NIMH VOCATIONAL ASSESSMENT AND PROGRAMMING SYSTEM (VAPS) FUNCTIONAL VOCATIONAL ASSESSMENT MODEL

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There are two aspects in trainee's skills assessment in the functional vocational assessment: • Generic assessment. • Specific skills assessment. Generic skills are the pre-requisite skills/work readiness skills for a specific job selection and training.

Generic skills include personal, social, academics, domestic, safety, hand functioning and mobility skills. NIMH has developed an 80-item generic skills checklist to assess the pre-requisite skills. Based on the job selected, a criterion-referenced checklist can be developed for assessing the pre-requisite skills for specific job training. Specific skills are the information gathered from the community assessment, interviews, the job analysis. The skills identified as required for success on community jobs should be the same skills on which trainees are assessed. Both work skills and work related skills should be considered in relationship to actual jobs available in the community. When trainees reach 18 years of age, vocational trainers should consider specific placements. NIMH Vocational Assessment and Programming System (VAPS) has the following parts: •

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Vocational Profile • Generic Skills assessment Check list • Job Analysis Format • Work Behaviour Assessment Check List • Vocational profile consists of trainees identification data, family history, socio- economic status, readiness skills assessment, associated condition, training received, daily routines, employment experiences (if any), possibilities of employment,

required area of guidance and selection of suitable job. • Generic Skills assessment Check list contains 80 items under 8

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domains. The domains are personal, communication, social behavior, functional academics, safety skills, domestic behavior, mobility and hand functioning and occupational skills.

Tick (v ') means the trainee is able to perform the activity independently without any help or support whereas cross (X) means the student with Intellectual Disability is not able to perform the activity or required kind of support such as physical prompt, verbal prompt and gestural prompt.

173 • Job analysis format consists title of job, Job site, job trainee, job programmer along with main working areas, additional duties, and work-related activities. The

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work related activities include personal, functional academics, sex education, recreation and independent living.

The independent living include the following areas- safety, travel, family and community living, • Work behaviour assessment

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checklist consists physical appearance, personal interaction, regularity and punctuality, communication and social manners, quality and quantity aspects of work.

In this assessment checklist 3 for always, 2 for often, 1 for rare and 0 for never is the norm of scoring. Vocational assessment should be conducted considering the students background by using VAPS in simulated environment (parents also should be included and involved during the assessment) in the generic skill area. Special educator then conduct the work behavior assessment of the trainee. After conducting detail vocational assessment, the special educator/vocational instructor will get assets and needs of the persons with Intellectual Disability. Considering the assets of the persons with Intellectual Disability and job identification through job survey, an individualized vocational training programme should be planned and implemented first in the simulated environment followed by the actual job site. During the training, evaluation should be conducted to find out the learning outcomes of the student with intellectual disability. At the initial level the special educator should provide the different level of support as and when required for the persons with intellectual disability. Gradually the level of support should be reduced to make the persons with intellectual disability independent in the particular task.

4.6 Provisions & Schemes of MoSJE for Vocational Skill Development India is a welfare state that is specially committed to the welfare and development of its citizens in general and of the disadvantaged in particular. It is the Ministry of Social Justice and Empowerment (MoSJE) which is responsible for all round development of persons with disabilities. As the name suggests the MoSJE is to ensure equitable treatment to such sections of the society who have faced and suffered injustice, social inequalities, discrimination and exploitation.

Approach to Rehabilitation: Rehabilitation has gained the due importance on the agenda of the Central Government.

174 The Government has planned and implemented a lot of schemes, programmes and projects which are supported by an 'infrastructural network' of the Disability Division in the MoSJE.

i. National Action Plan - A National Action Plan for Skilling the Persons with Disabilities has been prepared by the Department of Persons with Disabilities (DEPwD) with the following main components:-

- A Project Monitoring Unit (PMU) to be set up in the Department of Empowerment of Persons with Disabilities. The PMU would have the following components : • Training need assessment unit • Content Generation unit • Training Monitoring and Certification unit • Employer Connect unit • IT Unit to provide support for creation of E-learning modules, monitoring of training, E-certification and training centres / creation and maintenance of a job portal.
- The vocational / skill training would be provided by a network of skill training providers led by NGOs, private training institutions and Public Sector/Govt. Sector training institutions like VRCs. The vocational training would be provided by a cluster of training providers scattered over the country, having an established track record of providing skill training with high employability ratio. These training partners would be provided outcome based financial support by Deptt. Of Empowerment of Persons with Disabilities (DEPwD) and Ministry of Skill Development & Entrepreneurship (MSDE). Synergistic support would be provided to these training providers by the National Institutes of DEPwD, training institutions of Ministry of Human Resource Development, Ministry of Micro, Small & Medium Enterprises, other Central Ministries and State Governments.
- A separate cross cutting Sector Skill Council for PwDs is being created in collaboration with Ministry of Skill Development & Entrepreneurship and the private sector. Rehabilitation Council of India (RCI), in consultation with the Sector skill council and various National Institutes of the DEPwD would help generate a homogenous course curriculum and certification mechanism for the training providers.
- DEPwD would help these training providers by connecting them with various private

175 sector organizations and PSUs for providing employment connect as well as for obtaining CSR support. • DEPwD will coordinate with State Governments to support proactively by offering infrastructure and resource support to these clusters of Vocational Training Providers. Targets of the National Action Plan: • The DEPwD, in collaboration with NSDC, has set a target of skilling 5 lakh persons with disability in next 3 years (1 lakh in first year, 1.5 lakh in second year and 2.5 lakh in third year). After achieving the target for three years, we would have achieved a momentum and would have created a robust online-skill training platform enabling us to skill 5 lakh PwDs every year, thus skilling 2 Million more PwDs during 2018- 2022. Thus, till the year 2022, the National Action Plan will lead to skilling of 2.5 Million PwDs (with 70% target employment). This would be a major contribution to "Skill India" initiative of Hon'ble Prime Minister. • The skill training will be provided by a network of more than 200 clusters of Training Partners', thus setting a target of skilling about 500 PwDs in the first year for each of the cluster. The lead NGO may empower and take the help of small NGOs in the rural areas for the skill training but every such training centre will be monitored by the PMU. The network of training providers and capacity thereof will keep increasing every year. Objective & Coverage of the scheme 1) The Scheme aims at providing financial assistance for skill training for persons with disabilities. 2) The scheme will cover Persons with Disabilities (PwDs) with not less than 40% disability and having a disability certificate to this effect issued by a competent medical authority. 3) 30% reservation for women candidates: As an endeavour to encourage women, 30% of the total intake of each training program shall be earmarked for women candidates. 4) The scheme will operate through training institutions recognised by this Department as per the eligibility conditions contained in this scheme. Title of the Scheme and Date of Commencement The title of the scheme is "Financial Assistance for Skill Training of Persons with Disabilities". The scheme is effective

176 from the date of notification of the scheme or from 1st May, 2015 whichever is later. Conditions of Eligibility a. Eligibility of the Trainees (a) A citizen of India (b) A person with disability with not less than 40% disability and having a disability certificate to this effect issued by any competent medical authority. ii) The National Skill Development Corporation India, (NSDC) is a one of its kind, Public Private Partnership in India. It aims to promote skill development by catalyzing creation of large, quality, for-profit vocational institutions. NSDC provides funding to build scalable, for-profit vocational training initiatives. Its mandate is also to enable support systems such as quality assurance, information systems and train the trainer academies either directly or through partnerships. NSDC acts as a catalyst in skill development by providing funding to enterprises, companies and organisations that provide skill training. It will also develop appropriate models to enhance, support and coordinate private sector initiatives. The differentiated focus for the 21 sectors under NSDC's purview and its understanding of their viability will make every sector attractive to private investment. iii) The National Handicapped Finance and Development Corporation (NHFOC) was set up by the Ministry of Social Justice & Empowerment, Government of India on 24th January 1997 as a company not for profit under section 8 of Companies Act 2013 with the objective of serving as a catalyst in the economic development of PwDs. NHFDC functions as an apex financial institution of the country and provides financial assistance, in the form of concessional loans, to Persons with Disabilities for self-employment ventures, higher education and other activities. The fund is channelized through the State Channelizing Agencies (SCAs) nominated by the respective State/ UT Government(s) Also, the concessional loan of NHFDC is made available through some Public Sector Banks (Punjab National Bank, Andhra Bank, IDBI Bank and Bank of Baroda) for self-employment and higher education. NHFDC provides Self Employment Loan ; Upto Rs. 25 lakh (Interest rate of 4-8% p.a); Education Loan : Study in India (Rs. 10 lakh), Rs. 20 lakh (abroad) interest rate @ 4% p.a; Skill Training to PwDs : Free of cost and stipend of Rs. 2000 per month; Scholarships : 3000 scholarships for professional courses.

177 iv) The Government of India has set up 17 Vocational Rehabilitation Centres (V.R.C's). The main purpose of these centres is to evaluate the capabilities of disabled clients. They also sponsor candidates to potential employers. There is acute shortage of sheltered workshop for severely disabled persons. The Ministry of Social Justice and Empowerment is therefore exploring the production centres manned largely by disabled persons on the pattern of welfare factories in China. The main objectives of V.R.C's are: • Vocational evaluation and adjustment of disabled persons • Assessment of the medical, psychological, rehabilitation needs • Assist in developing rehabilitation plans depending upon the specific needs • Sponsor disabled registrants against notified/identified vacancies • Act as distribution centre's for various schemes like scholarship/aids and appliances • Make referrals to financial institutions for funding self-employment ventures v) National Awards for People with Disabilities : On the International Day of Disabled Persons on 3 rd December each year, the MoSJE has been giving Nationals Awards since 1969 in different categories including best employer of the disabled, outstanding employee, best individual, institutions, creative disabled persons etc. it has served the aim of creating awareness amongst the disabled persons and brought them in the mainstream. vi) District Disability Rehabilitation Centres (DDRC) -Background During 1985-1990, District Disability Rehabilitation Centres (DDRCs) started as outreach activity of the Ministry of Social Justice and Empowerment of Government of India for providing comprehensive services to the persons with disabilities at the grass root level and for facilitating creation of the infrastructure and capacity building at the district level for awareness generation, rehabilitation and training of rehabilitation professionals. Suitable changes as were deemed necessary for the PwD Act have been effected accordingly. The District Disability Rehabilitation Centres are set up under the Plan Scheme . "

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Scheme for implementation of Persons with Disabilities (Equal Opportunities, protection of Rights and Full Participation) Act 1995 (

SIPDA). Initially, establishment of DDRCs started as an out reach activity of this Ministry for providing comprehensive services to the persons with disabilities at the grass root level and for facilitating creation of the infrastructure and capacity building at the

178 district level for awareness generation, rehabilitation and training of rehabilitation professionals. Objectives of setting up of DDRC Setting up of District Disability Rehabilitation Centres (DDRCs) which would provide rehabilitative support to persons with disabilities through • Survey & identification of persons with disabilities through camp approach; • Awareness Generation for encouraging and enhancing prevention of disabilities, early detection and intervention etc. • Early Intervention; • Assessment of need of assistive devices, provision/fitment of assistive devices, follow up/repair of assistive devices. • Therapeutic Services e.g. Physiotherapy, Occupational Therapy, Speech Therapy etc.; • Facilitation of disability certificate, bus passes and other concession/facilities for persons with disabilities; • Referral and arrangement of surgical correction through Govt. & Charitable institutes; • Arrangement of loans for self employment, through banks & other financial institutions; • Counseling of persons with disabilities, their parents & family members; • Promotion of barrier free environment; • To provide supportive and complimentary services to promote education, vocational training and employment for persons with disabilities through:- • Providing orientation training to teachers, community and families • Providing training to persons with disabilities for early motivation and early stimulation for education, vocational training and employment. • Identifying suitable vocations for persons with disabilities, keeping in view local resources and designing and providing vocational training and identifying suitable jobs, so as to make them economically independent. • Provide referral services for existing educational training, vocational institutions.

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Documentation of Assessment, Result Interpretation and Report Writing-Implications of Assessment, Outcomes for Community Living. Documentation of Assessment

The assessment process involves collection of data through various modes. This

may involve collection of data from various sources such as parent, caretaker, teachers, therapist, psychologist, social workers, and observation of child, testing informal and formal setting etc. Further the data may be collected in one setting or over a span of time.

This is essential as the assessor or teacher aims at collecting information in all the areas of development of the child with mental retardation by using the appropriate and standardized special education assessment tool. Information should be collected through observation, interview and direct testing. The assessment data is used for the classification and placement decisions of students with mental retardation. The checklist should be kept properly for the documentation of the assessment report. Depending on the need of the child, age, ability, level etc different checklist may be used. Every standardized tool have data collection formats and specific scoring system to record the assessment. Initially case history format is used as a basic documentation tool for assessment. Psychologist, therapist and others involved in the assessment process may use different self-developed or standard formats to document assessment information. The assessment documentation process must be able to elicit and document every relevant information regarding the child, family, community etc those may be even distantly be related to making decisions about the child's educational programme. Result Interpretation

Interpretation is

a process of perceiving the pros and cons of assessment report or evaluation report. Interpretation helps the educator, the parents and other professionals' associated with the training programme to understand the assessment report. It is a

relevant factor influencing the training programme. Interpretation must be done at three levels of assessment. Level - 1 Interpretation during the initial assessment. Level - 2 Interpretation during the training programme Level - 3 Interpretation after the completion of training programme.

180 Level - 1 Interpretation during the initial assessment. When an individual training programme is decided for a student, it is essential to collect information about the student's

background, student's present performance,

student's ability and resources to be mobilized to accelerate the training programme. Information collected from all the above factors must be interpreted to see all possible positive factors that could be integrated for the training programme.

• Interpretation of Personal Data • Interpretation of Student's Ability • Interpretation of Student's Performance • Interpretation of Resources Interpretation of Personal Data

During history taking to understand the personal data such as pre-natal, natal, post- natal, education, family, social, medical, immunization and developmental data ; it

is essential to conclude the factors responsible for the student's condition, considering the above factors to understand the student helps in developing training programme for the student.

Interpretation of

Student's Ability It is essential to understand the student's

ability in terms of intelligence, and aptitude. Assessment also should focus to understand the interest and attitude of the student for different training Programmes. The

student's

overall ability and specific ability must be assessed and interpreted to decide specific task for training. Interpretation of

student's Performance Student's performance must be understood from different angles. Usually the performance is

elicited by using a behavioural scale during assessment. Other than the result of the behavioural scale, the past opportunity given to the student must be noted. The background information of the student like the family details,

education, involvement in training, and exposure and social-cultural background must be understood for giving a conclusive statement on performance. Interpretation of Resources Data must be collected to understand the

resources

available for development of the student and training to the student. For example, toilet training to a ten year by the Intellectual disability.

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Before deciding the training place, nature and training programme, it is essential to know a few aspects like:- 181 • The type of toilet used by the family • The person would be involved in training • The cultural belief for toileting • Cleaning methods after toileting etc. Developing teaching materials for the student must be based on the resources of the parents; if the parents are affordable to purchase highly costly materials then it will be worthwhile to prescribe such materials. On the other hand, the poor people could be advised to develop teaching materials

with locally

available materials with less expenditure. Level - 2 : Interpretation during the training programme It is essential to see the speed of training, and other relevant factors influencing training during different phases of the programme.

Understanding the result, the methods, the efficiency of materials, and the usefulness of techniques is essential to enhance the training programme. Hence, it is essential to interpret the intermittent improvement, and other associated factors for training

programme. For example, brushing skills is decided for training a eight years trainable child with Intellectual disability.

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The period decided for training was three months. After two months of training, it was observed that, the student has achieved the task. But, the parents are still continuing the training as because the period was decided for three months.

There may be other instance wherein a particular strategies or a particular teaching aid may not be effective for a long time; however the training is continued with same strategy and materials due to absence of intermittent interpretation.

Here, it must be

noted

that, interpretation during the training programme would help to bring changes

in

the training programme as per the requirement. Level - 3 : Interpretation after the completion of training programme

After the completion of training programme, it is essential to review and understanding the various factors those influenced the training programme. Interpretation of the overall result, specific result i.e. result in each skills, the methods used for training programme

such as - a) play way method, b)

structured method, c) project method and techniques used for training programme. It is essential to understand the whole scenario of the training programme. It also give idea for deciding the further training programme to be given to the student.

The interpretation

of level - 3 is also helpful for modification in existing programme in case the goals were not achieved and also for further planning.

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Report writing The interpretation and reporting of assessment results are guided by a set of general principles. Using Structured format : When analyzing and reporting assessment result, remember the reasons for referral and work toward answering the main assessment questions. Whether the interpretation and report are verbal or written, you must proceed in an orderly fashion to present a cohesive picture of the student's learning problems. The

major components of an assessment report are :-

- Identification Data—All essential demographic information about the student : name, gender, address, birth date, and so forth.
- Reason for Referral - The basis for and source of the referral.
- Relevant Background - Significant information about the student’s medical, developmental, educational, and socio-cultural background.
- Behavioural observations - Description of the student’s behaviour during assessment.
- Assessment Result and Discussion - Scores and other results in pertinent areas, such as personal, social, communication,

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reading, mathematics, and so forth.

- Summary and Conclusions - A brief statement of the level of performance and strengths and weaknesses in the areas assessed.
- Recommendations - The goals and objectives, special service, and service delivery model(s) appropriate for the student’s educational needs.
- Data Sheet - All the formal and informal results for independent analysis and reference.

Some important tips for report writing :

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Report only relevant data - Choose the most pertinent data to answer the assessment questions and disregard the rest.

- Report information once and then mention it only as needed avoid making the same point again and again. For example, distractible behavior has bearing upon all the results. Discuss it once in the appropriate place and then clarify its significance at a crucial point.
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Report facts and data accurately and simply-avoid making unfounded statements or inferences.

- Insert sensitive information tactfully-when information may be offensive or unpleasant to someone (for example, information about student abuse, a recent death in the family, or teacher-parent disagreements) and significant for interpreting the data, choose diplomatic language to make the point.
- Note the source of any information and report the data accurately - When appropriate, attribute statements to the parents, teachers, and other people who made them. Useful phrases are “As his mother reported...” or “From an interview with her teacher...”
- Use similar references in the case of tests and informal procedures, including observations and task analysis, “As measured by the WISC- R...” or “From observations in the classroom...”
- When reporting data from previous assessments do so briefly and with full reference to the source -

For example, a useful phrase may be. “The results of a recent psychological examination at Children’s Clinic ...”

- If appropriate, similarities or differences with the data to be reported can be noted in the discussion of results.
- Mention the absence of critical data, such as recent vision and hearing assessments - such data may be necessary for a full interpretation. When unavailable, it may be one of the recommended areas for further assessment.
- Report any test administration errors or problems and reservations about the findings. This should also be done only once and at the most significant point. Of course, if there were major problems in the administration of tests and the results are highly questionable, you should discard and not report them.
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Consider information about instructional factors in the classroom and non- instructional correlates (medical, social,

and cultural) - Test results must be interpreted in relationship to many factors. Among instructional variables are past educational experience and current conditions in the classroom. For example, a teacher may be using a particular procedure that enhances or limits good achievement. • In addition, the student’s medical, social, and cultural background may have bearing upon school performance. For example, a vision problem may be compounding reading difficulties. • Address discrepancies between data and present possible explanations. For example, there may be disagreement among test results, or between test results and a teacher’s

184 opinion. It may be possible to explain these discrepancies by referring to test construction, student behavior, classroom procedures, and so forth. • When interpreting test results, remember that there are two levels of analysis : statistical and clinical-interpret tests and other procedures individually and statistically first. Statistical analysis is computing the scores, identifying the important scores for interpretation, and perhaps arranging them on a profile. Clinical analysis establishes whether the performance is average, what the strengths and weaknesses are, and how the performance on the tests relates to other factors. Placing values on and the making judgments about test performances fall into the clinical analysis category. • Selectively use theoretical constructs - Their use in interpreting and reporting results may be considered part of a description of the pattern of learning problems or an attempt to unify the results of assessment. However, these efforts may lead to unwarranted statements of cause and effect. • Reports are written keeping in mind different implication. Different implications of report writing are given below : A)

Writing report for administrative decisions • Diagnosis and certification. • IQ assessment. • Placement in appropriate schools,

Vocational training institute. •

Eligibility to various benefits and concessions offered by the governments. • Access to suitable adaptive devices for independent mobility, communication and learning. B) Writing reports for educational programming / vocational

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<p>programming. This report is solely written by the teacher at the initial stage, formative stage and summative stage for promotions to next level or for future use. The following points are to be kept in mind while writing the reports. • Objectively • Relevance or use • Clarity in content and presentation 185 • Authenticity • Unbiased • Up to date • Simplicity • Precise • Provision of support documents where applicable</p>		

C) Writing reports

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<p>for referral Referrals are made in the beginning at the time of initial team assessment, during the implementation of the educational training and / or on the completion of school education.</p>		

D) Writing reports

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<p>for alternative placements This is a concept more applicable to the western countries where the placements are governed strictly by law. A team decision becomes absolutely essential to decide on the placement of the child with inclusion in focus. Community - In</p>		

general terms, a community is a sub-set of society but larger than a family. It constitutes a group of people, living together in social context generally with a common goal, common cause and develop a sense of belongings. Using assessment information for Community support for Individual with Intellectual Disability : Collecting information through assessment report is necessary to make the community more accessible in resource mobilization. Resource mobilization is a philosophy of offering services to disabled persons in their own communities. The persons with intellectual disability face direct and indirect discrimination in society ; assessment result gives authentic information of not only their weaknesses but also their strengths, hence helps to create a positive attitude of the society towards them. vhis or her strengths and weaknesses, abilities and interests along with demographic profile, these data facilitates the community resource to be mobilized to promote the education and rehabilitation of people with intellectual disabilities. The society can make itself more accessible by the help of a compact assessment report. Community Mapping - This means preparing a list of all those resources in the community, which can help the education of children with intellectual disability.

186 Networking - for developing community awareness and resource mobilization for rehabilitation of persons with intellectual disability lays in establishing networks i.e. linkages, among those who are directly and indirectly responsible for social change. 4.8 "Check Your Progress" 1. Define Assessment. Write down the significance of assessment for adult with intellectual disability.

.....
..... 2. State the role of vocational assessment for the rehabilitation of persons with Intellectual Disability.

.....
..... 3. Enlist five purpose of vocational assessment.
.....

.....
..... 4. State any three important principles of vocational assessment.

.....
..... 5. State the approaches of Vocational Assessment.
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187 6. Explain the future peerserspective of Vocational Assessment.
.....

.....
..... 7. Enlist the key components of transition for persons with Intellectual Disability.

.....
..... 8. Enlist the four staes of trsition according to NIMH transition model
.....

.....
..... 9. Write short notes on the following : a) BASAL—MR b) VRC c) DDRC d) NIMH—VAPS
.....

.....
..... 10. Write down the several implications of report writing.
.....

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188 4.9 Let us Sum up ●●●●●

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The information gained through the assessment process have to be utilized meaningfully for

the programme planning for independent living of PwIDs. Vocational Assessment has very important role to guide the PWIDS in rehabilitation process which is the ultimate goal. A PwID becomes independent only through proper rehabilitation. Through vocational assessment the special educator finds out the skills, performance and interest of the persons with Intellectual Disability which helps in planning and executing the planned vocational training programme in individual and group setup. Initially, a baseline assessment should be done using criterion referenced norms to obtain information about the individual's vocational potentialities. Then, formative assessment should focus on information related to vocational training Programme. The final stage encompasses on-the-job evaluation. Choice of vocation is dependent on abilities, interests and aptitude. The avenues may be open employment, sheltered employment or supported self employment, depending on the ability of the student, family resources and plans for the trainee and the ecological details. Since vocational assessment greatly influences vocational training and rehabilitation, professionals have become increasingly concerned about the use of appropriate assessment strategies. Broadly there are two types of assessment approaches; namely: the traditional and contemporary assessment approaches. ●●●●●

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It is essential to develop a formal, individualized transition plan for every student with intellectual disability. Formal plan should specify the objectives to be acquired. The plan should include annual goals and short term objectives that reflect skills required to function on the job, at home and in the community.

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Wherever appropriate, the person with ID should be consulted for his views and options as he is the consumer of the plan proposed.

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Parent education meeting should be conducted by the school personnel for the purpose of enhancing parental involvement.

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Inter- agency co-operation refers to coordinated efforts across different agencies like schools, rehabilitation services and vocational training centers so as to ensure the delivery of appropriate, non-duplicated services to each student.

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As a result of the implementation of individualize transition plan the trainee should be in a position to work in open employment, supported employment, sheltered employment or self-employment setup.

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The follow up services in addition to helping the students in retaining the job will help the professional in gathering information about the effectiveness of the transition programme.

Transition from school to work means

189 scientifically plan transfer of a student from school to world of work with requisite skills.

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SA Effect of Vocational Training on Behavioural S ...
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Transition plans may begin with a parent, school or an agency responsible for providing post school vocational services.

The most practiced transition model in Indian context is NIMH Vocational Transition model for persons with Mental Retardation (Intellectual Disability), developed by National Institute for the Mentally Handicapped, Secunderabad. This model states that transition plan is very important stage and role of special educator is also essential in planning and exhibiting the proper transition programme for the overall development of the persons with intellectual disability. ●●●●● BASAL-MR–Behavioural Assessment Scale for Adult Living- Mental Retardation. (Reeta Peshawaria, O.K. Menon, Don Bailey et al., 2000) .This scale has been developed at National Institute for the Mentally handicapped Secunderabad. This too! is developed for assessing the adaptive and maladaptive behavior of the adult persons with Intellectual Disability (Mental Retardation) above 18 years old. BASAL-MR gives a profile of skill behaviours and problem behaviours, while the problem behavior checklist is meant to measure only the problem behaviours of the adult person withIntellectual Disability. In Indian content the first assessment tool for vocational assessment was developed by the National Institute for the Mentally Handicapped, Secunderabad. The name of the scale is “

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NIMH Vocational Assessment and programming system for persons with Mental Retardation.

This vocational assessment tool was developed by A.T. Thressia Kutty in 1991. By using this tool conducting the vocational assessment is simple, easy and cost effective. Here assessment of the persons with Intellectual Disability is conducted in systematic manner.

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There are two aspects in trainee’s skills assessment in the functional vocational assessment: Generic assessment, Specific skills assessment. ●●●●●

The Government has planned and implemented a lot of schemes, programmes and projects which are supported by an ‘infrastructural network’ of the Disability Division in the MoSJE. i) National Action Plan - A National Action Plan for Skilling the Persons with Disabilities has been prepared by the Department of Persons with Disabilities (DEPwD). The Scheme aims at providing financial assistance for skili training for persons with disabilities. ii) The National Skill Development Corporation India, (NSDC) is a one of its kind, Public Private Partnership in India. It aims to promote skill development by 190 catalyzing creation of large, quality, for-profit vocational institutions. iii) The National Handicapped Finance and Development Corporation (NHFDC) was set up by the Ministry of Social Justice & Empowerment, Government of India on 24 th January 1997 as a company not for profit under section 8 of Companies Act 2013 with the objective of serving as a catalyst in the economic development of PwDs. iv) The Government of India has set up 17 Vocational Rehabilitation Centres (V.R.C’s). The main purpose of these centres is to evaluate the capabilities of disabled clients. They also sponsor candidates to potential employers. v) On the International Day of Disabled Persons on 3 rd December each year, the MoSJE has been giving Nationals Awards since 1969 in different categories including best employer of the disabled, outstanding employee, best individual, institutions, creative disabled persons etc. it has served the aim of creating awareness amongst the disabled persons and brought them in the mainstream. vi) During 1985-1990, District Disability Rehabilitation Centres (DDRCs) started as outreach activity of the Ministry of Social Justice and Empowerment of Government of India for providing comprehensive services to the persons with disabilities at the grass root level and for facilitating creation of the infrastructure and capacity building at the district level for awareness generation, rehabilitation and training of rehabilitation professionals. ●●●●●

The assessment process involves collection of data through various modes. This

may involve collection of data from various sources such as parent, caretaker, teachers, therapist, psychologist, social workers, and observation of child, testing informal and formal setting etc. Result Interpretation Interpretation is

a process of perceiving the pros and cons of assessment report or evaluation report. Interpretation helps the educator, the parents and other professionals' associated with the training programme to understand the assessment report. It is a relevant factor influencing the training programme.

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The interpretation and reporting of assessment results are guided by a set of general principles.

The interpretation and reporting should present a cohesive picture of the students' performance. It should include the following components : Identification data, reason for referral, relevant background, behavioral observations, 191 assessment result and discussion, summary and conclusions, recommendations, data sheet. There can be many purposes of report writing. 4.10 References Peshawaria, R, Menon, D. K. Bailey, D., Skinner, D., Ganguly, R., Rajeskhar, C.H. (2000)., Behavioural Assessment scales for Adult Living- Mental Retardation. Secunderabad : NIMH Thressiakutty, A. T. (1998) Vocational Assessment and Programming System for Persons with Mental Retardation. Secunderabad : NIMH Thressiakutty.

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A.T. & Rao, G.L., (2004). Curriculum for vocational education, transition of persons with mental retardation from school to work. Secunderabad :

NIMH Pati, N. C. (2006). Causes, Prevention, Identification and Assessment of Mental Retardation. New Delhi :Kanishka Publication. NIMH Secunderabad vocational training and employment of persons with mental retardation (A handbook for professionals, employers and parents in India) Myreddi, V. & Narayan, J. (2002). Self InstructionalMaterial: Assessment and Evaluation. Bhopal :Bhoj Open University. Baquer, A. & Sharma. A. (1997). Disability Challenges vs. Responses. New Delhi: CAN Pati N.C. (2010) Intellectual Disability, Jewels International, Bhubaneswar. Central Sector Scheme of Financial Assistance for skill training of persons with disability. (To be effected from the year 2015-16) <http://ncedp.org/employ/sch-vocatn.htm>

192 Unit - 5 □

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Assessment of Family Needs Structure 5.1 Introduction 5.2 Objectives 5.3 Significance of psycho-social need and its implication in family 5.3.1

Psychosocial needs: Significance 5.3.2 Assessment

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of psychosocial needs in the family 5.4 Assessment of parental needs and its implication in planning IFSP 5.4.1 Need of the parent 5.4.2 Assessment of parental need 5.4.3 Implication in planning IFSP 5.5 Assessment of sibling needs and its implication in planning IFSP 5.5.1 Sibling need 5.5.2 Assessment of

sibling need 5.5.3

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Implication in planning IFSP 5.6 Assessment of extended family needs and its implication in planning IFSP 5.6.1 Need of grandparents 5.6.2 Assessment of

grandparents need 5.6.3

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Implication in planning IFSP 5.7 Assessment of family and community resources for inclusion and strengthening of family 5.7.1 Assessment of family 5.7.2

Assessment of community resources Documentation, recording and reporting

and assessment result a) Components of assessment report: Documentation and recording b) General Principles of reporting

193 5.8 Check your progress 5.9 Let us Sum up 5.10 References 5.1. Introduction Family is the smallest unit of the society in which members are held together by marriage of two person of opposite gender of all human groups, family is the most important primary group which consists of with or without children.

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The benefits of family centered interventions are being greatly recognized now more than before. Efforts are being directed towards involving parents and other family members in the training and rehabilitation of the individuals with intellectual disabilities precisely for the reasons that such approaches results positive in both parent, family and child outcomes. It helps in enhancing child development, reducing stress in the family, increasing family coping strategies and also leads to improve relationships within the family. For strengthening the family having children with intellectual disabled the intervention need to be directed towards meeting the needs of the index child ,of parents, siblings and extended family members as also recognize ,promote and utilize the existing strengths of the families.

What is needs ? Needs can be defined as the gap between what is and what should be. A need can be felt by an individual, a group, or an entire community. It can be as concrete as the need for food and water or as abstract as improved community cohesiveness. An obvious example might be the need for public transportation in a community where older adults have no means of getting around town. More important to these same adults, however, might be a need to be valued for their knowledge and experience. Examining situations closely helps uncover what is truly needed, and leads toward future improvement. What is Resouce? Resources, or assets, can include individuals, organizations and institutions, buildings, landscapes, equipment — anything that can be used to improve the quality of life. What is Family? "Family is a group of persons united by the ties of marriage, blood or adoption, constituting a single household interacting and inter-communicating with each other

194 in their respective social roles of husband and wife, father and mother, son and daughter and hence creating a common culture." (Buigess and Locke). It is of different types like Joint, nuclear, extended. What is extended family?

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An extended family is a family that extends beyond the nuclear family, consisting of grandparents, aunts, uncles, and cousins all living nearby or in the same household. An example is a married couple that lives with either the husband or the wife's parents.

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To enhance the effectiveness of the family it is important to identify the needs of

individual family members, locate resources for meeting those needs and help by guiding the family members in utilizing these identifying resources. Such a realization has already led to the amendment of the U.S. Education of Handicapped Act of 1986(PL. 99-457)In the revised version of PL 99-457 necessitates by law to develop individualized family service plan(IFSP) for families who have children with developmental delays or those who are at risk for developmental delays. The law includes IFSP only for the families having children below 3 years, for reasons best known to the people involved in such decision making. What is IFSP?

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An Individualized Family Service Plan (IFSP) is a working document produced collaboratively by program staff and family members that contains the agreed upon Early Intervention services for an eligible child and family. Based on a multidisciplinary eligibility evaluation and any completed assessments, the plan includes services necessary to enhance the development of an eligible child, and the capacity of the family to meet the child's needs 5.2.

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Objectives After going through the unit you will be able to: - Understand

about significance of psychosocial needs and its assessment in the family. - Describe IFSP - Describe different types of parental, sibling, extended family needs.

195 - Distinguish between the various types of needs felt by the family members. - Describe the implications of different

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needs and its implication in planning IFSP. - Understand the assessment of family and community resources for inclusion. - Describe the process of documentation, recording and reporting. -

Discuss the General principles of the interpretation and reporting of assessment results 5.3 Significance of Psychosocial Needs and its Assessment in Family Learning is a very important phenomenon of human life and it occupies a central position in shaping human behaviour. A child begins his career as a learner at the time of birth and perhaps even before. Learning plays a crucial role in his development, it is through learning that he adopts the habits, customs and values the characteristics of the culture in which he is reared. 5.3.1. Psychosocial needs: Significance Integration of any child with disability into the society, as far as practicable, is one of the basic objectives of any civilized country. In order to maximize his social integration the child has to be equipped with his potentials which will lead to societal gains by avoiding individual loss and avoiding living of a parasitic life on his family. In order to achieve this objective it is of primary importance to 1. Understand different kinds of disabilities. 2. Different psycho-social aspects,i.e; self and social understanding ,thinking about the self, emergence of self -recognition and early emotional and social development involved in them. 5.3.2 –Assessment of psycho-social needs in family It would, therefore, be appropriate to assess the different psycho-social aspects including cognitive, personality, emotional, motivational and other socio-cultural factors separately. Other than these societal institutional level and group interaction level also can be assessed.

196 The assessment of - Cognitive - Personality - Emotional - Motivational and - other socio-cultural factors will be done by using daily routine assessment schedule and environmental assessment format .These assessment will be done based on criterion referenced test. 5.4

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Assessment of Parental Needs and its Implication in Planning IFSP

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Parents having a child with intellectual disabilities experience a variety of stressors and stress reactions related to the child's disability. (Orr et,al;1993) 5.4.1.

Need of the Parents – Parents have various needs after getting

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impacted in may ways because of having a child with intellectual disability.

The needs are as follows – 1. Information Needs – It includes the various information condition such as the condition and level of the disability, information regarding assessment reports and outcomes, what will be expected achievement from the particular child, information needs regarding repetition of dangerous sequences and incidence like before. The parents should have proper information regarding materials related to the disability. There should also be a need of information regarding diet and nutrition. 2. Child Management – The parents should have the following need during and regarding the management and intervention of the child with disabilities:- - Child rearing practice - Discipline - Problem behaviour management - Make the child co-operative - Training regarding the child i.e; Individualized Family Support Plan (IFSP)

197 and Individualized Educational Programme (IEP). - Regular parent and teacher interactions - All round development of a child irrespective of disability. 3. Service – This will include all the facilities, services and training procedures like: - Services availability - Making decision about school - Training materials making and arrangement of ingredients. - Home based training programme. - Both positive and negative effect of regular and special school. 4. Facilitating Interaction – Parents are informed and counselled about the following daily interaction: - Explaining about the child's condition - Explain about the priority need of the family involvement. 5. Hostel – Parents find hostel or residential unit for their disabled child during their job time and after their life time .So there are following needs regarding hostel needs : - Nature of hostel - Making decision regarding staying and keeping at hostel. 6. Personal –Emotional - This need is most important for the parents having child with disability. This includes: - Time to self both the parents. - Talk about personal problems. - Helping others and asking help when sad or depressed. - Physical health problems. - Planning and discussion about another child. 7. Personal –Social - Due to having a child with disability the parents become rigid, sometime depressed and they become very contracted within themselves. For this reason the personal – social needs are aslo important for these parents.

198 - Discussion with friends. - Discussion with other parents. 8. Physical Support - Support may be of physical, social, moral, financial matter. Physical support includes human resource support along with appropriate physical structure because these parents's own physical health is reported to be a greater risk. To overcome it following points is considered: - Manual support for transportation - Domestic support for child care. - Transportation for child's training. 9. Marriage - Every parent have a dream about a new social and emotional life of their children. There is various misconceptions also exist regarding the cure of mental retardation just being married. Parents think about its solution through marriage of their children. 10. Sexuality - Sexual need and urge also include an important need of every human being according to Maslow's hierarchy (Physiological need which include sexual need).and it cannot be denied also. Parents also become tensed about the sexuality and sexual needs of their children. They become tensed about the non fulfillment or expression of those needs in any situation. There should be proper guidance about this matter to the parents having disabled child. 11. Financial - Financial burdens may mount on the parents having children with intellectual disabilities. This includes - Financial help for services and service providers - Financial help to buy and maintenance of training materials. - Financial help for other intervention facilities and appointment of human resources. 12. Government Benefits - Parents should be aware about various central and state government policies regarding concessions and benefits i.e.; getting disability certificate, transportation facilities, educational, financial facilities, awareness about grievance readdresses. Parents should also have a need to know about various national acts and policies regarding disability. The main acts include PWD Act, 1995, National Trust Act, 1999, Right to Education Act, 2009 which will give them opportunity to avail all 199 types of facilities and concessions. 13. Vocational Planning- Vocational efficiency is one of the important aim of special education .To fulfill this aim the parents should know about the vocational rehabilitation, job survey, various employment models etc. Vocational rehabilitation makes a person with intellectual disability functionally independent in the community. 14. Future Planning- Irrespective of the disability as well as any human being every parents have a dream about their child and accordingly they plan for it.It becomes life long responsibility oriented programme for those parents who have a child with intellectual disability. For this future planning parents need to do: - Financial Planning - Prepare and mention the appropriate inheritance for their property. - Financial and physical structure planning about social security of the child. 15. Family Relationship -

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The presence of a child with intellectual disability in the family calls for a lot of adjustment on the part of the parents and the family members.

Interpersonal relationships with in and between

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the family members get affected. Marital harmony gets disturbed owing to various child related reasons such as meeting extra child-care responsibilities and burden, affecting sexual relationship between parents due to less privacy, more fatigue and fear of producing another child with disability. 5.4.2

Assessment of parental need A semi-structured interview schedule NIMH-FAMNS (Parents) is used to elicit the needs of parents having children with intellectual disability. It consists of total 19 main area and 60 items /needs. The score of each item on the schedule ranged from (no need) ; 1 (Not sure) ; 2 (Little a need) and 3 (Very much a need). 5.4.3 Implications in planning IFSP

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The IFSP is the written plan that lists services and supports to eligible children and families.

At Early Intervention, we believe that no one knows the

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child as well as parents. Parents are a partner in developing the IFSP, and it is important for them to be part of the process.

In this intervention programme parents will identify the assests, needs, choices of their children and also set the hope about their child which have a great implication in all over family life which are as follows: - Individualized need based intervention programmes must be carried out with parents and goals for intervention should always be set in consultation with the parents.

200 - In order to seek greater co-operation from parents, it is essential to meet identified parental needs along with the child's specific training needs. - Understanding and knowledge related to the functioning of the families, group dynamics and also skills in counselling, supportive psycho-therapy are essential for working effectively with families having individuals with disabilities. - Service providers need to equip themselves with the necessary knowledge and basic counselling skills to communicate diagnosis and needful information to parents in an empathetic and sensitive way. - Irrespective of the age of the child with intellectual disability, parents are concerned about the future planning for their child; they are eager to learn about his /her expected achievement and progress, vocational rehabilitation and issues related to sexuality and even marriage. Professionals need to counsel parents on such issues rather than postpone it for future consultations. It is important that professionals provide parents with honest and needful information before the parents shape their own thoughts and behavior toward meeting the needs of their child. - Parent during the initial contact generally convey child related needs to professionals and are guarded to state needs related to personal –emotional aspect. However, a skillful professional through effective counselling skills should be able to tap the personal –emotional needs as well as also the needs related to family relationships, if required. Intervention programmes designed to meet family needs facilitate effective coping. - Service providers need to have update information on state and central government benefits, legislation and the availability of services to meet this pressing need of many a parent. - To strengthen the family unit and facilitate healthy interactions and relationships among family members, need based family counselling should be provided. - Most of the available services resolve around child skill training, at the most involving the mother; the focus of intervention however continues to be the child. Efforts must be made to stretch the services to involve fathers and other family members to build support for the mother. - Parent support groups need to be encouraged to help meet various needs for the parents such as sharing information and building parent to parent support.

201 - Indigenous and culture specific models of care which are acceptable to Indian parents need to be developed to meet physical support, needs of parents as also the financial needs. - Efforts nedd to be made to set up need based services in non-urban areas. However need for expansion of services in urban areas cannot also be over-looked. - Efforts should begin early to strengthen the families by meeting their identified needs.This will help retain children with intellectual disability with their families providing them with a better quality of life. - Culturally relevant materials in print, audio or visual must be provided early to the parents and families for building awareness, right knowledge and correction of misconceptions, if present. - Need based training workshops should be conducted for parents to empower them with the necessary knowledge and skills related to child management needs. - Programmes for parents need to be conducted which could help clarify issues on sexuality, marriage and future planning related to financial and social securities of their child.

5.5 Assessment of Sibling Needs and its implication in Planning IFSP 5.5.1. Sibling Need

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The presence of an individual with intellectual disability in the family call for a lot of adjustments on the part of the parents, siblings and other significant family members (Peshwaria & Menon,1991). Identifying and meeting individual needs of various members in the family is the only way to strengthen the family having a child with intellectual disability. Beyond the typical needs experienced by siblings with the birth of a brother or sister, increased stress and additional needs for support are experienced by siblings having brothers or sisters with disability. These unique needs may take the form of family support, assistance, information etc. Thus, to strengthen families having individuals with intellectual disabilities, interventions must recognize the feelings and needs of the siblings. (Turnbull & Turnbull,1990). Although siblings may not always explicitly reveal their needs,

the research does suggest

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that siblings of persons with handicaps do have a number of special needs related to 202 themselves, their families, and the community. However till date very few attempts have been made to empirically study the needs of siblings having brother or sister with intellectual disability. Anecdotal reports have been the main source of identifying needs expressed by siblings.

Powell & Ogle (1985) contended that special concerns and unique needs will vary from sibling to

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sibling based on a number of individual characteristics of the family system.

Broad interpretation of the research findings indicate that

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siblings of children with handicaps have a range of needs from knowing the cause of handicaps, how to get along with their handicapped sibling better, what to tell their friends about their handicapped sibling, future role , to dealing with parental expectations. Children are a source of strength for parents. This relationship assumes even greater significance when there is a handicapped member in the family and especially for a country like India where there are no special security systems and siblings naturally assume the role of guardianship of their brother/ sister with intellectual

disabilities after the death of their parents. Within

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this context, to strengthen this natural resource of support i.e., the sibling by identifying and meeting their unique needs becomes imperative.

The empirical understanding of these siblings having brothers/sisters with intellectual disability in Indian families in terms of their impact needs and involvement are far from adequate and hence need priority. 5.5.2 Assessment: The needs of siblings having a brother /sister with intellectual disability will be assessed by using a specifically developed semi-structured interview schedule NIMH FAMILY NEEDS SCHEDULE (Siblings) shortly known as NIMH- FAMNS(Siblings). The NIMH-FAMNS (Siblings) consisted of 16 different needs. The score of each item on the schedule ranged from 0 to 2 (0-no need, 1- Little, 2- Very much need) so that higher the score, greater is the intensity of the need expressed by the sibling. According to NIMH-FAMNS (Sibling) the various sibling needs are as follows: 1. Information: condition 2. Expected achievement 3. Training regarding the sibling management. 4. Hostel placement provision and information. 5. Information explaining the condition. 6. More time: to self. 7. Help: Future Plan.

203 8. Information: Resources. 9. Information about the training programme. 10. Expecting equal attention. 11. Normal expect: Parents. 12. Help: mediate family. 13. Information: Motivate. 14. Awareness programme. 15. Information: Government Benefit. 16. Others 5.5.3 Implication in planning IFSP: Unlike parents siblings also have a greater role in IFSP for the eligible child. - Siblings do require information on the condition of their brother/sister with intellectual disability. They also require knowledge and skills to train and learn to manage behavior problems of their affected brother/sister effectively. To meet such needs of siblings, needs based intervention programmes such as Behaviour modification workshops could be conducted. - Siblings do not only require help in meeting the needs of their brother. /sister with intellectual disability but they also require help for themselves in planning for their future. - Sibling groups could be initiated to help siblings share their concerns with each other. Interactions between siblings could contribute immensely in resolving their emotional reactions and help learn from each other's experiences, the ways of coping with common situations encountered by them. Individual and group counselling programmes for siblings can be of great help. - Parents and family members need to become aware of the special needs of siblings. Non-handicapped siblings i.e. brothers and sisters may also need to understand each others' needs and help share the extra responsibilities equally. - Intervention programmes should emphasize and encourage involvement of non- handicapped siblings with their brother/sister with intellectual disability right from the beginning when a child with intellectual disability is identified in the 204 family. This would help shape up siblings to accept, adjust and also contribute constructively in strengthening the families. - Parents are generally the decision makers for their children especially so when the children are still young. Hence, parental acceptance of siblings' involvement becomes one of the crucial factors in facilitating the initiation or conduct of intervention programmes with the siblings. Parents may need to be convinced on the merits of sibling involvement as also that, such an involvement will not adversely affect the non-handicapped sibling. 5.6 Assessment

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of Extended Family Needs and its implication in Planning IFSP 5.6.1

Need of grandparents: Grandparents constitute important part of the environment that the index child must inevitably interact. Typically in India ,being elders in the family ,grandparents to a large extent influence the decision making related to child care ,nursing, nutrition and wide ranging matters in family life. Depending upon their resources, the availability of time, their age and physical health, most often the grandparents are drawn into the role of caregivers or supervisors of caregivers. With rapid urbanization, even though the traditional joint family system is fast disintegrating, yet grandparents continue to play an important and significant role which has direct bearing on the child with intellectual disability and the family. Following are the categories related to the needs reported by grandparents of children with intellectual disability: 1. Cure: Intellectual disability – Looking for a treatment or a therapy that will cure the condition of intellectual disability. 2. Guidance: Help family – Guidance from the therapists as to how they can help the family. 3. Information: Government Benefits – From where and what are the benefits available from the Government for such children. 4. Care: Future – Future social security of the grandchild. 5. Information: Child management – Availability of training programmes to help 205 them manage their grandchild. 6. Training Communication – Training programme in language and communication for the grandchild. 7. Cause: Intellectual Disability – Interested to know what caused the condition. 8. Sensitivity : Professionals – Want. 9. Information: resources – From whom and where to turn for help. 5.6.2 Assessment of grand parents need: The needs of grandparents having a grandchild with intellectual disability will be assessed by using a specifically developed semi- structured interview schedule NIMH FAMILY NEEDS SCHEDULE (Grandparents) shortly known as NIMH-FAMNS(Grandparents).The NIMH-FAMNS (Grandparents) consisted of 9 different needs. The score of each item on the schedule ranged from 0 to 2 (0-no need, 1- Little, 2- Very much need) so that higher the score, greater is the intensity of the need expressed by the sibling. 5.6.3 Implication in planning IFSP: Any work on the families would be incomplete without taking into account the role of grandparents. Grandparents are one of the significant natural support providers to a family having a child with intellectual disability, helpful for developing IFSP - Grandparents are a great natural resource/support for the families having persons with intellectual disability and hence their role needs to be strengthened. It has been reported by parents that acceptance and support by grandparents' especially parental grandparents is considered as an important facilitator in coping. - Grandparents are involved in many ways in providing support to the family yet they have expressed the need for further help and guidance from professionals' as to how they can contribute better which must be meet. - Grandparents do

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get affected in many ways because of having a grandchild with intellectual disability.

Help in mitigating such effects must start early with grandparents and strategies for help included in the family intervention programmes. - Grandparents though have emotional reactions as the strongest impact, yet, while expressing needs they did not seek any help for the same. The need to
206 resolve or understand these emotional reactions could be explored if necessary during counselling programme. - Grandparents too have several needs because of having grandchild with intellectual disability in the family. These needs require to be identified and individualized intervention programmes have to be worked out to meet such needs. - All the family members including the parents and siblings of the child with intellectual disability must become aware of the grandparents needs and involve themselves in meeting the grandparents' needs. When professionals work towards mitigating the impact and help meeting the needs of grandparents, it would help strengthen grandparents to involve more constructively to the wellbeing of the grandchild with mental retardation and the whole family. Family counselling would go a long way in meeting some of the needs. - Grandparents could be brought together in a group to share their concern with each other. Interactions amongst affected grandparents could contribute immensely in resolving emotional reactions and learning from each other's experience in coping with certain common situations. - Professionals working and interacting with the families do need to equip themselves with effective counselling skills to communicate the child's condition and also to have better relationships with all the family members. - Training programmes for the grandparents could be conducted as per identified needs of grandparents. This would equip them with the knowledge and skills and enable grandparents to spend time with their grandchild more usefully and effectively. Other than the grandparents there are little need for cousin brothers and other uncle, aunts those who are continuously living with the family which include the entire family member's need are discussing throughout this chapter. Acceptance of these children and involve with them will have greater

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implication in planning IFSP. 5.7 Assessment of Family and Community Resources for Inclusion and Strengthening of Family 5.7.1. Assessment of family –

In this point we explore the context and process of family assessment with in early intervention programme for children with disabilities or developmental delays. Family
207 assessments are now a routine, indeed mandated, practice in early intervention programmes. Three primary reasons can be advanced with disabilities. 1. Family assessment recognizes explicitly the need to examine the children's development within their most powerful context, that of the family. 2. Family assessment is grounded in the belief that parents can benefit from focused attention on their capacities for providing a nurturing, informed and attentive environment for their children with disabilities. 3. There is an increasing recognition that the intensity and specificity of early intervention programme need to be tailored to the characteristics and functioning of the family in light of the child's disability or risk status. (Guralnick, 1998) 5.7.2 Assessment of Community Resources Resource assessment is central to economic development planning since local resources are the primary means through which communities can effect economic development outcomes. Resource Assessment Goals: • Identify critical resources and assets • Evaluate their potential and current contribution to development goals • Define ways to more effectively apply them Five resource areas to evaluate: (1) Land, facilities and infrastructure that supply (and sustain) the physical assets and systems that support economic activity (2) Human capital and labour force resources, including the education and training system, that provide the skills and talent to form, manage and operate enterprises. (3) Capital resources that finance businesses, community facilities and other community needs. (4) Technology resources that contribute new products and processes, technical know-how, and best practices to the economy. (5) Organizational capacity and relationships to undertake economic development activities.

208 Documentation, Recording and Reporting Assessment Result a) Components of assessment report: Documentation and Recording - The major components of assessment report which are needed to record for documentation are as follows: 1.

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Identification Data: All essential demographic information about the student: full name, address, date

of

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birth, and so forth. 2. Reason for referral: The basis for and source of the referral. 3. Relevant background: Significant information about the student's medical, developmental, educational and socio cultural background. 4. Behavioural Observations: Descriptions of the student's behaviour during assessment. 5. Assessment result and discussion: Scores and other results in pertinent areas, such as reading, mathematics, and so forth. 6. Summary and conclusions: A brief statement of the level of performance and strength and weakness in the areas assessed. 7. Recommendations: The goals and objectives, special services, and service delivery models appropriate for the student's educational needs. 8. Data Sheet: All the formal and informal results for independent analysis and reference.

b) General principle of reporting–

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The interpretation and reporting of assessment results are guided by a set of general principles – a)

Follow a structured format. b) Report only relevant data c)

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Report information once and then mention it only as needed. d) Avoid making

recommendations or giving ideas for solutions throughout the report. e) Report facts and data accurately and in a simple way. f) Insert sensitive information tactfully. g)

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Note the source of any information and report the data accurately. 209

h) During reporting data from previous assessment,

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do so briefly and with full reference to the source. i) Mention the absence of critical data, such as recent visual and hearing assessments. j) Report any test administration errors

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problems and reservations about the findings. k) Consider information about instructional factors in the classroom and non- instructional correlates (medical, social,

and cultural). l) Address discrepancies between data and present possible explanations. m) Statistical and clinical analysis should be done during interpreting test results. n) Selectively use of theoretical constructs. o) Keep a variety of stylistic points in mind. Interpretation and reporting the results require both an excellent understanding of data as well as a good grasp of communication skills. 5.8 "Check Your Progress" 1. What do you mean by family?

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..... 2. What are the various needs faced by parents?

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..... 3. What is IFSP?Mention the various implication of sibling needs assessment in planning IFSP.

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210 4. What are the guiding principles of report writing?

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..... 5. How will you assess the needs of grandparents needs in planning IFSP?

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..... 5.9 Let us Sum up ●●●●●

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Families are critical agents in the care, management and habilitation of individuals with intellectual disability. Parents, sibling and other significant family members are increasingly, being involved in the training and habilitation of the individuals with intellectual disability. The underlying concept of family centered intervention is that children's functioning can be maximized by providing services that are designed to enhance the effectiveness of their families. Families are interactive, interdependent systems with individual members reciprocally affecting each other. ●●●●●

Consequently, any events or changes that affect one member of the family will directly or indirectly affect all other members and therefore affect the family as a whole. Family needs are identified by analyzing the needs of every family members need i.e; parental needs, sibling need and grandparent's need. NIMH Family Needs Schedule (NIMH-FAMNS) are used to assess the needs of various family member according to the relationship which are available in three separate checklists. ●●●●● Individual Family service Plan (IFSP) plan required by PL 99-457 that includes the related needs of the family of the child with disabilities. The regulation require that an IFSP or Individual Family service Plan, be developed for each infant or toddler and its family. Family members are taught and trained about

211 the identification of the assets of the child, need of their child with disabilities, their involvement with them, choice of those children, hope with these children. ●●●●● Intervention should be individualized for parents and families as per their individual needs. ●●●●● Community is also plays a major role to develop a child. So there is a need of assessing the

community resources i.e.; physical, financial, human, technical and organizational resources. ●●●●● A community needs assessment identifies the strengths and resources available in the community to meet the needs of children, youth, and families. The assessment focuses on the capabilities of the community, including its citizens, agencies, and organizations. It provides a framework for developing and identifying services and solutions and building communities that support and nurture children and families. ●●●●●

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It's important to have a plan in writing, which shows the work families and staff will do together .

Every work with the child should be well documented, and properly reported. 5.10 References ●●●● D. B. Bailey & R. J. Simeonsson. Family Assessment in Early Intervention (pp-185-206). Columbus, OH : Merrill. ●●●● DSE (MR) manual: Family needs for persons with Mental Retardation ●●●● Hallahan, Kauffman, and Pullen.(2009). Exceptional Learners. 11th ed. Boston. ●●●● Mcloughlin, J.A & Lewis, R.B.(1986).Assessing Special Students .2 nd ed. Columbus : Merill Publishing Company. ●●●● Peshawaria, R et,al; (1995).

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Understanding Indian Families : Having Persons with Mental Retardation. Secunderabad : NIMH ●●●●

Turnbull,a.p. & Turnbull,H.R.(1995).Families,Professionals and exceptionality:A Special Partnership(3 rd ed.)Upper Saddle Rier,NJ:Merill.
212 ●●●● Claimant v Harbor Regional Center, OAH No. 2014050757 (July 1, 2014) [http:// www.documents.dgs.ca.gov /oah/DDS_Decisions/2014050757.084.pdf](http://www.documents.dgs.ca.gov/oah/DDS_Decisions/2014050757.084.pdf) ●●●● <http://ctb.ku.edu/en/assessing-community-needs-and-resources> ●●●● <http://www.mass.gov/eohhs/gov/departments/dph/programs/family-health/early-intervention/family-info/individualized-family-service-plan-ifsp-dev.html> ●●●● [https://www.childwelfare.gov/topics/systemwide /assessment/community/](https://www.childwelfare.gov/topics/systemwide/assessment/community/)

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Submitted text As student entered the text in the submitted document.
Matching text As the text appears in the source.

1/203 SUBMITTED TEXT 95 WORDS 35% MATCHING TEXT 95 WORDS

Assessment and Identification of Needs UNIT - 1 :
INTELLECTUAL DISABILITY—NATURE AND NEEDS 9-65
UNIT - 2 : ASSESSMENT 66-125 UNIT - 3 : ASSESSMENT
AT PRE-SCHOOL AND SCHOOL LEVEL 126-149 UNIT - 4
: ASSESSMENT AT ADULT AND VOCATIONAL LEVELS
150-191 UNIT - 5 : ASSESSMENT OF FAMILY NEEDS
192-212 8 9 Unit - 1 □□□□ Intellectual Disability
—Nature and Needs Structure : 1.1 Introduction 1.2
Objectives 1.3 Historical Perspective of Intellectual
Disability 1.4 Definition of Intellectual Disability
—International and Indian perspective 1.4.1 ICD-10 1.4.2
American Association on Intellectual and Developmental
Disabilities (AAIDD) 1.4.3 World Health Organisation
(WHO) 1.4.4 PWD Act 1995 1.4.5 RPD bill (proposed) 1.4.6

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2/203	SUBMITTED TEXT	45 WORDS	77% MATCHING TEXT	45 WORDS
	<p>Intellectual Disability (ID), once called Mental Retardation, is characterized by below-average intelligence or mental ability and a lack of skills necessary for day- to-day living. People with intellectual disabilities can and do learn new skills, but they learn them more slowly. There are varying degrees of intellectual disability</p> <p>W https://www.ipl.org/essay/Three-Major-Causes-Of-Intellectual-Disability-F3M9TX3RCED6</p>		<p>Intellectual disability (ID) is also known as mental retardation and is characterized by below-average intelligence or mental ability and it is necessary to have a skills for day-to-day living. People with intellectual disabilities can and do learn new skills, but they learn them more slowly. There are varying degrees of intellectual disability,</p>	
3/203	SUBMITTED TEXT	102 WORDS	95% MATCHING TEXT	102 WORDS
	<p>With the implementation of the Persons with Disabilities Act (PWD), 1995 intellectual disabilities has been recognized as a disability with an identity of its own. Earlier, data on mental retardation had been clubbed with data on mental illness. It is only in the recent years that early identification of persons with mental retardation has become possible. Systematic thinking on screening and identification emerged consequent to the National Policy on Education (NPE), 1986, even though working groups had been set up even as early as 1981 during the International Year of the Disabled Persons (IYDP) by the then Ministry of Welfare. Early identification includes screening, early diagnosis and parent counseling. 1.2</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>		<p>With the implementation of the Persons with Disabilities Act (PWD), 1995 mental retardation has been recognized as a disability with an identity of its own. Earlier, data on mental retardation had been clubbed with data on mental illness. It is only in the recent years that early identification of persons with mental retardation has become possible. Systematic thinking on screening and identification emerged consequent to the National Policy on Education (NPE), 1986, even though working groups had been set up even as early as 1981 during the International Year of the Disabled Persons (IYDP) by the then Ministry of Welfare. Early identification includes screening, early diagnosis and parent counseling.</p>	
4/203	SUBMITTED TEXT	17 WORDS	61% MATCHING TEXT	17 WORDS
	<p>Objectives After studying this unit you will be able to: ●●●●● Narrate the historical perspective of Intellectual Disability ●●●●●</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>		<p>Objectives After going through this unit you will be able to:- ? Understand the concept of Intellectual Disability ?</p>	

5/203	SUBMITTED TEXT	84 WORDS	100% MATCHING TEXT	84 WORDS
	<p>Identification of persons with mental retardation and affording them care and management for their disabilities is not a new concept in India. The concept had been translated into practice over several centuries as a community participative 12 culture. The status of disability in India, particularly in the provision of education and employment for persons with mental retardation, as a matter of need and above all, as a matter of right, has had its recognition only in recent times, almost after the enactment of the Persons with Disabilities Act(PWD), 1995.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>		<p>Identification of persons with mental retardation and affording them care and management for their disabilities is not a new concept in India. The concept had been translated into practice over several centuries as a community participative culture. The status of disability in India, particularly in the provision of education and employment for persons with mental retardation, as a matter of need and above all, as a matter of right, has had its recognition only in recent times, almost after the enactment of the Persons with Disabilities Act (PWD), 1995.</p>	

6/203	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
	<p>The word "Etiology means causation. Knowledge of the causative factors of</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>			

7/203	SUBMITTED TEXT	47 WORDS	86% MATCHING TEXT	47 WORDS
	<p>Intellectual disability can be caused by any condition that impairs development of the brain before birth, during birth or in the childhood 11 years. Several hundred causes have been discovered, but in about one- third of the people affected, the cause remains unknown. There are varying degrees of intellectual disability,</p> <p>W https://www.ipl.org/essay/Three-Major-Causes-Of-Intellectual-Disability-F3M9TX3RCED6</p>		<p>Intellectual disability can be caused by any condition that impairs development of the brain before birth, during birth or in the childhood years. Several hundred causes have been discovered, but in about one-third of the people affected, the cause remains unknown. three major known causes of intellectual disability</p>	

8/203	SUBMITTED TEXT	92 WORDS	78% MATCHING TEXT	92 WORDS
<p>As early as the Ramayana period (around 5000BC) we have a reference to intellectual disability. Queen kaikayi's maid Mantara was dull witted and thus easily duped. The concept of problems was mentioned first in Atharva veda. ●●●● A much older system of philosophy the Sankya, contain a statement on different types of intellectual disabilities. ●●●● The Garba upanishad (around 1000 BC) a treatise on embryology, suggests that babies with defects are "born to those parents whose minds are distressed." ●●●● Differential diagnosis among various sorts of odd behavior has always been hard, but are more readily recognizable " childish mind" model for</p>				
SA Suman Madan (19-BMU-6111) EDUCATION.docx (D148140404)				

9/203	SUBMITTED TEXT	46 WORDS	90% MATCHING TEXT	46 WORDS
<p>appeared in a riddle of the Upanishads compiled perhaps in 500BC. ●●●● A careful study of the ancient Indian literature reveals that there have been a few references to persons with intellectual disability. In the mythology of patanjali, we read that patanjali had to teach Goudapathaga, who was</p>				
SA Suman Madan (19-BMU-6111) EDUCATION.docx (D148140404)				

10/203	SUBMITTED TEXT	41 WORDS	89% MATCHING TEXT	41 WORDS
<p>dull headed persons. ●●●● The Patanjali yoga sutras deal with yoga as a therapy. A careful reading of these sutras reveal that persons with mental retardation have also been taken into consideration for this therapy. ●●●● The grate physician charaka has given various causes for</p>				
SA Suman Madan (19-BMU-6111) EDUCATION.docx (D148140404)				

11/203	SUBMITTED TEXT	108 WORDS	89% MATCHING TEXT	108 WORDS
	<p>and discusses the different types and classification. ●●●●●</p> <p>Clear reference to persons with intellectual disability can be traced in the Sangam literature (200BC-200AD) by Erayanar and Avvaiyar and more recently by Thiruvalluvar.</p> <p>13 ●●●●● In the 4th century BC, Kautilya banned the use of terms insulting persons with disabilities. He employed many people with disabilities in his spy network. ●●●●●</p> <p>King Amarsakti had three sons viz, Vasusakti, Ugrasakti and Anekasakti, who were greater fools or "supreme block-head". This folly caused their father's courtier Vishnu Sharma to devise the world's first special education text Panchatantra, around the 1st century BC. Basham remarks "Never was a school text book better written" ●●●●● Ancient Hindu, Buddhist and Sanskrit</p>			
	SA	Suman Madan (19-BMU-6111) EDUCATION.docx (D148140404)		

12/203	SUBMITTED TEXT	126 WORDS	93% MATCHING TEXT	126 WORDS
	<p>treat idiocy like other birth handicaps, arising through sin in an earlier incarnation .According to Manu, the Law Giver, that as a consequence of a remnant of the guilt of former crimes , as persons are idiots ,dumb,blind, deaf and deformed,all despised by the virtuous. ●●●●● The Buddhist Mantalsi Jatakar recounts an early attempt to teach "the profound dullards" by activity methods and practical curriculum, but he did not succeed .Later some teachers did persevere so that the unfit rather than being weeded out might end up with more time at school than the clever ones. ●●●●● Arthasatra mentions treatment and care given to people with disabilities at mattas (monasteries) and in the time of Ashoka, at the hospital at Pataliputra.Sinhalese asylums for people with disabilities were set up by the century in what is now</p>			
	SA	Suman Madan (19-BMU-6111) EDUCATION.docx (D148140404)		

13/203	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
	<p>International Statistical Classification of Diseases and Related Health Problems (ICD),</p>			
	SA	SIDDHI SOOD.docx (D46667599)		

14/203	SUBMITTED TEXT	64 WORDS	97% MATCHING TEXT	64 WORDS		
<p>A condition of arrested or incomplete development of the mind, which is especially characterized by impairment of skills manifested during the developmental period, skills which contribute to the overall level of intelligence, i.e. cognitive, language, motor, and social abilities. Retardation can occur with or without any other mental or physical condition. 1.4.2 American Association on Intellectual and Developmental Disabilities (AAIDD) Intellectual disability is a disability characterized by significant limitations in</p> <p>SA CHAPTER_-_1.pdf (D38635105)</p>						
15/203	SUBMITTED TEXT	22 WORDS	95% MATCHING TEXT	22 WORDS		
<p>both intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills. This disability originates before the age of 18.</p> <p>SA DOC-I-SUDHA.docx (D104250311)</p>						
16/203	SUBMITTED TEXT	15 WORDS	85% MATCHING TEXT	15 WORDS		
<table border="0"> <tr> <td style="width: 50%;"> <p>INTELLECTUAL FUNCTIONING Intelligence refers to general mental capability, such as learning, reasoning, problem solving and so on.</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p> </td> <td style="width: 50%;"> <p>Intellectual functioning—also called refers to general mental capacity, such as learning, reasoning, problem solving, and so on.</p> </td> </tr> </table>					<p>INTELLECTUAL FUNCTIONING Intelligence refers to general mental capability, such as learning, reasoning, problem solving and so on.</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>	<p>Intellectual functioning—also called refers to general mental capacity, such as learning, reasoning, problem solving, and so on.</p>
<p>INTELLECTUAL FUNCTIONING Intelligence refers to general mental capability, such as learning, reasoning, problem solving and so on.</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>	<p>Intellectual functioning—also called refers to general mental capacity, such as learning, reasoning, problem solving, and so on.</p>					
17/203	SUBMITTED TEXT	35 WORDS	86% MATCHING TEXT	35 WORDS		
<table border="0"> <tr> <td style="width: 50%;"> <p>ADAPTIVE BEHAVIOUR Adaptive Behaviour represents the conceptual, social and practical skills that are learned and performed by people in their everyday lives. ●●●●●</p> <p>Conceptual skills- Language and Literacy, money, time, number ●●●●● Social skills- interpersonal skills, social responsibility,</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p> </td> <td style="width: 50%;"> <p>Adaptive Behaviour Adaptive behaviour is the collection conceptual, social, and practical skills that are learned and performed by people in their everyday lives. ? Conceptual skills—language and literacy; money, time, and number concepts; and self-direction. ? Social skills—interpersonal skills, social responsibility,</p> </td> </tr> </table>					<p>ADAPTIVE BEHAVIOUR Adaptive Behaviour represents the conceptual, social and practical skills that are learned and performed by people in their everyday lives. ●●●●●</p> <p>Conceptual skills- Language and Literacy, money, time, number ●●●●● Social skills- interpersonal skills, social responsibility,</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>	<p>Adaptive Behaviour Adaptive behaviour is the collection conceptual, social, and practical skills that are learned and performed by people in their everyday lives. ? Conceptual skills—language and literacy; money, time, and number concepts; and self-direction. ? Social skills—interpersonal skills, social responsibility,</p>
<p>ADAPTIVE BEHAVIOUR Adaptive Behaviour represents the conceptual, social and practical skills that are learned and performed by people in their everyday lives. ●●●●●</p> <p>Conceptual skills- Language and Literacy, money, time, number ●●●●● Social skills- interpersonal skills, social responsibility,</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>	<p>Adaptive Behaviour Adaptive behaviour is the collection conceptual, social, and practical skills that are learned and performed by people in their everyday lives. ? Conceptual skills—language and literacy; money, time, and number concepts; and self-direction. ? Social skills—interpersonal skills, social responsibility,</p>					

18/203	SUBMITTED TEXT	16 WORDS	83% MATCHING TEXT	16 WORDS
<p>There is evidence of disability during the developmental period— before the age of 18. 27 ADDITIONAL CONSIDERATIONS ●●●●●</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>		<p>there is evidence of the disability during the developmental period, which is operationalized as the age Additional Considerations</p>		
19/203	SUBMITTED TEXT	30 WORDS	92% MATCHING TEXT	30 WORDS
<p>disability is any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being. (WHO, 1976) Disability is</p> <p>SA rizqinlaskar7865@gmail.com.docx (D154033629)</p>				
20/203	SUBMITTED TEXT	50 WORDS	93% MATCHING TEXT	50 WORDS
<p>World Health Organisation (WHO) A condition of arrested or incomplete development of the mind, which is especially characterized by impairment of skills manifested during the developmental period, skills which contribute to the overall level of intelligence, i.e. cognitive, language, motor, and social abilities. Retardation can occur with or without any other mental or physical condition.</p> <p>SA CHAPTER_- _1.pdf (D38635105)</p>				
21/203	SUBMITTED TEXT	24 WORDS	93% MATCHING TEXT	24 WORDS
<p>Mental retardation" means a condition of arrested or incomplete development of mind of a person which is specially characterized by subnormality of intelligence. 28 1.4.5</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>		<p>mental retardation" means a condition of arrested or incomplete development of mind of a person which is specially characterised by subnormality of intelligence;</p>		

22/203	SUBMITTED TEXT	41 WORDS	100% MATCHING TEXT	41 WORDS
<p>Intellectual disability means a significantly reduced ability to understand new or complex information and to learn and apply new skills (impaired intelligence). This results in a reduced ability to cope independently (impaired social functioning), and begins before adulthood, with a lasting effect on development.</p> <p>SA SIDDHI SOOD.docx (D46667599)</p>				
23/203	SUBMITTED TEXT	13 WORDS	82% MATCHING TEXT	13 WORDS
<p>mental disorders. "Mental retardation is defined as significantly sub average general intellectual functioning that</p> <p>SA Ms. Poonam Rani_Ph.D. Education_18-BMU-6294.pdf (D118488397)</p>				
24/203	SUBMITTED TEXT	24 WORDS	79% MATCHING TEXT	24 WORDS
<p>in at least two of the following skills areas i.e communication, self-care, home living, social/interpersonal skills, use of academic skills, work, leisure, health and safety</p> <p>SA EDU 293Introduction To Neuro Developmental Disabilities.pdf (D165064915)</p>				
25/203	SUBMITTED TEXT	26 WORDS	100% MATCHING TEXT	26 WORDS
<p>Intellectual Disability (Intellectual Developmental Disorder) is a disorder with onset during the developmental period that includes both intellectual and adaptive functioning deficits in conceptual, social, and practical domains.</p> <p>SA Chapter -3 ID.docx (D155148857)</p>				
26/203	SUBMITTED TEXT	19 WORDS	63% MATCHING TEXT	19 WORDS
<p>how well an individual copes with everyday tasks: The conceptual domain includes skills in language, reading, writing, math, reasoning, knowledge, and memory.</p> <p>how an individual copes with the everyday demands of- • Conceptual tasks- skills in language, reading, writing, math, reasoning, knowledge, and memory. •</p> <p>W https://thinkorganisedo.com.au/what-is-intellectual-disability/</p>				

27/203	SUBMITTED TEXT	19 WORDS	92% MATCHING TEXT	19 WORDS
<p>social domain refers to empathy, social judgment, interpersonal communication skills, the ability to make and retain friendships, and similar capacities.</p> <p>W https://thinkorganisedo.com.au/what-is-intellectual-disability/</p>		<p>Social ability- refers to empathy, social judgment, interpersonal communication skills, the ability to make and retain friendships, and similar capacities. •</p>		
28/203	SUBMITTED TEXT	18 WORDS	100% MATCHING TEXT	18 WORDS
<p>on self-management in areas such as personal care, job responsibilities, money management, recreation, and organizing school and work tasks. 30</p> <p>W https://thinkorganisedo.com.au/what-is-intellectual-disability/</p>		<p>on self-management in areas such as personal care, job responsibilities, money management, recreation, and organizing school and work tasks.</p>		
29/203	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>a close follow up to identify delays and abnormalities in development.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
30/203	SUBMITTED TEXT	20 WORDS	57% MATCHING TEXT	20 WORDS
<p>IQ Range Mild Mental Retardation 50-BELOW 70 Moderate Mental Retardation 35-49 Severe Mental Retardation 20-34 Profound Mental Retardation BELOW 20 1.6.2 Medical classification Mental Retardation</p> <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				
31/203	SUBMITTED TEXT	50 WORDS	44% MATCHING TEXT	50 WORDS
<p>Pre-Primary level -Chronological ages 3 - 6 years - Mental ages Up to 5 years Primary level - Chronological ages 7 - 10 years - Mental ages 5 - 7 years Secondary level - Chronological ages 10 – 14 years - Mental ages 7 - 9 years Pre- Vocational level Chronological ages 14 - 16 years 15-below 18 years -</p> <p>SA Ms. Poonam Rani_Ph.D. Education_18-BMU-6294.pdf (D118488397)</p>				

32/203	SUBMITTED TEXT	11 WORDS	76% MATCHING TEXT	11 WORDS
<p>may require fewer staff members and less cost than more intense levels of</p>		<p>may require fewer staff members and lower expense than more intense levels of</p>		
<p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>				

33/203	SUBMITTED TEXT	21 WORDS	81% MATCHING TEXT	21 WORDS
<p>Educable IQ 50 to 70 Second to fifth grade achievement III school academic areas Social adjustment that will permit some degree of independence</p>				
<p>SA SEID -31 PDF.pdf (D127037695)</p>				

34/203	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>of the UN 48 Convention on the Rights of Persons with Disabilities (</p>		<p>of the UN Convention on the Rights of Persons with Disabilities</p>		
<p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>				

35/203	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>of the UN Convention on the Rights of Persons with Disabilities.</p>		<p>of the UN Convention on the Rights of Persons with Disabilities</p>		
<p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>				

36/203	SUBMITTED TEXT	66 WORDS	89% MATCHING TEXT	66 WORDS
<p>the community Occupational sufficiency that will permit partial or total self support Trainable IQ 20 to 49 Learning primarily in the areas of self-help, very limited achievement in areas considered academic 46 Social adjustment usually limited to home an closely surrounding area. Occupational performance primari in sheltered workshop or an institutional setting. Custodial IQ Below20 Usually unable to achieve even sufficient skills to care for basic needs. Will usually require nearly total care an supervision for duration of</p>				
<p>SA SEID -31 PDF.pdf (D127037695)</p>				

37/203	SUBMITTED TEXT	17 WORDS	100% MATCHING TEXT	17 WORDS
<p>is done during second trimester of pregnancy in diagnosing certain physical anomalies, metabolic disorders or biochemical abnormalities.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>		<p>is done during second trimester of pregnancy in diagnosing certain physical anomalies, metabolic disorders or biochemical abnormalities. 144 •</p>		
38/203	SUBMITTED TEXT	71 WORDS	94% MATCHING TEXT	71 WORDS
<p>Screening Screening is a procedure for an initial identification of persons with mental retardation and for a follow up with assessment. Screening Procedure Many of the screening techniques collected National Institute for the Mentally Handicapped (NIMH), Secunderaba, appeared in RCI. A more systematic process and procedure has been the pooling of a battery of tests on clinical investigations by the NIMH, for identification and screening of persons with mental retardation. They include pre-natal, neonatal and post-natal diagnostic procedures: i) Pre-natal Procedures</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
39/203	SUBMITTED TEXT	74 WORDS	94% MATCHING TEXT	74 WORDS
<p>hydrocephaly, microcephaly, hydrencephaly, holoprosencephaly, prosencephaly and some cerebellar lesions. Intra-uterine growth retardation can also be detected through such measurements as foetal biparietal diameter, crown rump length and transverse abdominal diameter. vii) Aminocentesis Aminocentesis indicated in cases of foetal chromosomal aberration, congenital metabolic errors and open, neural tube defects, severe Rh incompatibility and also in cases of advanced maternal age with previous birth history of an abnormal child. Aminocentesis is a Procedure for purposes of early identification and primary prevention for many genetic abnormalities.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>		<p>hydrocephaly, microcephaly, hydrencephaly, holoprosencephaly, prosencephaly and some cerebellar lesions. Intra-uterine growth retardation can also be detected through such measurements as foetal biparietal diameter, crown rump length and transverse abdominal diameter. • Aminocentesis is indicated in cases of foetal chromosomal aberration, congenital metabolic errors and open, neural tube defects, severe Rh incompatibility and also in cases of advanced maternal age with previous birth history of an abnormal child. Aminocentesis is a procedure for purposes of early identification and primary prevention for many genetic abnormalities •</p>		

40/203	SUBMITTED TEXT	128 WORDS	97% MATCHING TEXT	128 WORDS
<p>Neonatal and Post-natal Screening and Diagnostic Procedure Blood and urine examinations are conducted in the neonatal period in all suspected cases and with a previous history of mental retardation in the family. Cretinism is 52 another condition which can be diagnosed in the neonatal period and necessary treatment given. ●●●● Apgar Score at one minute after delivery is an index of asphyxia and the need for assisted ventilation. ●●●● Urine screening for metabolic errors - PKU (Phenyle Ketoneuria) ●●●● Blood biochemistry tests for cretinism, rickets, jaundice. ●●●● Blood antibody titres to detect infections. ●●●● Chromosomal analysis for Down Syndrome, deletion of syndromes. ●●●● Neonatal neurobehavioural assessments. ●●●● EEG electroencephalogram for seizure disorder. ●●●● Screening for visual impairments (visual acuity, fundus examination, retinoscopy). ●●●● Screening for hearing impairments(Tympanogram, BERA.) ●●●● Ultra sonogram. ●●●● CT scan (comnuterized tomography). ●●●● MRI (Magnetic Resonance Imaging) for intra-cranial pathology and structural abnormalities.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>		<p>Neonatal and Post-natal Screening and Diagnostic Procedure Blood and urine examinations are conducted in the neonatal period in all suspected cases and with a previous history of mental retardation in the family. Cretinism is another condition which can be diagnosed in the neonatal period and necessary treatment given. • Apgar Score at one minute after delivery is an index of asphyxia and the need for assisted ventilation. • Urine screening for metabolic errors - PKU (Phenyle Ketoneuria). • Blood biochemistry tests for cretinism, rickets, jaundice. • Blood antibody titres to detect infections. • Chromosomal analysis for Down Syndrome, deletion of syndromes. • Neonatal neuro assessments. • EEG electroencephalogram for seizure disorder. • Screening for visual impairments (visual acuity, fundus examination, retinoscopy). • Screening for hearing impairments (Tympanogram, BERA.) • Ultra sonogram. • CT scan (computerized tomography). • MRI (Magnetic Resonance Imaging) for intra-cranial pathology and structural abnormalities. •</p>		
41/203	SUBMITTED TEXT	25 WORDS	88% MATCHING TEXT	25 WORDS
<p>Chorionic Villous Sampling where a biopsy of the chorionic villi is performed either transabdominally or vaginally. The sa'mple is then subjected to karyotyping and enzyme determination</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
42/203	SUBMITTED TEXT	40 WORDS	100% MATCHING TEXT	40 WORDS
<p>Ultra Sound Examination : The technique can be used to detect displacement of brain midline structures, thickness of brain substance, pathological cavities in the brain. Real-time ultrasound examination of the head can reveal intracranial haemorohage in the newborn. Biochemical Tests in neonatal screening ●●●●</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>		<p>Ultra Sound Examination: The technique can be used to detect displacement of brain midline structures, thickness of brain substance, pathological cavities in the brain. Real-time ultrasound examination of the head can reveal intracranial haemorohage in the newborn. • Biochemical Tests in neonatal screening</p>		

43/203	SUBMITTED TEXT	130 WORDS	96% MATCHING TEXT	130 WORDS
	<p>Electro Encephalography (EEG): EEG is useful not only in epilepsy, but in many other cases of mental retardation and organic brain lesions. In certain cases it also helps in localization of lesions and the severity of a cerebral damage. Incidence of abnormal EEGs is higher in cases of mental retardation associated with epilepsy, encephalitis, severe degree of mental retardation and brain damage sustained before birth or during birth or in the early period of infancy. ●●●●● Computerised Tomography (CT): There are many abnormalities which can be detected by CT scan of the CNSllch as, anoxia of tissue, intracranial haemorrhage, hydrocephalous and congen,ital anomalies like holoprosencephaly, a-genesis of 235 corpus callosum, Arnold chiari malformations, congenital cysts, calcifications, etc. ●●●●● Magnetic Resonance Imaging (MRI): This screening helps in identifying a large number of persons with suspected disability in a limited time period. Screening Tools</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>		<p>Electro Encephalography (EEG): EEG is useful not only in epilepsy, but in many other cases of mental retardation and organic brain lesions. In certain cases it also helps in localization of lesions and the severity of a cerebral damage. Incidence of abnormal EEGs is higher in cases of mental retardation associated with epilepsy, encephalitis, severe degree of mental retardation and brain damage sustained before birth or during birth or in the early period of infancy. There are many abnormalities which can be detected by CT scan of the CNS, such as, anoxia of tissue, intracranial haemorrhage, hydrocephalous and anomalies like holoprosencephaly, a-genesis of corpus callosum, Arnold chiari malformations, congenital cysts, calcifications, etc. • Magnetic Resonance Imaging (MRI): This screening helps in identifying a large number of persons with suspected disability in a limited time period. Other Screening Tools</p>	

44/203	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
	<p>is an index of asphyxia and the need for assisted ventilation.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>			

45/203	SUBMITTED TEXT	94 WORDS	79% MATCHING TEXT	94 WORDS
	<p>Child's Progress Normal Delayed Development. If No Development not achieved by the period 1 Responds to name / 1-3months 4 th month Voice 2 Smiles at others 1-4 months 6 th month 3 Holds head steady 2-6 months 6 month 4 Sits without support 5-10 months 12 month 54 5 Stands without 9-14 months 18 th month support 6 Walks well 10-20months 20 th month 7 Talks in 2-3 word 16-30 3rd year sentences months 8 Eats/drinks by self 2-3 years 4th year 9 Tells his name 2-3 years 4th year 10 Has toilet control 3-4 years 4th year 11</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>			

46/203	SUBMITTED TEXT	25 WORDS	79% MATCHING TEXT	25 WORDS
<p>If the child is found to be delayed in anyone of the items given from 1-11 and if he has fits or physical disability then</p> <p>SA SIDDHI SOOD.docx (D46667599)</p>				
47/203	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>Panda K.C (1997) Education of Exceptional Children, New Delhi Vikas</p> <p>Panda, K.C. (1997). Education of Exceptional Children. New Delhi, Vikas 15.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>				
48/203	SUBMITTED TEXT	36 WORDS	96% MATCHING TEXT	36 WORDS
<p>This delayed development is reflected in low performance across academic and other skill areas, as well as significantly lower scores on measures of intelligence and adaptive behavior, when compared with students who are not identified with intellectual disabilities.</p> <p>SA SIDDHI SOOD.docx (D46667599)</p>				
49/203	SUBMITTED TEXT	20 WORDS	67% MATCHING TEXT	20 WORDS
<p>Grossman, H. (Ed.) (1983) Manual on terminology and classification in Mental retardation (rev. ed) Washington, DC. American Association on Mental deficiency. 66</p> <p>SA FAMILY ADJUSTMENT AND NEEDS OF MENTALLY RETARDED CHILDREN(TARANNUM).docx (D21118331)</p>				
50/203	SUBMITTED TEXT	15 WORDS	83% MATCHING TEXT	15 WORDS
<p>Assessment Structure 2.1 Introduction 2.2 Objectives 2.3 Concept, Meaning, Definition and Purpose of Educational Assessment 2.3.1 Defenition of Assessment 2.3.2</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				

51/203	SUBMITTED TEXT	15 WORDS	90% MATCHING TEXT	15 WORDS
<p>Documentation of Assessment, Result Interpretation and Report writing Implication of all the above for inclusion 2.7.1</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
52/203	SUBMITTED TEXT	29 WORDS	89% MATCHING TEXT	29 WORDS
<p>assessment refers to the process of gathering and analyzing information in order to make instructional , administrative and / or guidance decisions about, or for an individual (Wallace, Larsen and</p> <p>Assessment refers to the process of gathering and analysing information in order to make instructional, administrative and/ or guidance decisions about or for an individuals (Wallace, Larsen, and</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>				
53/203	SUBMITTED TEXT	13 WORDS	100% MATCHING TEXT	13 WORDS
<p>Assessment, in general, refers to a systematic process of gathering information about an individual'</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
54/203	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
<p>level of performance in order to prepare a programme plan. Assessment can be formal</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
55/203	SUBMITTED TEXT	17 WORDS	100% MATCHING TEXT	17 WORDS
<p>Assessment is any of variety of procedures used to gather information about the student performance (Linn</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
56/203	SUBMITTED TEXT	17 WORDS	84% MATCHING TEXT	17 WORDS
<p>Determining eligibility ●●●● determination of current performance level and educational need, ●●●● decisions about classification and programme placement, ●●●●</p> <p>determining eligibility, (c) determination of current performance level and educational need, (d) decision about classification and programme placement, (</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>				

57/203	SUBMITTED TEXT	16 WORDS	100% MATCHING TEXT	16 WORDS
<p>Assessment is the process of gathering information to monitor progress and make educational decisions if necessary (</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
58/203	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>expression of opinion or judgment regarding some situation, object or character".</p> <p>SA EDU 293Introduction To Neuro Developmental Disabilities.pdf (D165064915)</p>				
59/203	SUBMITTED TEXT	17 WORDS	100% MATCHING TEXT	17 WORDS
<p>a "Scale with a set of points which describe varying degrees of the dimension of an attribute being observed".</p> <p>SA EDU 293Introduction To Neuro Developmental Disabilities.pdf (D165064915)</p>				
60/203	SUBMITTED TEXT	14 WORDS	96% MATCHING TEXT	14 WORDS
<p>Grade Level Assessment Device for Children with Learning Problems in Primary Schools (J. Narayan) ●●●●●</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
61/203	SUBMITTED TEXT	16 WORDS	90% MATCHING TEXT	16 WORDS
<p>Documentation of Assessment, Result Interpretation and Report Writing - Implication of all the above for Inclusion 2.7.1</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				

62/203	SUBMITTED TEXT	50 WORDS	100% MATCHING TEXT	50 WORDS
<p>Whatever is the educational facility in which the student is being educated; appropriate documentation is of utmost importance. Right from birth history and diagnosis to disability certification, school admission, assessment, curriculum planning, implementation and evaluation, future planning, vocational training and placement leading to economic independence - all have to have records at each stage.</p> <p>SA seid-33 pdf.pdf (D127037753)</p>				
63/203	SUBMITTED TEXT	46 WORDS	85% MATCHING TEXT	46 WORDS
<p>Assessment at Pre-school and School Level Structure 3.1 Introduction 3.2 Objectives 3.3 Importance of assessment at pre-school and school level 3.4 Developmental and Adaptive Behaviour Assessment 3.5 Assessment Tools at preschool level:-Upanayan, Aarambh, Portage, MDPS, FACP 3.6 Assessment Tools at school age :- MDPS, BASIC-MR, GLAD, Support Intensity Scale 3.7 Documentation of Assessment, Result Interpretation</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
64/203	SUBMITTED TEXT	29 WORDS	75% MATCHING TEXT	29 WORDS
<p>school level (MDPS, BASIC-MR, GLAD SIS). 127 4. Understand documentation of assessment result interpretation and report writing implication of class level assessment & its relation to inclusion with resource support. 3.3</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
65/203	SUBMITTED TEXT	39 WORDS	45% MATCHING TEXT	39 WORDS
<p>there are no State policies or standard guidelines on assessment and intervention programmes. In this scenario, it is justified to look-up at the best practices available worldwide. The Individual with Disabilities Education Act (1997) of US require that every child identified</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				

66/203	SUBMITTED TEXT	19 WORDS	92% MATCHING TEXT	19 WORDS
<p>disabilities at this stage will be assessed by a multidisciplinary team to establish relative strengths and needs in all</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
67/203	SUBMITTED TEXT	17 WORDS	82% MATCHING TEXT	17 WORDS
<p>areas of development and identify appropriate services; secondly, a family directed assessment of resources, priorities, and concerns</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
68/203	SUBMITTED TEXT	59 WORDS	47% MATCHING TEXT	59 WORDS
<p>of the family and identification of resources and support system to meet them. Further the assessment should be able to predict the expected outcome for both the child and family, and precisely state what intervention programmes are required to achieve the outcome. In this context it is pertinent to note that preschool assessment should gather information on both the child and the family.</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
69/203	SUBMITTED TEXT	24 WORDS	50% MATCHING TEXT	24 WORDS
<p>VSMS) and / or criterion scales (e.g. MDPS). 3. A detailed educational assessment, preferably based on the functional approach (e.g. the functional assessment checklists for programming). 4.</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
70/203	SUBMITTED TEXT	21 WORDS	72% MATCHING TEXT	21 WORDS
<p>assessment can be conducted formally (e.g. grade level assessment tool by Narayan, 1994) or informally (e.g. teacher made curriculum-based tests). At school level,</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				

71/203	SUBMITTED TEXT	18 WORDS	68% MATCHING TEXT	18 WORDS
<p>for placement in regular schools, the assessment should go beyond the individual with disabilities. It is also important to</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
72/203	SUBMITTED TEXT	18 WORDS	83% MATCHING TEXT	18 WORDS
<p>This provides a measure of mental development based on social adaptive behavioural skills, communicative skills and motor skills</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
73/203	SUBMITTED TEXT	32 WORDS	35% MATCHING TEXT	32 WORDS
<p>This can also be used with any age group of suspected cases of mental retardation. This tool shows good correlation with standardized IQ measures; therefore it is used whenever standard intelligence testing is not</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
74/203	SUBMITTED TEXT	22 WORDS	75% MATCHING TEXT	22 WORDS
<p>its applicability up to the age of 12 years (Venkatesan, 2002). It takes about ten minutes to apply and interpret the test</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
75/203	SUBMITTED TEXT	18 WORDS	92% MATCHING TEXT	18 WORDS
<p>in academic learning, judgement and reasoning in dealing with the environment and social skills in group activities and interpersonal</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				

76/203	SUBMITTED TEXT	19 WORDS	75% MATCHING TEXT	19 WORDS
<p>human development, teaching and education, home living, community living, employment, health and safety behavior, social behavior and protection and advocacy.</p> <p>SA SIDDHI SOOD.docx (D46667599)</p>				
77/203	SUBMITTED TEXT	20 WORDS	78% MATCHING TEXT	20 WORDS
<p>individual program planning and assessing the total programming needs of groups of clients for research purposes. It can be used to</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
78/203	SUBMITTED TEXT	26 WORDS	60% MATCHING TEXT	26 WORDS
<p>adulthood. It is divided into two parts : Part-I, is concerned with matters described as adaptive behaviour and comprises ten domains with a total of 66 items.</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
79/203	SUBMITTED TEXT	16 WORDS	79% MATCHING TEXT	16 WORDS
<p>are independent functioning, physical development, number and time, domestic activity, vocational activity, self direction, responsibility, and socialization,</p> <p>SA CHAPTER_-_1.pdf (D38635105)</p>				
80/203	SUBMITTED TEXT	24 WORDS	82% MATCHING TEXT	24 WORDS
<p>behaviour, untrustworthy behaviour, withdrawal, stereotyped behaviour, inappropriate interpersonal manners, unacceptable vocal habits, unacceptable 134 habits, self abusive behaviour, hyperactive tendencies, sexually aberrant behaviour, psychological disturbances and</p> <p>SA CHAPTER_-_1.pdf (D38635105)</p>				

81/203	SUBMITTED TEXT	17 WORDS	62% MATCHING TEXT	17 WORDS
<p>Edgar A. Doll in 1935, and has been revised several times since its first publication. It was</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
82/203	SUBMITTED TEXT	15 WORDS	70% MATCHING TEXT	15 WORDS
<p>for program evaluation and research. The scale was designed to assess the social competence of</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
83/203	SUBMITTED TEXT	24 WORDS	50% MATCHING TEXT	24 WORDS
<p>of the 12 areas, which are as follows : gross motor, fine motor, mealtime activities, dressing, grooming, toileting, receptive language, expressive language, socialization, reading, writing</p> <p>of the domains. The domains are listed below :- 1. Gross Motor Activities 2. Fine Motor Activities 3. Meal Time Activities 4. Dressing 5. Grooming 6. Toileting 7. Receptive Language 8. Expressive Language 9. Social Interaction 10. Reading 11. Writing 12.</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>				
84/203	SUBMITTED TEXT	36 WORDS	73% MATCHING TEXT	36 WORDS
<p>Motor : (Gross Motor, fine motor) Self-help skills : (Eating, dressing, grooming, toileting) Communication skills : (Receptive language, expressive language) Social interactions Functional academic skills : (Reading, writing, arithmetic, time, money) Domestic behavior Community orientation Recreation and leisure time activities Vocational activities 138 Each</p> <p>motor skills (gross motor and fine motor), self-help skills (eating, dressing, grooming, toileting), communication skills (receptive, expressive), social interaction, functional academic skills (reading, writing, number, time, money), domestic behaviour, community interaction, recreation and leisure time activities, and vocational activities. Each</p> <p>W https://specialeducationnotes.co.in/C12unit3.htm</p>				
85/203	SUBMITTED TEXT	24 WORDS	65% MATCHING TEXT	24 WORDS
<p>Behavioural Assessment Scales for Indian Children with Mental Retardation (BASIC-MR) are used for assessing the current level of behaviour and for programme planning with children</p> <p>Behavioural Assessment Scale for Indian Children with Mental Retardation (BASIC-MR) This assessment is used for assessing the current level of behaviour and for programme planning for children</p> <p>W https://specialeducationnotes.co.in/C12unit3.htm</p>				

86/203

SUBMITTED TEXT

23 WORDS

70% MATCHING TEXT

23 WORDS

There are eight domains with 89 items, grouped age wise self-help general; self help eating, self help dressing, self direction, occupation, communication, locomotion, and socialization.

SA CHAPTER 1.2 assessment tools.docx (D155146787)

87/203

SUBMITTED TEXT

17 WORDS

71% MATCHING TEXT

17 WORDS

BASIC-MR comprises two parts - Part A and B. Part A has 280 items which provide information

SA CHAPTER 1.2 assessment tools.docx (D155146787)

88/203

SUBMITTED TEXT

13 WORDS

88% MATCHING TEXT

13 WORDS

daily living, language, reading-writing, number-time, domestic-social and prevocational-money. With respect to each item, one

SA CHAPTER 1.2 assessment tools.docx (D155146787)

89/203	SUBMITTED TEXT	212 WORDS	94% MATCHING TEXT	212 WORDS
	<p>the BASIC-MR, PART A. The six possible levels of performance under which each item can be scored are as follows. The record booklet is used to enter the scores obtained by the child on each item. Level One : Independent (Score 5) - If the child performs the listed behaviour without any kind of physical or verbal help, it is marked as 'independent' and given a score of 5. Level Two : Clueing (Score 4) - If the child performs the listed behaviour only with some kind of verbal hints, it is marked as 'clueing' and given a score of 4. Level Three : Verbal Prompting (Score 3) - If the child perform the listed behaviour with some kind of accompanying verbal statements, it is marked as 'verbal prompting' and given a score of 3. Level Four : Physical Prompting (Score 2) - If the child performs the listed behaviour only with any kind of accompanying physical or manual help, it is marked as 'physical prompting' and given a score of 2. Level Five : Totally dependent (Score 1) - If the child does not perform the listed behaviour at present, although he can be trained to do so; it is marked as 'totally dependent' and given a score of 1. Level Six : Not applicable (Score 0) - Some children may not be able to perform</p> <p>W https://specialeducationnotes.co.in/C12unit3.htm</p>		<p>the BASIC-MR, Part A. The six possible levels of performance under which each items can be scored are as follows. Use the record booklet to enter the scores obtained by the child on each item. Level One: Independent (score 5) - If the child performs the listed behaviour without any kind of physical or verbal help, it is marked as independent and given a score of 5. Level Two: Clueing (Score 4) - If the child performs the listed behaviour only with some kind of verbal hints. It is marked as "clueing" and given a score of 4. Level Three: Verbal Prompting (score 3) - If the child performs the listed behaviour with some kind of accompanying verbal statements. It is marked as verbal prompting and given a score of 3. Level Four: Physical Prompting (Score 2) - If the child performs the listed behaviour only with any kind of accompanying physical or manual help, it is marked as physical prompting and given a score of 2. Level Five: Totally dependent (Score 1) If the child does not perform the listed behaviour currently, although he can be trained to do so. It is marked as totally dependent and given a score of 1. Level Six: Not applicable (Score 0) - Some children may not be able to perform</p>	
90/203	SUBMITTED TEXT	12 WORDS	95% MATCHING TEXT	12 WORDS
	<p>Each child with retardation may show different levels of performance on</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>			
91/203	SUBMITTED TEXT	18 WORDS	78% MATCHING TEXT	18 WORDS
	<p>BASIC-MR Part A : Skill behaviour domains 1. Motor 2. Activities of daily living 3. Language 4. Reading-writing 5. Number-time 6. Domestic-social 7. Prevocational-money 8.</p> <p>W https://specialeducationnotes.co.in/C12unit3.htm</p>		<p>BASIC-MR Part A includes 180 items grouped under seven domains – motor, activities of daily living, language, reading and writing, number-time, domestic-social, prevocational-money.</p>	

92/203	SUBMITTED TEXT	22 WORDS	100% MATCHING TEXT	22 WORDS
<p>listed behaviour at all, owing to sensory or physical handicaps. Wherever an item is marked "not applicable", it gets a score of 0.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
93/203	SUBMITTED TEXT	22 WORDS	70% MATCHING TEXT	22 WORDS
<p>Violent and destructive behaviours 2. Temper tantrums 3. Misbehaves with others 4. Self-injurious behaviours 5. Repetitive behaviours 6. Odd behaviours 7. Hyperactivity 8. Rebellious behaviours 9. Antisocial behaviours 10. Fears 141</p> <p>SA MANISHA autism PAPER.docx (D124681370)</p>				
94/203	SUBMITTED TEXT	20 WORDS	79% MATCHING TEXT	20 WORDS
<p>in the areas of home living; community living; life-long learning; employment, health and safety; social interaction; and protection and advocacy. The</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
95/203	SUBMITTED TEXT	18 WORDS	70% MATCHING TEXT	18 WORDS
<p>require increased levels of support, regardless of his or her relative intensity of support needs in other life areas. The</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
96/203	SUBMITTED TEXT	20 WORDS	63% MATCHING TEXT	20 WORDS
<p>Upanayan, Arambh, Portage, MDPS, FACP and assessment tools in school level is MDPS, BASIC-MR, GLAD and Support Intensity Scale. Documentation of assessment</p> <p>Upanayan, Aarambh, Portage, Mdps, And Facp Unit 4 Assessment Tools At School Ages – Mdps, Basic –Mr, Glad, And Support Intensity Scale Unit 5 Documentation Of Assessment ,</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>				

97/203	SUBMITTED TEXT	13 WORDS	76% MATCHING TEXT	13 WORDS
<p>Documentation of Assessment, Result Interpretation and Report writing : Implication of class level assessment</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
98/203	SUBMITTED TEXT	28 WORDS	100% MATCHING TEXT	28 WORDS
<p>References : Arya, S., Kishore, M. T., Ranga, S., & Bist, J. (2005). Current Status of Intelligence Testing in India : Perspectives on Disabilities. NIMH News Letter, 18 (2&3), 19-23.</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				

99/203

SUBMITTED TEXT

256 WORDS

99% MATCHING TEXT

256 WORDS

Dunn, L., & Markwandt. E. (1988). Peabody Individual Achievement Test-Revised. Circle Pines, MN : American Guidance Service. Jayashankarappa B. S. (1986) Intellectual tests and social adaptive behavioural scales used for the assessment of the mentally handicapped in India. Journal of Personality and Clinical Studies, 2, 89-98. Linn, R.L., & Gronlund, N. E. (2000), Measurement and assessment in education, 8 th Edition Columbus OH : Merrill. Luckason, R., Borthwick-Duffy, S., Buntinx, W.H.E., Coutler, D. L., Craig, E. M., Reeve, A. et al. (2002). Mental Retardation : definition, classification, and systems of support (10 th ed.) Washington DC : American Association on Mental Retardation. 148 Luckason, R., Cutler, D.L., Polloway, E.A., Reese, S, Schalock, R.L., Snell, M.E. et. Al. (1992). Mental Retardation, definition, classification, and systems of support (9 th ed.) Washington DC : American Association on Mental Retardation. Madhavan, T., Kalyan, M., Naidu, S., Peshwaria, R., Narayan, J. (1989). Mental Retardation Manual for Psychologists, Secunderabad : NIMH. Narayan J. (1994). Garde Level Assessment Device for Children with Learning Problems in Schools, Secunderabad : NIMH. Narayan, J. & Kutty, A. T. (2002). Handbook for the trainers of the mentally retarded persons : Pre-primary Level. Curriculum Package Series 1, Secunderabad : NIMH. National Institute for the Mentally Handicapped (1989). Mental Retardation : Manual for Psychologists, Secunderabad : Author. Overton, T. (2000). Assessment in special education : an applied approach, New York : Merrill. Persha, A. & Rao. V.R.P.S. (2003). Early Intervention : A Service Model. Early Intervention to IUGR Children at Risk for Developmental Delays, Secunderabad : NIMH. Peshawaria, R., & Venkatesan, S. (1992). Behavioural Approach in Teaching Mentally Retarded Children – A manual for teachers, Secunderabad : NIMH. Peshawaria, R.,

SA CHAPTER 1.2 assessment tools.docx (D155146787)

100/203	SUBMITTED TEXT	87 WORDS	100% MATCHING TEXT	87 WORDS
<p>Rao S, Narayan J. (2002). Aarambh – Training Package for Early Childhood Special Education (An Inclusive Model), Secunderabad : NIMH. Schalock, R. L., Luckasson, R. A., Shogren, K.A., Borthwick-Duffy, V., Buntink, W.H.E. et. Al. (2007). The Renaming of Mental Retardation : Understanding the Change to the Term Intellectual Disability. Intellectual and Developmental Disabilities, 45 (2) : 116-124. Subba Rao, T.A. (1992). Manual of Developing Communication Skills in Mentally Retarded Persons, Secunderabad : NIMH. 149 Taylor, R.L. (1993). Assessment of exceptional students – Educational and Psychological Procedures, 3 rd Edn. Boston : Allyn & Bacon.</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
101/203	SUBMITTED TEXT	37 WORDS	100% MATCHING TEXT	37 WORDS
<p>Woolfolk. A. (20001). Educational Psychology, 2 nd Edition, Boston : Allyn & Bacon. Yule. W. & Carr. J. (1987). Behaviour Modification for People with Mental Handicaps (2 nd Edition), London : Croom Helm. 150</p> <p>SA CHAPTER 1.2 assessment tools.docx (D155146787)</p>				
102/203	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>Objectives After going through this unit, you will be able to : ●●●●●</p> <p>Objectives After going through this unit you will be able to:- ?</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>				
103/203	SUBMITTED TEXT	56 WORDS	81% MATCHING TEXT	56 WORDS
<p>Assessment at Adult and Vocational levels Structure 4.1 Introduction 4.2 Objectives 4.3 Significance of Assessment for Independent living of PwIDs. 4.4 Assessment for Transition from School to Work. 4.5 Assessment Tools for Independent Living - BASAL-MR, V APS. 4.6 Provisions & Schemes of MoSJE for Vocational Skill Development 4.7 Documentation of Assessment, Result Interpretation and Report Writing– Implications of Assessment, Outcomes for Community Living. 4.8</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				

104/203	SUBMITTED TEXT	13 WORDS	95% MATCHING TEXT	13 WORDS
<p>outcomes for community living. 152 4.3 Significance of Assessment for Independent living of</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>		<p>Outcomes For Community Living SIGNIFICANCE OF ASSESSMENT FOR INDEPENDENT LIVING OF</p>		
105/203	SUBMITTED TEXT	39 WORDS	63% MATCHING TEXT	39 WORDS
<p>Comprehensive transition from school to work planning and implementation require participation from all relevant school, parents and the children with intellectual disability Very often, comprehensive transition planning requires restructuring and rethinking of professional roles. Refining professional roles is not enough, participation of</p> <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				
106/203	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
<p>Assessment is a process of collecting data for the purpose of making decisions about</p> <p>SA EDU 293Introduction To Neuro Developmental Disabilities.pdf (D165064915)</p>				
107/203	SUBMITTED TEXT	100 WORDS	89% MATCHING TEXT	100 WORDS
<p>Analysis : Processing and understanding of patterns in person's educational, social, developmental, environmental, medical, and emotional history. ●●●●●</p> <p>Evaluation : Evaluation of person's academic, intellectual, psychological, emotional, perceptual, language, cognitive, and medical development in order to determine areas of strength and weakness. ●●●●●</p> <p>Determination : Determination of the presence of suspected disability and the knowledge of the criteria that constitute each category. ●●●●●</p> <p>Recommendation : Recommendations concerning educational placement and program that needs to be made to the school, teachers and parents.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				

108/203	SUBMITTED TEXT	10 WORDS	90% MATCHING TEXT	10 WORDS
<p>for Transition from School to Work Transition from school to work</p> <p>W http://crcgkp.org.in/upload_store/596913DEd_MD_syllabus.pdf</p>		<p>for transition from school to work. 1. Programme for transition from school to work. 2.</p>		
109/203	SUBMITTED TEXT	60 WORDS	74% MATCHING TEXT	60 WORDS
<p>Provides information on work readiness skills. ●●●●● Helps to identify suitable jobs in the community. ●●●●● Provides information on jobs selected. ●●●●● Identifies areas in which training is needed. ●●●●● Emphasizes on-the-job training. ●●●●● Evaluates work related skills and work behavior. ●●●●● Targets employment for all trainees who are assessed. ●●●●● Extends support for job retention Aim of Vocational Assessment The main aim of vocational assessment is to</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
110/203	SUBMITTED TEXT	39 WORDS	63% MATCHING TEXT	39 WORDS
<p>Comprehensive transition from school to work planning and implementation require participation from all relevant school, parents and the children with intellectual disability Very often, comprehensive transition planning requires restructuring and rethinking of professional roles. Refining professional roles is not enough, participation of</p> <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				
111/203	SUBMITTED TEXT	17 WORDS	91% MATCHING TEXT	17 WORDS
<p>Transition plans may begin with a parent, school or an agency responsible for providing post school vocational services.</p> <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				
112/203	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>particular group the student could be promoted to the higher class).</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>		<p>particular group the student could be promoted to the higher class.</p>		

113/203	SUBMITTED TEXT	32 WORDS	52% MATCHING TEXT	32 WORDS
<p>Stage Systematic school instruction is the foundation of vocational training and related employment. The children with Intellectual Disability are being taught daily living skills through functional curriculum from pre-primary to pre-vocational levels. The functional curriculum</p> <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				
114/203	SUBMITTED TEXT	44 WORDS	81% MATCHING TEXT	44 WORDS
<p>The main objectives of school based curriculum are :</p> <ul style="list-style-type: none"> ●●●● It develops work habits, positive attitudes, value toward work and daily living skills. ●●●● It provides instructions and guidance for establishing and maintaining relationship at home, school and at work. ●●●● It develops the work <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				
115/203	SUBMITTED TEXT	13 WORDS	84% MATCHING TEXT	13 WORDS
<p>Identification of employment opportunities, (iii) Working out strategies to enlist jobs in community,</p> <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				
116/203	SUBMITTED TEXT	58 WORDS	86% MATCHING TEXT	58 WORDS
<p>right from the beginning of their schooling. As they reach the final stage, the search for the real job starts. The training continues in simulated job setting and job sites. By the end of the training, as they leave school, the students with intellectual disability are placed in actual sites. It can be in one of the following types of employment</p> <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				
117/203	SUBMITTED TEXT	11 WORDS	89% MATCHING TEXT	11 WORDS
<p>the new employees to continue on-the-job are given importance in this model.</p> <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				

118/203

SUBMITTED TEXT

162 WORDS

97% MATCHING TEXT

162 WORDS

Planning for Vocational Transition : the Process This is the important phase of a transition model. Transition programme would have no meaning without specific planning. Formal individualized student plans It is essential to develop a formal, individualized transition plan for every student with intellectual disability. Formal plan should specify the objectives to be acquired. The plan should include annual goals and short term objectives that reflect skills required to function on the job, at home and in the community. Transition plan should be comprehensive in scope. In addition to specific job skill training, students must also be prepared to use community services effectively, manage money, and travel to and from work place independently. Plans must take care of all these skill areas to meet the comprehensive needs of the students and at the same time should be individualized. Each individual requires a different set of post-school services. Transition plans must also be longitudinal in nature. Participation of all individuals and agencies involved in the transition process during the initial development

SA SEID -31 PDF.pdf (D127037695)

119/203	SUBMITTED TEXT	190 WORDS	91% MATCHING TEXT	190 WORDS
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the plan is required till the final placement. The plan initially should be for a longer period and should then be modified once in a year. ØØØØ Consumer input
 Wherever appropriate, the person with ID should be consulted for his views and options as he is the consumer of the plan proposed. When the person with intellectual disability is not capable of making decision, the parent or primary caregiver becomes the consumer to represent the student concerned, Therefore, parental involvement in vocational transitional plans is important. They should be made aware of the employment alternatives available to their children. They must acquire knowledge and skills required to participate effectively in transitional planning. Systematically planned parent education programs will improve the effectiveness and duration of parent involvement. Parent education meeting should be conducted by the school personnel for the purpose of enhancing parental involvement. The meeting should.

- Orient the parents to the community agencies providing post-school services to handicapped youth.
- Familiarize parents with specific responsibilities of special education, vocational education and vocational rehabilitation in the vocational transition process. ●●●●

Prepare parents to work with various agencies to develop transition plans and to apply for future services. 164

SA SEID -31 PDF.pdf (D127037695)

120/203	SUBMITTED TEXT	28 WORDS	98% MATCHING TEXT	28 WORDS
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Assessment Tools and methods vary depending on the purpose for which assessment is to be carried out and the type of the data that has to be gathered.	assessment tools and methods vary depending on the purpose for which the assessment is to be carried out and the type of the data that has to be gathered.
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W <http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf>

121/203

SUBMITTED TEXT

225 WORDS

94% MATCHING TEXT

225 WORDS

Inter-agency co-operation It refers to coordinated efforts across different agencies like schools, rehabilitation services and vocational training centers so as to ensure the delivery of appropriate, non-duplicated services to each student (Morton et al. 1983) However, it is a difficult attempt. Since agencies differ widely in their opinion, services continue to be duplicated. Solutions to these problems are yet to come up. ØØØØØ Employment outcome Employment outcome is the outgrowth of appropriate secondary special educational programme and a meaningful transition plan. As a result of the implementation of individualize transition plan the trainee should be in a position to work in open employment, supported employment, sheltered employment or self-employment setup. It is essential that communities should provide different vocational alternatives, in order to make transition programme a success. ØØØØØ Necessity of follow-up services Though outcome stage is the final stage in the transition model, the responsibility of the special educator does not end with this. In order to monitor the transition effectively, it is the essential to follow-up the individuals-who are placed on jobs in regular interval. It is also essential to ensure job retention by the person concerned. Here, we have to collect information about the student's perception of his/her present job status, parents' satisfaction and the employer's evaluation of his/her work performance. The follow up services in addition to helping the students in retaining the job will help the professional in gathering information about the effectiveness of the transition programme. 4.5

SA SEID -31 PDF.pdf (D127037695)

122/203

SUBMITTED TEXT

28 WORDS

67% MATCHING TEXT

28 WORDS

Part : A ●●●●● Personal care ●●●●● Food management
 ●●●●● Household tasks & responsibility ●●●●●
 Community & Leisure ●●●●● Sexuality ●●●●● Work
 ●●●●● Functional literacy ●●●●● Social-communication

SA SEID -31 PDF.pdf (D127037695)

123/203	SUBMITTED TEXT	27 WORDS	59% MATCHING TEXT	27 WORDS
<p>Physical harm towards others ●●●●● Damages property 166 ●●●●● Misbehaves with others ●●●●● Temper tantrums ●●●●● Self-injurious behaviours ●●●●● Repetitive behaviours ●●●●● Odd behaviours ●●●●● Inappropriate social behaviours ●●●●● Inappropriate sexual behaviours ●●●●● Rebellious behaviours ●●●●●</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
124/203	SUBMITTED TEXT	20 WORDS	81% MATCHING TEXT	20 WORDS
<p>to administer all the items within a given domain for each and every adult being assessed on the BASAL-MR. 5. The</p> <p>SA MANISHA autism PAPER.docx (D124681370)</p>				
125/203	SUBMITTED TEXT	35 WORDS	77% MATCHING TEXT	35 WORDS
<p>of BASAL-MR (PART-A) Each adult with Intellectual Disability may show different levels of performance on every item on the BASAL-MR (Part A), the six possible levels of performance under which each item can be scored are as follows:</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
126/203	SUBMITTED TEXT	21 WORDS	77% MATCHING TEXT	21 WORDS
<p>Level Three : Verbal prompting (Score 3) If the adult performs the listed behavior only with some kind of accompanying verbal statements (</p> <p>Level Three: Verbal Prompting (score 3) - If the child performs the listed behaviour with some kind of accompanying verbal statements.</p> <p>W https://specialeducationnotes.co.in/C12unit3.htm</p>				
127/203	SUBMITTED TEXT	33 WORDS	90% MATCHING TEXT	33 WORDS
<p>it is marked as verbal prompting and given a score of 3. Level Four: Physical Prompting (Score 2) If the adult performs the listed behavior only with any kind of accompanying physical or manual help (</p> <p>It is marked as verbal prompting and given a score of 3. Level Four: Physical Prompting (Score 2) - If the child performs the listed behaviour only with any kind of accompanying physical or manual help,</p> <p>W https://specialeducationnotes.co.in/C12unit3.htm</p>				

128/203	SUBMITTED TEXT	36 WORDS	79% MATCHING TEXT	36 WORDS
<p>Each adult with Intellectual Disability may show different levels of performance on every item on the BASAL-MR (Part A). The six possible levels of performance under which each item can be scored are as follows : Use</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
129/203	SUBMITTED TEXT	35 WORDS	91% MATCHING TEXT	35 WORDS
<p>it is marked as physical prompting and given a score of 2. Level Five : Totally dependent (Score 1) If the "adult does not perform the listed behavior currently although he can be trained to do so (</p> <p>it is marked as physical prompting and given a score of 2. Level Five: Totally dependent (Score 1) If the child does not perform the listed behaviour currently, although he can be trained to do so.</p> <p>W https://specialeducationnotes.co.in/C12unit3.htm</p>				
130/203	SUBMITTED TEXT	62 WORDS	73% MATCHING TEXT	62 WORDS
<p>to enter the scores obtained by the adult on each item. Level Two : Independent (Score 5) If the adult performs the listed behavior without any kind of physical or verbal assistance or clueing/ modelling. It is marked as independent and given a score of 5, Level Two : Clueing/ modelling (Score 4) If the adult performs the listed behavior only with some kind of verbal hints (</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
131/203	SUBMITTED TEXT	17 WORDS	100% MATCHING TEXT	17 WORDS
<p>it is marked as totally dependent and given a score of 1. Level Six : Not Applicable (Score 0)</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
132/203	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>MR (Part B) is to be administered individually on each</p> <p>SA Suman Madan (19-BMU-6111) EDUCATION.docx (D148140404)</p>				

133/203	SUBMITTED TEXT	24 WORDS	68% MATCHING TEXT	24 WORDS
<p>each item within every domain in the scale and assess whether the given person with Intellectual Disability has or does not have, the stated</p> <p>SA Research Work Suraj.pdf (D30233331)</p>				
134/203	SUBMITTED TEXT	24 WORDS	72% MATCHING TEXT	24 WORDS
<p>given person with Intellectual Disability, check each item of the scale and rate them along a three point rating scale, viz. never, occasionally or frequently.</p> <p>W https://specialeducationnotes.co.in/C12unit3.htm</p> <p>given child with mental retardation, check each of the scale and rate them along a three point rating scale, viz. never (n), occasionally (o) or frequently (</p>				
135/203	SUBMITTED TEXT	79 WORDS	64% MATCHING TEXT	79 WORDS
<p>once in a while or now and then, it is rated "Occasionally" and given a score of 1. c) If the stated problem behavior occurs quite often or, habitually it is rated as "frequently" and given a score of 2. 170 Thus, for each item on the BASAL-MR (Part B) an adult with Intellectual Disability may get any score ranging from 0 to 2 depending on the frequency of that problem behavior. Enter the appropriate score obtained by the person for each item in the</p> <p>W https://specialeducationnotes.co.in/C12unit3.htm</p> <p>once in a while or now and then, it is marked "Occasionally" and given a score of one. · If the stated problem behaviour presently occurs quite often or, habitually, it is frequently" and given a score of Thus, for each item on the BASIC-MR, Part B, a child with mental retardation may get any score ranging from zero to two depending on the frequency of that problem behaviour. Enter the appropriate score obtained by the child for each item in the</p>				
136/203	SUBMITTED TEXT	22 WORDS	87% MATCHING TEXT	22 WORDS
<p>of BASAL MR (Part B) The following is the criteria of scoring which need to be used for BASAL-MR (Part B) 1. For</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
137/203	SUBMITTED TEXT	28 WORDS	69% MATCHING TEXT	28 WORDS
<p>the individual scores of the person on each item within a domain and express it as 'obtained score' for that domain. Convert it into percentage for each domain. 4.</p> <p>SA Research Work Suraj.pdf (D30233331)</p>				

138/203	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>NIMH Vocational Assessment and programming system for persons with Mental Retardation) -</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>		<p>NIMH - Vocational Assessment and Programming System for Persons with Mental Retardation (</p>		
139/203	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>NIMH Vocational Assessment and programming system for persons with Mental Retardation.</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>		<p>NIMH - Vocational Assessment and Programming System for Persons with Mental Retardation (</p>		
140/203	SUBMITTED TEXT	18 WORDS	75% MATCHING TEXT	18 WORDS
<p>dividing the total obtained score with the maximum possible score i.e. 240 and multiply by 100. 6.</p> <p>SA Suman Madan (19-BMU-6111) EDUCATION.docx (D148140404)</p>				
141/203	SUBMITTED TEXT	37 WORDS	95% MATCHING TEXT	37 WORDS
<p>There are two aspects in trainee's skids assessment in the functional vocational assessment: • Generic assessment. • Specific skills assessment. Generic skills are the pre-requisite skills/work readiness skills for a specific job selection and training.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
142/203	SUBMITTED TEXT	41 WORDS	73% MATCHING TEXT	41 WORDS
<p>Vocational Profile • Generic Skills assessment Check list • Job Analysis Format • Work Behaviour Assessment Check List • Vocational profile consists of trainees identification data, family history, socio- economic status, readiness skills assessment, associated condition, training received, daily routines, employment experiences (if any), possibilities of employment,</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				

143/203	SUBMITTED TEXT	20 WORDS	83% MATCHING TEXT	20 WORDS
<p>domains. The domains are personal, communication, social behavior, functional academics, safety skills, domestic behavior, mobility and hand functioning and occupational skills.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
144/203	SUBMITTED TEXT	12 WORDS	76% MATCHING TEXT	12 WORDS
<p>work related activities include personal, functional academics, sex education, recreation and independent living.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
145/203	SUBMITTED TEXT	18 WORDS	92% MATCHING TEXT	18 WORDS
<p>checklist consists physical appearance, personal interaction, regularity and punctuality, communication and social manners, quality and quantity aspects of work.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
146/203	SUBMITTED TEXT	14 WORDS	88% MATCHING TEXT	14 WORDS
<p>Documentation of Assessment, Result Interpretation and Report Writing-Implications of Assessment, Outcomes for Community Living. Documentation of Assessment</p> <p>Documentation Of Assessment, Result Interpretation And Report Writing Implications Of Assessment, Outcomes For Community Living OF ASSESSMENT</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>				
147/203	SUBMITTED TEXT	17 WORDS	100% MATCHING TEXT	17 WORDS
<p>Scheme for implementation of Persons with Disabilities (Equal Opportunities, protection of Rights and Full Participation) Act 1995 (</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				

148/203**SUBMITTED TEXT**

100 WORDS

93% MATCHING TEXT

100 WORDS

Before deciding the training place, nature and training programme, it is essential to know a few aspects like:- 181

- The type of toilet used by the family
- The person would be involved in training
- The cultural belief for toileting
- Cleaning methods after toileting etc.

Developing teaching materials for the student must be based on the resources of the parents; if the parents are affordable to purchase highly costly materials then it will be worthwhile to prescribe such materials. On the other hand, the poor people could be advised to develop teaching materials

SA SEID -31 PDF.pdf (D127037695)**149/203****SUBMITTED TEXT**

38 WORDS

88% MATCHING TEXT

38 WORDS

The period decided for training was three months. After two months of training, it was observed that, the student has achieved the task. But, the parents are still continuing the training as because the period was decided for three months.

SA SEID -31 PDF.pdf (D127037695)**150/203****SUBMITTED TEXT**

61 WORDS

89% MATCHING TEXT

61 WORDS

Report writing The interpretation and reporting of assessment results are guided by a set of general principles. Using Structured format : When analyzing and reporting assessment result, remember the reasons for referral and work toward answering the main assessment questions. Whether the interpretation and report are verbal or written, you must proceed in an orderly fashion to present a cohesive picture of the student's learning problems. The

SA SEID -31 PDF.pdf (D127037695)

151/203**SUBMITTED TEXT**

54 WORDS

94% MATCHING TEXT

54 WORDS

reading, mathematics, and so forth. • Summary and Conclusions - A brief statement of the level of performance and strengths and weaknesses in the areas assessed. • Recommendations - The goals and objectives, special service, and service delivery model(s) appropriate for the student's educational needs. • Data Sheet - All the formal and informal results for independent analysis and reference.

SA SEID -31 PDF.pdf (D127037695)**152/203****SUBMITTED TEXT**

61 WORDS

97% MATCHING TEXT

61 WORDS

Report only relevant data - Choose the most pertinent data to answer the assessment questions and disregard the rest. • Report information once and then mention it only as needed avoid making the same point again and again. For example, distractible behavior has bearing upon all the results. Discuss it once in the appropriate place and then clarify its significance at a crucial point. 183 •

SA SEID -31 PDF.pdf (D127037695)**153/203****SUBMITTED TEXT**

136 WORDS

88% MATCHING TEXT

136 WORDS

Report facts and data accurately and simply-avoid making unfounded statements or inferences. • Insert sensitive information tactfully-when information may be offensive or unpleasant to someone (for example, information about student abuse, a recent death in the family, or teacher-parent disagreements) and significant for interpreting the data, choose diplomatic language to make the point. • Note the source of any information and report the data accurately - When appropriate, attribute statements to the parents, teachers, and other people who made them. Useful phrases are "As his mother reported..." or "From an interview with her teacher..." Use similar references in the case of tests and informal procedures, including observations and task analysis, "As measured by the WISC- R..." or "From observations in the classroom..." • When reporting data from previous assessments do so briefly and with full reference to the source -

SA SEID -31 PDF.pdf (D127037695)

154/203	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
<p>Consider information about instructional factors in the classroom and non- instructional correlates (medical, social,</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
155/203	SUBMITTED TEXT	94 WORDS	95% MATCHING TEXT	94 WORDS
<p>programming. This report is solely written by the teacher at the initial stage, formative stage and summative stage for promotions to next level or for future use. The following points are to be kept in mind while writing the reports. • Objectively • Relevance or use • Clarity in content and presentation 185 • Authenticity • Unbiased • Up to date • Simplicity • Precise • Provision of support documents where applicable</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
156/203	SUBMITTED TEXT	28 WORDS	95% MATCHING TEXT	28 WORDS
<p>for referral Referrals are made in the beginning at the time of initial team assessment, during the implementation of the educational training and / or on the completion of school education.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
157/203	SUBMITTED TEXT	39 WORDS	92% MATCHING TEXT	39 WORDS
<p>for alternative placements This is a concept more applicable to the western countries where the placements are governed strictly by law. A team decision becomes absolutely essential to decide on the placement of the child with inclusion in focus. Community - In</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
158/203	SUBMITTED TEXT	13 WORDS	88% MATCHING TEXT	13 WORDS
<p>The information gained through the assessment process have to be utilized meaningfully for</p> <p>SA CHAPTER_-_1.pdf (D38635105)</p>				

159/203	SUBMITTED TEXT	48 WORDS	94% MATCHING TEXT	48 WORDS
<p>It is essential to develop a formal, individualized transition plan for every student with intellectual disability. Formal plan should specify the objectives to be acquired. The plan should include annual goals and short term objectives that reflect skills required to function on the job, at home and in the community.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
160/203	SUBMITTED TEXT	22 WORDS	91% MATCHING TEXT	22 WORDS
<p>Wherever appropriate, the person with ID should be consulted for his views and options as he is the consumer of the plan proposed.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
161/203	SUBMITTED TEXT	17 WORDS	100% MATCHING TEXT	17 WORDS
<p>Parent education meeting should be conducted by the school personnel for the purpose of enhancing parental involvement.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
162/203	SUBMITTED TEXT	29 WORDS	93% MATCHING TEXT	29 WORDS
<p>Inter- agency co-operation refers to coordinated efforts across different agencies like schools, rehabilitation services and vocational training centers so as to ensure the delivery of appropriate, non-duplicated services to each student.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
163/203	SUBMITTED TEXT	27 WORDS	100% MATCHING TEXT	27 WORDS
<p>As a result of the implementation of individualize transition plan the trainee should be in a position to work in open employment, supported employment, sheltered employment or self-employment setup.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				

164/203	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>NIMH Vocational Assessment and programming system for persons with Mental Retardation.</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>		<p>NIMH - Vocational Assessment and Programming System for Persons with Mental Retardation (</p>		
165/203	SUBMITTED TEXT	27 WORDS	100% MATCHING TEXT	27 WORDS
<p>The follow up services in addition to helping the students in retaining the job will help the professional in gathering information about the effectiveness of the transition programme.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
166/203	SUBMITTED TEXT	18 WORDS	91% MATCHING TEXT	18 WORDS
<p>Transition plans may begin with a parent, school or an agency responsible for providing post school vocational services.</p> <p>SA Effect of Vocational Training on Behavioural Skills in Mild Intellectually Disabled (Anash Kumar ... (D29288122)</p>				
167/203	SUBMITTED TEXT	17 WORDS	100% MATCHING TEXT	17 WORDS
<p>There are two aspects in trainee's skills assessment in the functional vocational assessment: Generic assessment, Specific skills assessment. ●●●●●</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
168/203	SUBMITTED TEXT	15 WORDS	100% MATCHING TEXT	15 WORDS
<p>The interpretation and reporting of assessment results are guided by a set of general principles.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				

169/203	SUBMITTED TEXT	16 WORDS	61% MATCHING TEXT	16 WORDS
<p>Assessment of Family Needs Structure 5.1 Introduction 5.2 Objectives 5.3 Significance of psycho-social need and its implication in family 5.3.1</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
170/203	SUBMITTED TEXT	43 WORDS	56% MATCHING TEXT	43 WORDS
<p>of psychosocial needs in the family 5.4 Assessment of parental needs and its implication in planning IFSP 5.4.1 Need of the parent 5.4.2 Assessment of parental need 5.4.3 Implication in planning IFSP 5.5 Assessment of sibling needs and its implication in planning IFSP 5.5.1 Sibling need 5.5.2 Assessment of</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
171/203	SUBMITTED TEXT	19 WORDS	84% MATCHING TEXT	19 WORDS
<p>Implication in planning IFSP 5.7 Assessment of family and community resources for inclusion and strengthening of family 5.7.1 Assessment of family 5.7.2</p> <p>implication in planning IFSP Unit 5: Assessment of family and community resources for inclusion and strengthening of family, documentation, recording and reporting Assessment of Family</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>				
172/203	SUBMITTED TEXT	21 WORDS	67% MATCHING TEXT	21 WORDS
<p>Implication in planning IFSP 5.6 Assessment of extended family needs and its implication in planning IFSP 5.6.1 Need of grandparents 5.6.2 Assessment of</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				

173/203	SUBMITTED TEXT	108 WORDS	78% MATCHING TEXT	108 WORDS		
<p>The benefits of family centered interventions are being greatly recognized now more than before. Efforts are being directed towards involving parents and other family members in the training and rehabilitation of the individuals with intellectual disabilities precisely for the reasons that such approaches results positive in both parent, family and child outcomes. It helps in enhancing child development, reducing stress in the family, increasing family coping strategies and also leads to improve relationships within the family. For strengthening the family having children with intellectual disabled the intervention need to be directed towards meeting the needs of the index child ,of parents, siblings and extended family members as also recognize ,promote and utilize the existing strengths of the families.</p> <p>SA THESIS Vaniaritakula Social Work.docx (D19105024)</p>						
174/203	SUBMITTED TEXT	41 WORDS	89% MATCHING TEXT	41 WORDS		
<p>An extended family is a family that extends beyond the nuclear family, consisting of grandparents, aunts, uncles, and cousins all living nearby or in the same household. An example is a married couple that lives with either the husband or the wife’s parents.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>						
175/203	SUBMITTED TEXT	62 WORDS	100% MATCHING TEXT	62 WORDS		
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>An Individualized Family Service Plan (IFSP) is a working document produced collaboratively by program staff and family members that contains the agreed upon Early Intervention services for an eligible child and family. Based on a multidisciplinary eligibility evaluation and any completed assessments, the plan includes services necessary to enhance the development of an eligible child, and the capacity of the family to meet the child’s needs 5.2.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p> </td> <td style="width: 50%; vertical-align: top;"> <p>An Individualized Family Service Plan (IFSP) is a working document produced collaboratively by program staff and family members that contains the agreed upon Early Intervention services for an eligible child and family. Based on a multidisciplinary eligibility evaluation and any completed assessments, the plan includes services necessary to enhance the development of an eligible child, and the capacity of the family to meet the child's needs.</p> </td> </tr> </table>					<p>An Individualized Family Service Plan (IFSP) is a working document produced collaboratively by program staff and family members that contains the agreed upon Early Intervention services for an eligible child and family. Based on a multidisciplinary eligibility evaluation and any completed assessments, the plan includes services necessary to enhance the development of an eligible child, and the capacity of the family to meet the child’s needs 5.2.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>	<p>An Individualized Family Service Plan (IFSP) is a working document produced collaboratively by program staff and family members that contains the agreed upon Early Intervention services for an eligible child and family. Based on a multidisciplinary eligibility evaluation and any completed assessments, the plan includes services necessary to enhance the development of an eligible child, and the capacity of the family to meet the child's needs.</p>
<p>An Individualized Family Service Plan (IFSP) is a working document produced collaboratively by program staff and family members that contains the agreed upon Early Intervention services for an eligible child and family. Based on a multidisciplinary eligibility evaluation and any completed assessments, the plan includes services necessary to enhance the development of an eligible child, and the capacity of the family to meet the child’s needs 5.2.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>	<p>An Individualized Family Service Plan (IFSP) is a working document produced collaboratively by program staff and family members that contains the agreed upon Early Intervention services for an eligible child and family. Based on a multidisciplinary eligibility evaluation and any completed assessments, the plan includes services necessary to enhance the development of an eligible child, and the capacity of the family to meet the child's needs.</p>					

176/203	SUBMITTED TEXT	12 WORDS	87% MATCHING TEXT	12 WORDS
<p>Objectives After going through the unit you will be able to: - Understand</p> <p>W http://142.93.128.11:8080/jspui/bitstream/123456789/683/2/U2.pdf</p>		<p>Objectives After going through this unit you will be able to:- ? Understand</p>		
177/203	SUBMITTED TEXT	15 WORDS	90% MATCHING TEXT	15 WORDS
<p>To enhance the effectiveness of the family it is important to identify the needs of</p> <p>SA All_Chapter_Final_DKT_Ph.d_Thesis_Revised.docx (D143306060)</p>				
178/203	SUBMITTED TEXT	25 WORDS	68% MATCHING TEXT	25 WORDS
<p>needs and its implication in planning IFSP. - Understand the assessment of family and community resources for inclusion. - Describe the process of documentation, recording and reporting. -</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
179/203	SUBMITTED TEXT	9 WORDS	100% MATCHING TEXT	9 WORDS
<p>Assessment of Parental Needs and its Implication in Planning IFSP</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
180/203	SUBMITTED TEXT	22 WORDS	93% MATCHING TEXT	22 WORDS
<p>Parents having a child with intellectual disabilities experience a variety of stressors and stress reactions related to the child's disability. (Orr et,al;1993) 5.4.1.</p> <p>SA THESIS Vaniaritakula Social Work.docx (D19105024)</p>				
181/203	SUBMITTED TEXT	11 WORDS	87% MATCHING TEXT	11 WORDS
<p>impacted in may ways because of having a child with intellectual disability.</p> <p>SA THESIS Vaniaritakula Social Work.docx (D19105024)</p>				

182/203	SUBMITTED TEXT	26 WORDS	100% MATCHING TEXT	26 WORDS
<p>The presence of a child with intellectual disability in the family calls for a lot of adjustment on the part of the parents and the family members.</p> <p>SA THESIS Vaniaritakula Social Work.docx (D19105024)</p>				
183/203	SUBMITTED TEXT	16 WORDS	100% MATCHING TEXT	16 WORDS
<p>The IFSP is the written plan that lists services and supports to eligible children and families.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>				
184/203	SUBMITTED TEXT	24 WORDS	82% MATCHING TEXT	24 WORDS
<p>child as well as parents. Parents are a partner in developing the IFSP, and it is important for them to be part of the process.</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p>				
185/203	SUBMITTED TEXT	40 WORDS	91% MATCHING TEXT	40 WORDS
<p>the family members get affected. Marital harmony gets disturbed owing to various child related reasons such as meeting extra child-care responsibilities and burden, affecting sexual relationship between parents due to less privacy, more fatigue and fear of producing another child with disability. 5.4.2</p> <p>SA MA Dissertation.pdf (D26388436)</p>				

186/203**SUBMITTED TEXT**

124 WORDS

89% MATCHING TEXT

124 WORDS

The presence of an individual with intellectual disability in the family call for a lot of adjustments on the part of the parents, siblings and other significant family members (Peshwaria & Menon,1991). Identifying and meeting individual needs of various members in the family is the only way to strengthen the family having a child with intellectual disability. Beyond the typical needs experienced by siblings with the birth of a brother or sister, increased stress and additional needs for support are experienced by siblings having brothers or sisters with disability. These unique needs may take the form of family support, assistance, information etc. Thus, to strengthen families having individuals with intellectual disabilities, interventions must recognize the feelings and needs of the siblings. (Turnbull & Turnbull,1990). Although siblings may not always explicitly reveal their needs,

SA SEID -31 PDF.pdf (D127037695)**187/203****SUBMITTED TEXT**

55 WORDS

93% MATCHING TEXT

55 WORDS

that siblings of persons with handicaps do have a number of special needs related to 202 themselves, their families, and the community. However till date very few attempts have been made to empirically study the needs of siblings having brother or sister with intellectual disability. Anecdotal reports have been the main source of identifying needs expressed by siblings.

SA SEID -31 PDF.pdf (D127037695)**188/203****SUBMITTED TEXT**

12 WORDS

100% MATCHING TEXT

12 WORDS

sibling based on a number of individual characteristics of the family system.

SA SEID -31 PDF.pdf (D127037695)

189/203	SUBMITTED TEXT	87 WORDS	83% MATCHING TEXT	87 WORDS
<p>siblings of children with handicaps have a range of needs from knowing the cause of handicaps, how to get along with their handicapped sibling better, what to tell their friends about their handicapped sibling, future role , to dealing with parental expectations. Children are a source of strength for parents. This relationship assumes even greater significance when there is a handicapped member in the family and especially for a country like India where there are no special security systems and siblings naturally assume the role of guardianship of their brother/ sister with intellectual</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
190/203	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>of Extended Family Needs and its implication in Planning IFSP 5.6.1</p> <p>Of Extended Family Needs And Its Implication In Planning Ifsp 4.1</p> <p>W http://mpbou.edu.in/slm/bedside/sesmr01.pdf</p>				
191/203	SUBMITTED TEXT	21 WORDS	78% MATCHING TEXT	21 WORDS
<p>this context, to strengthen this natural resource of support i.e., the sibling by identifying and meeting their unique needs becomes imperative.</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
192/203	SUBMITTED TEXT	21 WORDS	84% MATCHING TEXT	21 WORDS
<p>implication in planning IFSP. 5.7 Assessment of Family and Community Resources for Inclusion and Strengthening of Family 5.7.1. Assessment of family –</p> <p>implication in planning IFSP Unit 5: Assessment of family and community resources for inclusion and strengthening of family, documentation, recording and reporting Assessment of Family</p> <p>W http://mpbou.edu.in/slm/bedside/sesmr01.pdf</p>				
193/203	SUBMITTED TEXT	13 WORDS	76% MATCHING TEXT	13 WORDS
<p>get affected in many ways because of having a grandchild with intellectual disability.</p> <p>SA THESIS Vaniaritakula Social Work.docx (D19105024)</p>				

194/203**SUBMITTED TEXT**

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Identification Data: All essential demographic information about the student: full name, address, date

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birth, and so forth. 2. Reason for referral: The basis for and source of the referral. 3. Relevant background: Significant information about the student's medical, developmental, educational and socio cultural background. 4. Behavioural Observations: Descriptions of the student's behaviour during assessment. 5. Assessment result and discussion: Scores and other results in pertinent areas, such as reading, mathematics, and so forth. 6. Summary and conclusions: A brief statement of the level of performance and strength and weakness in the areas assessed. 7. Recommendations: The goals and objectives, special services, and service delivery models appropriate for the student's educational needs. 8. Data Sheet: All the formal and informal results for independent analysis and reference.

SA SEID -31 PDF.pdf (D127037695)**196/203****SUBMITTED TEXT**

16 WORDS

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The interpretation and reporting of assessment results are guided by a set of general principles — a)

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Report information once and then mention it only as needed. d) Avoid making

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198/203	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>Note the source of any information and report the data accurately. 209</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
199/203	SUBMITTED TEXT	28 WORDS	79% MATCHING TEXT	28 WORDS
<p>do so briefly and with full reference to the source. i) Mention the absence of critical data, such as recent visual and hearing assessments. j) Report any test administration errors</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
200/203	SUBMITTED TEXT	19 WORDS	92% MATCHING TEXT	19 WORDS
<p>problems and reservations about the findings. k) Consider information about instructional factors in the classroom and non- instructional correlates (medical, social,</p> <p>SA SEID -31 PDF.pdf (D127037695)</p>				
201/203	SUBMITTED TEXT	18 WORDS	100% MATCHING TEXT	18 WORDS
<p>It's important to have a plan in writing, which shows the work families and staff will do together .</p> <p>W http://mpbou.edu.in/slm/bedsede/sesmr01.pdf</p> <p>It's important to have a plan in writing, which shows the work families and staff will do together.</p>				
202/203	SUBMITTED TEXT	70 WORDS	91% MATCHING TEXT	70 WORDS
<p>Families are critical agents in the care, management and habilitation of individuals with intellectual disability. Parents, sibling and other significant family members are increasingly, being involved in the training and habilitation of the individuals with intellectual disability. The underlying concept of family centered intervention is that children's functioning can be maximized by providing services that are designed to enhance the effectiveness of their families. Families are interactive, interdependent systems with individual members reciprocally affecting each other. ●●●●●</p> <p>SA All_Chapter_Final_DKT_Ph.d_Thesis_Revised.docx (D143306060)</p>				

203/203

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Understanding Indian Families : Having Persons with
Mental Retardation. Secunderabad : NIMH ●●●●●











Understanding Indian families having persons with Mental
Retardation, Secunderabad NIMH. 4.

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1 B. Ed. Spl. Ed. (M. R. / H. I. / V. I)- ODL Programme AREA - C C-12 : INDENTIFICATION OF CHILDREN WITH VISUAL IMPAIRMENT AND ASSESSMENT OF NEEDS A COLLABORATIVE PROGRAMME OF NETAJI SUBHAS OPEN UNIVERSITY AND REHABILITATION COUNCIL OF INDIA

2 Chairman Prof. Subha Sankar Sarkar, Vice Chancellor, Netaji Subhas Open University, DD-26, Sector-I, Kolkata-700064
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without the written permission from the NSOU authorities. Dr. Ashit Baran Aich Registrar(Actg.)

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

4 I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed. (M. R. / H. I. / V. I)- ODL Programme AREA - C C-12 : INDENTIFICATION OF CHILDREN WITH VISUAL IMPAIRMENT AND ASSESSMENT OF NEEDS

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7 Netaji Subhas Open University AREA - C C-12 : IDENTIFICATION OF CHILDREN WITH VISUAL IMPAIRMENT AND ASSESSMENT OF NEEDS C-12 □□□□□ Identification

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of Children with Visual Impairment and Assessment of Needs UNIT - 1 : ANATOMY AND PHYSIOLOGY OF HUMAN EYE 9-34 UNIT - 2 : TYPES OF VISUAL IMPAIRMENT AND COMMON EYE DISORDERS 35-62 UNIT - 3 : IMPLICATIONS OF VISUAL IMPAIRMENT AND NEEDS OF VISUALLY IMPAIRED 63-113 UNIT - 4 : IDENTIFICATION AND ASSESSMENT OF VISUAL IMPAIRMENT 114-169 UNIT - 5 : ASSESSMENT OF LEARNING NEEDS OF CHILDREN 170-198 WITH VIMD 8 9 Unit -1 □□□□□ Anatomy and Physiology of Human Eye Structure 1.1 Introduction 1.2 Objectives 1.3 Structure and Functions of Human Eye 1.3.1 Structure of Human Eye 1.3.2 Functions of Human Eye 1.4 Vision Development and Process of Seeing 1.4.1 Normal Vision Development 1.4.2 Process of Seeing 1.5 Principles of Refraction and Refractive Errors 1.5.1

Refraction and its Principles 1.5.2 The Concept of

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Refractive Errors 1.6 Concept of Blindness and Low Vision 1.6.1 Blindness 1.6.2 Low Vision 1.7 Concept of Visual Acuity, Visual Field, Depth Perception, and Contrast Sensitivity 1.7.1

Visual Acuity 1.7.2 Visual Field 1.7.3 Depth Perception 1.7.4 Contrast Sensitivity 1.8 Check Your Progress 1.9 Let us Sum Up 1.10 References 1.1 Introduction The eye is one of the most complex sense organs of the human body which gives us the sense of light. It allows us to observe and learn more about the surrounding world 10 than we do with the help of any of the four other senses. We use our eyes in almost every activity we perform, whether watching, reading, writing, working, viewing television, driving a cycle, and in countless other ways. It also allows us to see and interpret the shapes, colours and dimensions of objects in the world they reflect or emit. The eye is able to detect bright light or dim light, but it cannot sense object when light is absent. In the following sections

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the structure and functions of human eye, vision development and process of seeing, principles of refraction and refractive errors, blindness and low vision

and other related concepts are discussed. 1.2 Objectives After going through the self-instructional materials in Sub-Unit 1, the learners will be able to: • Know about the

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structure and functions of human eye; • Understand normal vision development and process of seeing; • Understand the principles of refraction and refractive error; • Understand the blindness, impairment and low vision; • Understand the Concepts of Visual Acuity, Visual Field, Depth Perception, and Contrast Sensitivity. 1.3

Structure and Function of Human Eye 1.3.1 Structure of Human Eye The human

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eye is one of the most complex organs in our body. It is

amazing that something so small an organ can have so many working parts. But when you consider how difficult the task of providing vision really is, perhaps it's no wonder after all. The outer covering of the eyeball consists of a relatively tough, white layer called the sclera (or white part of the eye). Near the front of the eyeball, in the area protected by the eyelids, the sclera is covered by a thin, transparent membrane, known as conjunctiva, which runs to the edge of the cornea. The conjunctiva also covers the moist black surface of the eyelids and eyeballs (Figure: 1). Light enters the eyeball through the cornea, the clear, curved layer in front of the iris and pupil. The cornea serves as a protective covering for the front of the eye and also helps focus light on the retina at the back of the eye. After passing through the cornea, light travels through the pupil (the black dot in

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the middle of the eye). The iris—the 11 circular, coloured area of the eye that surrounds the pupil—controls the amount of light that enters into the eyeball. The

pupil dilates (enlarges) and constricts (shrinks) like the aperture of a camera lens as the amount of light in the immediate surroundings changes. The iris allows more light into the eye when the environment is dark and allows less light into the eye when the environment is bright. The size of the pupil is controlled by the actions of the pupillary sphincter muscle and dilator muscle. Figure 1: Schematic Diagram of Human Eye Behind the iris sits the lens. By changing its shape, the lens focuses light onto the retina. Through the action of small muscles, the lens becomes thicker to focus on nearby objects and thinner to focus on distant objects. The retina contains the cells that sense light (photoreceptors) and the blood vessels that nourish them. The most sensitive part of the retina is a small area called the macula, which has millions of tightly packed photoreceptors (the type called cones). The high density of cones in the macula makes the visual image detailed, just as a high-resolution digital camera has more megapixels, Each photoreceptor is linked to a nerve fibre. The nerve fibres from the photoreceptors are bundled together to form the optic nerve. The optic disk, the first part of the optic nerve, is at the back of the eye. The photoreceptors in the retina convert the image into electrical signals, which are carried to the brain by

12 the optic nerve. There are two main types of photoreceptors - cones and rods. Cones are responsible for sharp, detailed central vision and colour vision and are clustered mainly in the macula. The rods are responsible for night and peripheral (side) vision. Rods are more numerous than cones and much more sensitive to light, but they do not register colour or contribute to detailed central vision as the cones do. Rods are grouped mainly in the peripheral areas of the retina. The eyeball is divided into two sections, each of which is filled with fluid. The front section (anterior segment) extends from the inside of the cornea to

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the front surface of the lens. It is filled with a fluid called the aqueous humor, which

nourishes the internal structures. The back section (posterior segment) extends from the back surface of the lens to the retina. It contains a jellylike fluid called the vitreous humor. The pressure generated by these fluids fills out the eyeball and helps maintain its shape. The anterior segment is divided into two chambers. The front (anterior) chamber extends from the cornea to the iris. The back (posterior) chamber extends from the iris to the lens. Normally, the aqueous humor is produced in the posterior chamber, flows slowly through the pupil into the anterior chamber, and then drains out of the eyeball through outflow channels located where the iris meets the cornea. Some important structural components of human eye and their functions are given below: 1.

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Sclera - Sclera is the white part of the eye which forms the larger portion of the eye ball. Function: a. It helps to maintain the shape of the eye. b. It supports delicate structures within the eye. 2.

Conjunctiva - a thin clear mucous membrane which covers the front of the sclera and follows around to line the inside of the eyelids is the Conjunctiva. Function: It covers the interior surface of lids and joins them to the eyeball. 3. Cornea - A crystal-clear window at the front of the eye is known as Cornea, it is a thin convex-concave living tissue which is kept moist by a thin film of tear and bathed on the posterior surface by the aqueous humour. It is kept smooth by blinking of the lids. Function: It permits the light to pass through and helps focusing it on the retina along with the lens.

13 4. Iris - The black disc beneath the cornea is Iris. The posterior surface of the iris is pigmented. The colour of the iris decides colour of the eye. Function: Muscle in the iris make the pupil larger or smaller. 5. Pupil: The black hole in the centre of the iris is Pupil. The pupils in both the eye- balls look black due to the darkness of the interior of the eye. Function: (a) It controls entry of light into the eye - In bright light, the circular muscles of the iris contract and the pupil becomes smaller to reduce the amount of light that enters into the eye, while in dark, muscles help the pupil to widen allowing more light to enter into the eye. 6. Anterior Chamber - is situated between the cornea and the iris. It is filled with clear fluid called the aqueous humour. Function: a. The aqueous humour keeps the posterior surface of the cornea moist. b. It plays a major role in the maintenance of the pressure of the eye. 7. Lens - Lens is situated behind the iris in the eye-ball. It is transparent and consists of an elastic capsule filled with clear material. It is suspended by transparent fibres of zonules. Function - Focusing the rays of light to the back of the eye. 8. Retina - it is the light sensitive membrane of nerves which lines the inner surface of the eye and consists of - (a) an outer layer of pigment epithelium, (b) inner portions of rods, cones and (c) connecting nerve cells. Function - It changes light waves into electrical impulses. 9. Vitreous Body - It is the clear, viscous liquid, like a jelly filled in the open area between the lens and retina. Function - This fluid basically holds the lens place and gives support to the eye coats. 10. Optic Nerves - the fine fibres arising from each nerve cell come out of the eye- ball through the optic nerve and join the fibres coming from the either eye at an interaction in the brain called 'chiasm'. Function - It carries impulses to the back of the brain where the consciousness of colour and shapes takes place. 11. Macula- It is a small area situated at the centre of the retina. It is the most sensitive visual part of the eye which is also called the yellow spot.

14 Function - It is used for activities that need fine vision like reading and writing. 1.3.2 Functions of Human Eye Basic function of the eye is to visualize world around us. It includes: 1. Optic system projecting an image; 2. System that perceives and encodes the received information for the brain; 3. Life-supporting' servicing system. How does the Human Eye Work? In a number of ways, the human eye works much like a digital camera: 1. Light is focused primarily by the cornea — the clear front surface of the eye, which acts like a camera lens. 2. The iris of the eye functions like the diaphragm of a camera, controlling the amount of light reaching the back of the eye by automatically adjusting the size of the pupil (aperture). 3. The eye's crystalline lens is located directly behind the pupil and further focuses light. Through a process called accommodation, this lens helps the eye automatically focus on near and approaching objects, like an autofocus camera lens. 4. Light focused by the cornea and crystalline lens (and limited by the iris and pupil) then reaches the retina — the light-sensitive inner lining of the back of the eye. The retina acts like an electronic image sensor of a digital camera, converting optical images into electronic signals. The optic nerve then transmits these signals to the visual cortex — the part of the brain that controls our sense of sight. 1.4 Vision Development and Process of Seeing 1.4.1 Normal Vision Development At birth, baby sees only in black and white and shades of gray. Nerve cells in their retina and brain that control vision are not fully developed. Also, a newborn infant's eyes don't have the ability to accommodate (focus on near objects). If baby doesn't seem to be "focusing" on objects, including mother's face. It just takes time. Despite these visual limitations, studies show that within a few days after birth, infants prefer looking at an image of their mother's face to that of a stranger. Researchers believe this

15 preference depends on large, high-contrast stimuli, like the boundary of the mother's hairline to her face. (In studies, if these boundaries were masked with a scarf or bathing cap, the infants' preference of looking at their mother's face went away). One thing anybody may notice about newborn baby is how large their eyes are. This is because that normal infant development proceeds from the head down. At birth, baby's eyes are almost 65 percent of their adult size. Vision Development in Babies Babies' vision goes through many changes in the first months after birth. Baby's eyes are not very sensitive to light in the first month of life. In fact, the amount of light required for a 1-month-old infant to be aware that light is present (called the light detection threshold) is 50 times higher than that of an adult. Infants start to develop the ability to see in colours very quickly. At one week after birth, they can see red, orange, yellow and green. But it takes a little longer for them to be able to see blue and violet This is because blue light has shorter wavelengths, and fewer colour receptors exist in the human retina for blue light. Many advances in vision development take place in months two and three. Infants develop sharper visual acuity during this period, and their eyes are beginning to move better as a team. The child should follow moving objects at this stage and starting to reach for things s/he sees. Also, infants at this stage of development learn how to shift their gaze from one object to another without having to move their head. And their eyes are becoming more sensitive to light; a 3 months old infant's light detection threshold is about 10 times that of an adult. Focus and Tracking: Newborn babies have peripheral vision (the ability to see to the sides) and in the first weeks of life gradually develop the ability to focus on an object or point in front of them. At one month, a baby can focus briefly on objects up to three feet away. By two months, infants are also able to track (follow) moving objects, as their visual coordination and depth perception improve. By three months they also have the hand/ arm control needed to bat at nearby moving objects. If a baby's eyes are not working together to focus and track objects by three months of age, a paediatrician should be consulted. Distance vision continues to develop in the early months. By four months a baby may smile when they see a parent across a room, and they can see objects outside when looking through a window.

16 Light and Images: At birth, babies are very sensitive to bright light, so their pupils remain constricted to limit the light coming into the eyes. After about two weeks, the pupils begin to enlarge and babies can see a range of shades of light and dark. As the retinas (the light-sensitive tissue inside the eye) develop, the ability to see and recognize patterns improves. High contrast images like black-and-white pictures, bull's eyes or very simple face shapes are most likely to attract babies' attention in the early weeks. The human face is always babies' favourite image. When someone holds a baby, he or she will look intently at the person's face, especially the eyes. As the baby's visual span increases in the first month, he/she will be able to see the person's whole face and will be much more responsive to facial expressions.

Colour Vision: Babies' colour vision matures at about the same rate as the other visual abilities. At one month, they are sensitive to the brightness or intensity of colour and will look longer at bold colours and contrasting patterns than at lighter tones. By about four months babies can differentiate and respond to the full range and shades of colours. To help or stimulate a 2 to 3-month-old child's vision development, the American Optometric Association (ADA) has the following recommendations: ●●●● Add new items to their room or frequently change the location of their crib or existing items in the room. ●●●● Talk to the baby as you walk around the room. ●●●● Keep a night light on to provide visual stimulation when they are awake. ●●●● While infants should be placed on their backs for sleep to decrease the risk of sudden infant death syndrome (SIDS), put them on their stomachs when they are awake and you can supervise them. This provides important visual and motor experiences. Vision Development in Preschool and School-aged Children: The child is now mobile, crawling about and covering more distance than you could ever have imagined. S/He is better at judging distances and more accurate at grasping and throwing objects. This is an important developmental period for the child. At this stage, infants are developing a better awareness of their overall body and are learning how to coordinate

17 their vision with their body movements. Focusing, tracking, depth perception, and other aspects of vision continue to develop throughout early and middle childhood, Convergence, the ability of both eyes to focus on an object simultaneously, becomes more fully developed by about age seven; this is one reason any problems a child has with focusing or eye alignment should be treated before that age. Most children are naturally somewhat farsighted (hyperopic) but can see well at other distances. More pronounced myopia (nearsightedness) and astigmatism are thought to be inherited. There is some evidence from recent studies in the United States and Australia that the amount of time school-aged children spend outdoors, in natural light, may have some impact on whether they develop mild myopia. To stimulate the development of child's eye-hand-body coordination, get down on the floor with him and encourage him to crawl to objects. Place a favourite toy on the floor just out of his reach and encourage him to get it. Also provide plenty of objects and toys that she can take apart and put together.

1.4.2 Process of Seeing The physical components of the human

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visual system include the eye, the visual centre in the brain, and the optic nerve which connects the eye to the visual centre. The light rays passing from the environment to the eye through the cornea. The cornea is the external covering of the eye and in the presence of light it reflects visual stimuli. These reflect light rays passed through the pupil which is an opening in the iris. The pupil regulates the amount of light entering the eye. The lens focuses the light rays by changing their direction so that they strike the retina directly. As in a camera lens, the lens of the eye reverses the image. The retina consists of light sensitive cells namely rods and cones that transmit the image to the brain through optic nerves. Images

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the retina upside down until they are flipped over the visual centre of the brain as the brain interprets the images.

Both the eyes have slightly different fields of vision since they are separated by the nose. Each of these visual fields are divided into the right and leftside. Each individual eye takes in different information, due to the different visual fields. Signals from the left visual fields of both eyes are sent to the right visual cortex and vice-versa. The information received at one eye is incomplete since only one part of the image is available. Therefore, both eyes immediately send their information to the brain, so that the

18 information can be combined. Along the way at the optic chiasma, some of the nerves from each optic nerve cross over, so that information from the left visual fields comes together and the same goes for the right visual field. The optic nerve is essentially made up of a bundle of nerve fibres that carry electrical impulses down to minute cables. After reaching the optic chiasma, another swapping of information takes place at the cell station or the geniculate body. This connection functions in accordance with the reflexes of the pupils. From here, the nerve spread out on their respective sides around the temporal part of the brain. Finally, they pass through the main exchange reaching the visual cortex. The images are interpreted at this point. How does the eye see ? For people with normally functioning eyes, the following sequence takes place: 1. Light reflects off the object we are looking at. 2. Light rays enter the eye through the cornea at the front of the eye. 3. The light passes through a watery fluid (aqueous humor), and enters the pupil to reach the lens. 4. The lens can change in thickness to bend the light, which will focus it onto the retina at the back of the eye. 5. On the way to the retina, the light passes through a thick, clear fluid called a vitreous humor. The vitreous humor fills the eyeball and helps maintain its round shape. 6. The light then reaches the back of the eye and hits

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the retina. The retina translates the light into electrical impulses which are then carried to the brain by the optic nerve. 7. Finally, the

visual cortex of the brain interprets these impulses as what we see. 1.5 Principles of Refraction and Refractive Error 1.5.1 Principles of Refraction

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Refraction is the bending of light as it passes between materials of different optical density. If there is irregular bending of light due to error in medium of reflection, this becomes refractive error. 19

The purpose of the eye-ball is to receive light from the outside world and transmit it to the brain for processing. There are three aspects to this function. In the first instance, the light rays have to be correctly focused on to the back of the eye. Secondly, the light- sensation related information has to be converted to electrochemical signals by the cells within the retina. Finally, that electromechanical signal is to be transmitted to the brain through the optic nerve.

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Refraction of Eye Refraction refers to the state of focus of the eye. It is the ability of the eye to bend light so that an image is focused on the retina. So, refraction is the deflection of light from a straight path through the eye by various ocular tissues, including the cornea, lens, aqueous humour, and vitreous body. 1.5.2 Concept of Refractive Error Error in refractive media, the eye gets unclear or blurring image. When there is a deviation in light rays from a distant object brought to a focus on the retina, the image that is formed on the retina appears blurred.

The variation in image formation

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is known as ametropia in which parallel rays are not accurately focused on the retina. Ametropia includes hypermetropia, myopia and astigmatism. Therefore, refractive error is defined as "a defect in the eye that prevents light rays from being brought to a single focus exactly on the retina" (Bourgeault, 1969).

The principles of refractive errors are: 1. Corneal curvature, 2. Depth of the anterior chamber, 3. Shape of the lens, 4. Length of the eye (axial length). These four elements change over time as the eye grows (e.g., axial length) and matures in later years (e.g., quality of tears which affects the air-tear interface). The emmetropic eye is able to achieve a perfect focus. Ametropia is the global term referring to any refractive error. Refractive development is influenced by both the environmental and genetic factors. Significance of Refractive Errors • Refractive errors are important because they account for half the cases of avoidable vision impairment globally (153 million people). • Undetected refractive errors in childhood may lead to behavioural problems and adversely affect social interaction and performance (academic or sporting) at school.

20 • It has been found that a minor reduction in vision has been associated with an increased risk of death and physical-social-emotional problems in people aged over 50 years. • Under-corrected refractive error may account for up to 75% of all vision impairment in the third-world countries. Interventions to treat refractive errors (e.g., spectacles) are simple and cost-effective. However, global estimates indicate that more than 2.3 billion people in the world experience poor vision due to refractive error of which 670 million people are considered visually impaired because they do not have access to corrective treatment. Types of Refractive Error There are different types eye-problems due to refractive errors in the eyes. Some of these are given below: 1. Myopia: As the normal eye is virtually round, the rays of light coming from outside, touch the retina. The myopic eye is longer from the front to the back and the extra length prevents the image being in sharp focus. Actually, in myopia, the eyes are too deep and cornea is too curving which are the main causes of myopia. There are mainly three types of myopia: i. Congenital Myopia • Present at birth, • May be unilateral as well as bilateral, • Bilateral myopia may be associated with squint. ii. Simple Myopia • Most common type of myopia, • Does not progress after adolescence. iii. Pathological Myopia • Type of progressive and degenerative myopia, • Begins at the age of 5-10 years, • Strongly hereditary,

21 • Common in women, Jews and Japanese. Symptoms of Myopia: • Black spots are seen floating before the eyes, • Discomfort in performing near work, • Flashes of light may be seen, • Indistinct distant vision is the most common symptom. Usually the young children are unable to see clearly. Treatment of Myopia: • It is treated by prescribing suitable corrected concave lens for concave use. In high myopia, spectacles should be made to fit closely to the eye. 2.

Hypermetropia This is opposite to myopia. Short length of eye ball is the cause of it. It may also consist of flat curvature of cornea. Newborns are invariably hypermetropic. The incidence decreases rapidly with age remaining at about 50% after 20 years. Symptoms of Hypermetropia • Blurring of vision for near work, • Frontal headache and eye strain, • Burning and dryness in the eye. Treatment of Hypermetropia • It is treated by prescribing suitable correcting spherical convex lenses. 3. Astigmatism It is that condition of refraction in which a point of light cannot be made to produce a punctuate image upon the spherical retina. It is due to unequal curvature of cornea and decentring of lens. Regular Astigmatism Normally cornea is flatter from side to side (horizontal meridian) perhaps because of the pressure of the eyelids. It is curved above downwards (vertical). Regular astigmatism is present when the two principal meridians are at the right angles. It can be corrected by lenses.

22 • According to the rule - the vertical meridian is more curved, e.g., as in normal cornea. • Against the rule - the horizontal meridian is more curved, e.g., as after cataract surgery. • It is present when the corneal surface is irregular. It cannot be adequately corrected by lens, e.g., as following healed corneal ulcer. In that case, Soft Contact lens may be used. Symptoms of Regular Astigmatism; • Diminished visual acuity is the most troublesome clinical symptom; • Eye strain and headache after short time of near work is usually present; • The letters in the book appear to be 'running together'. Treatments of Regular Astigmatism • When there are symptoms, suitable cylindrical lenses are prescribed for constant use. 1.6 Concept and Definitions of Blindness and Low Vision Visual impairment describes vision that cannot be fully corrected by ordinary prescription lenses, medical treatment, or surgery. The term visual impairment includes conditions ranging from the presence of good usable vision, low vision, or to the absence of any sight at all-total blindness. Many terms are used when people refer to visual impairment. These terms are explained below: 1.6.1 Blindness

The term blindness means no light perception of both the eyes of a human being. Probably the best way to describe this is not to stand in a dark place or cover your eyes, but rather think about what you can see directly behind you. Now, do not turn your head, but use your eyes to see directly behind you. That may utter sense of darkness where only other senses describe what is behind you is the closest to no light perception a sighted individual may see. Even if you close your eyes and stand with a blind fold in utter darkness, your eyes still try to perceive some form of imagery. Blindness with light perception has several different forms. However, people often see light with shadows or shadows with some light. The way one sees in this state depends on the condition of the eye and the cause for the sight loss.

23 Legal blindness refers to a term developed to determine cut off assessments for sight loss. It refers to a visual acuity on a Snellen's Chart of 20/ 200 corrected with best eye. This means that the size of a sign of a normally sighted person sees at 200 feet, a legally blind individual must be 20 feet away. A second classification for legal blindness involves tunnel vision. In this case, a person must have a field of view less than 20 degrees while looking forward. Definition of Blindness :

Simple Definition: Inability of a person to count fingers from a distance of 6 meters or 20 feet. Technical Definition: Vision of 6/ 60 or less with the best possible spectacle correction and Diminution of field vision to 20° or less in better eye. ●●●● Severe Visual Impairment Severe visual impairment is a term used by researchers at the National Center for Health Statistics (NCHS) to describe visual impairment in people who are unable to read ordinary newsprint even with correction. This term, used primarily for studying visual impairment in the population, is not used in clinical references by eye care professionals. People with a severe visual impairment may or may not be legally blind. ●●●● Visually Impaired

The term visually impaired, also used by the National Center for Health Statistics for studying visual impairment in the population, describes visual impairment in people who have difficulty reading ordinary newsprint even with correction. Like the term severe visual impairment, visual impairment is used by researchers who study the population, and is not used in clinical references. ●●●● Presbyopia Presbyopia refers to the eye's loss of accommodation, the eye's focusing power and ability to adjust the focus of the eye on the distance between the individual and the object People with presbyopia, typically those age 40 and older, experience a progressive inability to focus for near vision viewing as the lens becomes less elastic with age. Lenses with magnification are used to provide the correction needed. These lenses are commonly referred to as "reading glasses," or necessary magnification can be added to a person's regular eyeglasses as bifocals, or trifocals. Variable focus lenses are also available to correct presbyopia.

Variable focus lenses are also available to correct presbyopia.

24 1.6.2 Low Vision Low vision is a reduced level of vision that cannot be fully corrected with conventional glasses. It is not the same as blindness. Unlike a person who is blind, a person with low vision has some useful sight. However, low vision usually

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interferes with the performance of daily activities, such as reading or driving. A person with low vision

may not recognize images at a distance or be able to differentiate colours of similar tones. One is legally blind when the best corrected central acuity is less than 20/ 200 (perfect visual acuity is 20/ 20)

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in the better eye, or the side vision is narrowed to 20 degrees or less in the better eye.

People who are legally blind may still have some useful vision. It may be noted that if anybody is legally blind, s/he may qualify for certain government benefits. Furthermore, It is estimated that approximately 17 percent of normal people over the age of 65 years are either blind or have low vision. Symptoms of Low Vision: • Difficulty in recognizing objects at a distance (viz., street signs or bus signs) • Difficulty in differentiating colours (particularly in the green-blue-violet range) • Difficulty in seeing well up close (viz., reading or cooking) The symptoms described above may not necessarily mean that anybody has the low vision. However, if you experience one or more of these symptoms, contact the eye doctor for a complete examination. The specialist eye doctor can tell the difference between normal changes which are common with age and changes caused by eye disease. Causes of Low Vision: Although low vision can occur at any stage in life, it primarily affects the elderly, but it is not a natural part of aging. Although most people experience some physiological changes with age (presbyopia), these changes usually do not lead to low vision. Most people develop low vision because of eye diseases. Common causes of low vision, particularly with older adults, include muscular degeneration, glaucoma, and diabetic retinopathy. When vision impairment is recognized early, treatment can be more effective, enabling people to maintain as much independence as possible. Low Vision Aids: Many types of assistive devices are available to help people with low vision. These items include special glasses and other magnification devices and large print reading materials. Other communication aids include computer software and various other technological devices.

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Concept of Visual Acuity, Visual Field, Depth Perception and Contrast Sensitivity 1.7.1 Visual Acuity

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Visual acuity (VA) commonly refers to the clarity of vision. Visual Acuity is dependent on some optical and neural factors, i.e., (i) the sharpness of the retinal focus within the eye, (ii) the health and functioning of the retina, and (iii) the sensitivity of the interpretative faculty of the brain. Visual acuity is

a measure of our centra! vision, the ability to distinguish details and shapes of objects. Distant vision is tested with a chart with differently sized letters read from a distance of six metres away. This is called the Snellen's Test Types.

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Visual acuity is typically measured while fixating, i.e. as a measure of central (orfoveal) vision, for the reason that it is highest there. However, acuity in peripheral vision can be of equal (or sometimes higher) importance in everyday life. Acuity declines towards the periphery in an inverse-linear (i.e. hyperbolic) fashion. Visual acuity is a measure of

the spatial resolution of the visual processing system. As it is sometimes referred to by optical professionals, visual acuity of a person is tested to identify so-called optotypes - stylized letters, Landolt rings, Le symbols, or other patterns - on a printed chart (or some other means) from a set viewing at a fixed distance. Optotypes are represented as black symbols against a white background (i.e. at maximum contrast). The distance between the person's eyes and the testing chart is set so as to approximate optical infinity in the way the lens attempts to focus (far acuity), or at a defined reading distance (near acuity). Normal visual acuity is commonly referred to as 20/ 20 vision, the metric equivalent of which is 6/ 6 vision. At 20 feet or 6 meters, a human eye with nominal performance is able to separate contours that are approximately 1.75 mm apart. Vision of 20/ 40 corresponds to lower than nominal performance and vision of 20/10 corresponds to better performance. Acuity is a measure of visual performance and does not directly relate to the eyeglass prescription required to correct vision. Instead, an eye examination seeks to find the prescription that will provide the best corrected visual performance achievable. The resulting acuity may be greater or less than 20/ 20 = 1.0. Indeed, a subject diagnosed as having 20/ 20 vision will often actually have higher visual acuity because, once this standard is attained, the subject is considered to have normal (in the sense of undisturbed)

26 vision and smaller optotypes are not tested. Emmetropic subjects with 20/ 20 vision or 'better' (20/ 15, 20/ 10, ect), may still require an eyeglass correction for other problems related to the visual system, such as eye strain ocular injuries. Measurement: Visual acuity is measured by a psychophysical procedure and as such relates the physical characteristics of a stimulus to a subject's percept and her/ his resulting responses. Measurement can be made by using an eye chart, by optical instruments, or by computerized tests like the 'FrACT. Care must be taken that viewing conditions correspond to the standard, such as correct illumination of the room and the eye chart, correct viewing distance, enough time for responding, error allowance, and so forth. In the European countries, these conditions are standardized by the European norm (EN ISO 8596, previously DIN 58220). 1.7.2

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Visual Field The visual field refers to the total area in which objects can be seen in the side (peripheral) vision while you focus your eyes on a central point. The

visual field is the "spatial array of visual sensations available to observation in introspectionist psychological experiments." The equivalent concept for optical instruments and sensors is the 'field of view' (FOV). In optometry and ophthalmology a visual field test

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is used to determine whether the visual field is affected by diseases that cause local scotoma a more extensive loss of vision or a reduction

in sensitivity (increase in threshold). Normal limits : The normal human visual field extends to approximately 60 degrees nasally (toward the nose, or inward) from the vertical meridian in each eye, to 100 degrees temporal (away from the nose, or outwards) from the vertical meridian, and approximately 60 degrees above and 75 below the horizontal meridian. In the United Kingdoms, the minimum field requirement for driving is 60 degrees either side of the vertical meridian, and 20 degrees above and below horizontal. The macula corresponds to the central 13 degrees of the visual field; the fovea to the central 3 degrees. Measuring the Visual Field: The visual field is measured by perimetry. This may be kinetic, where points of light are moved inwards until the observer sees them, or static, where points of light are

27 flashed onto a white screen and the observer is asked to press a button if s/he sees it. The most common perimeter used is the automated Humphrey Field Analyzer and Heidelberg Edge Perimeter. Another method is to use a campimeter, a small device designed to measure the visual field. Patterns testing the central 24 degrees or 30 degrees of the visual field, are most commonly used. Most perimeters are also capable of testing the full field of vision. Another method is for the practitioner to hold up 1, 2, or 5 fingers in the four quadrants and center of a patient's visual field (with the other eye covered), if the patient is able to report the number of fingers properly as compared with the visual field of the practitioner, the normal result is recorded as 'full to finger counting' (often abbreviated FTFC). The blind spot can also be assessed via holding a small red object between the practitioner and the patient. By comparing when the red object disappears for the practitioner, a patient's abnormally large blind spot can be identified. There are many variants of this type of examination (e.g., wiggling fingers at visual periphery in cardinal axes).

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Visual Field Loss: Visual field loss may occur due to disease or disorders of the eye, optic nerve, or brain.

Classically, there are four types of visual field defects: i. Altitudinal field defects, loss of vision above or below the horizontal - associated with ocular abnormalities; ii. Bitemporal hemianopia, loss of vision at the sides; iii. Central scotoma, loss of central vision Homonymous hemianopia, loss at one side in both eyes - defect behind optic chiasm (see below); In humans, confrontational testing and other forms of perimetry are used to detect and measure visual field loss. Different neurological difficulties cause characteristic forms of visual disturbances, including hemianopsias (shown below without macula sparing), quadrantanopsia, and others. 1.7.3

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Depth Perception Depth perception is the visual ability to perceive the world in three dimensions (3

D) and the distance of an object. Depth perception arises from a variety of depth cues. These are typically classified into binocular cues that are based on the receipt of sensory information in three dimensions from both eyes and monocular cues that can be represented in just two dimensions and observed with just one eye. Binocular cues include stereopsis, eye convergence, disparity, and yielding depth from binocular vision through exploitation of parallax. Monocular cues include size: distant objects subtend smaller visual angles than near objects, grain, size, and motion parallax. Disorders Affecting Depth Perception: i. Ocular conditions such as amblyopia, optic nerve hypoplasia, and strabismus may reduce the perception of depth. ii. Since (by definition), binocular depth perception requires two functioning eyes, a person with only one functioning eye has no binocular depth perception. iii. It is typically felt that depth perception must be learned in infancy using an unconscious inference. 1.7.4

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Contrast Sensitivity Contrast sensitivity is a very important measure of visual function, especially in situations of low light, fog or glare, when the contrast between objects and their background is

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often reduced. Driving at night is an example of an activity that requires good contrast sensitivity for safety.

As mentioned above, contrast sensitivity describes the ability of the visual system to distinguish bright and dim components of a static image. Visual acuity can be defined as the angle with which one can resolve two points as being separate, given that the image is shown with 100% contrast and is projected onto the fovea of the retina. Thus, when an optometrist or ophthalmologist assesses a patient's visual acuity using a Snellen's chart or some other acuity chart, the target image is displayed at high contrast (e.g., black letters on a white background). A subsequent contrast sensitivity exam may demonstrate difficulty with decreased contrast (e.g., grey letters on a white background). To assess a patient's contrast sensitivity, one of several diagnostic examinations may be used. Most charts in an ophthalmologist's or optometrist's office will show images of varying contrast and spatial frequency. Parallel bars of varying width and contrast, known as 'sine-wave gratings', are sequentially viewed by the patient. The width of the bars and their distance apart represent spatial frequency, measured in cycles per degree. Studies have demonstrated that medium-level spatial frequency, approximately 5-7 cycles per degree, is optimally detected by most individuals, compared with low or high-level spatial frequencies. The contrast threshold can be defined as the minimum contrast that can be resolved by the patient. The contrast sensitivity is equal to $1 / \text{contrast-threshold}$. Using the results of a contrast sensitivity exam, a contrast sensitivity curve can be plotted, with spatial frequency on the horizontal, and contrast threshold on the vertical axis. Also known as contrast sensitivity function (CSF), the plot demonstrates the normal range of contrast sensitivity, and will indicate diminished contrast sensitivity in patients who fall below the normal curve. Some graphs contain "contrast sensitivity acuity equivalents", with lower acuity values falling in the area under the curve. In patients with normal visual acuity and concomitant reduced contrast sensitivity, the area under the curve serves as a graphical representation of the visual deficit. It can be because of this impairment in contrast sensitivity that patients have difficulty driving at night, climbing stairs and other activities of daily living in which contrast is reduced. The graph demonstrates the relationship between contrast sensitivity and spatial frequency. The target-like images are representative of center-surround organization of neurons, with peripheral inhibition at low, intermediate and high spatial frequencies. Used with permission from Brian Wandell, PhD. Recent studies have demonstrated that intermediate-frequency sinusoidal patterns are optimally-detected by the retina due to the center-surround arrangement of neuronal receptive fields. In an intermediate spatial frequency, the peak (brighter bars) of the pattern is detected by the center of the receptive field, while the troughs (darker bars) are detected by the inhibitory periphery of the receptive field. For this reason, low- and high-spatial frequencies elicit excitatory and inhibitory impulses by overlapping frequency peaks and troughs in the center and periphery of the neuronal receptive field. Other environmental, physiologic and anatomical factors influence the neuronal transmission of sinusoidal patterns, including adaptation. Decreased contrast sensitivity arises from multiple etiologies, including retinal disorders such as Age-Related Macular Degeneration (ARMD), amblyopia, lens abnormalities, such as cataract, and by higher-order neural dysfunction, including stroke and Alzheimer's disease. In light of the multitude of etiologies leading to decreased contrast sensitivity, contrast sensitivity tests are useful in the characterization and monitoring of dysfunction, and less helpful in detection of disease.

1.8 Check your Progress

1. Draw the structure of human eye and label its different component.
2. Compare the functions of human eye with a digital camera.

30 3. What is Sclera?

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4. What do you mean by retina?

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5. State the structure and functions of cornea.

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6. What is the normal vision of the new born baby?

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7. Discuss the process of seeing with an illustration.

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8. What do you mean by 'light direction threshold'?

.....

9. How images are formed in the eyes of the baby at the age between 2-12 weeks?

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31 10. What is meant by 'Optic Chiasma'?

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11. Discuss the principles of refraction in the eye with a suitable diagram.

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12. Explain the concept of refractive error?

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13. What is the significance of refractive errors?

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14. Mention three types of refractive errors.

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14. What is Myopea?

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16. Define blindness.

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32 17. How can you try to express the feeling of blindness?

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..... 18. How can blindness be differentiated from low vision?

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..... 19. Explain the symptoms of low vision.

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..... 20. What are the causes of low vision?

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..... 21. Discuss the concept of visual acuity.

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..... 22. How can the visual acuity be measured?

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..... 23. What do you mean by visual field?

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33 24. What is depth perception?

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..... 25. State the significance of contrast sensitivity.

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..... 1.9 Let us sum up Our eye is one of the most complex sense organs of the body. It helps us to see & interpret the shapes, colours & dimensions of the objective world. While cruesing into the lesson, we ventured through the sophisticated structure of an eye, its components, viz, sclera, conjunctiva, cornea, pupil, anterior chamber, lens, retina, vitreous body & optic nerves and their respective functions. All these structural components functions to visualize world around us. The human eye works much like a digital camera. At birth, babies are very sensitive to bright light & thus light coming to the eyes is limited. Babies vision goes through many changes. Vision development during the preschool & school-aged children are based on few parameters like-focusing, tracking, depth perception & other aspects of vision. All these functionaries follows certain principles of refraction & refractive error. There are different types of eye-sight problems like myopia, hypermetropea, astigmatism etc. All these problems are the result of certain refractive errors in the eyes. There are treatments available for such kinds of eye problems. Another pertinent issue concerning eye & vision is the concept of blindness & low vision. Visual impairment describes vision that cannot be fully corrected by ordinary prescription. There are different types of visual impairment, some are manageable while others are not. Many types of assistive devices are available to help people with low vision.

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Types of Visual Impairment and Common Eye Disorders Structure 2.1 Introduction 2.2 Objectives 2.3 Visual acuity 2.3.1 Loss of visual

acuity 2.3.2 Estimation of percentage visual

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loss 2.4 Visual field 2.4.1 Loss Visual field 2.5 Colour vision defect 2.5.1 Loss of contrast sensitivity 2.5.2

Role of teacher for low vision children 2.6 Refractive Errors and Common Eye Diseases 2.6.1 Refractive Errors 1. Myopia 2. Hypermetropia (hyperopia) 3. Astigmatism 4. Presbyopia 2.6.2 Common Eye Diseases 2.7 Educational implication of different eye Disorders 2.8 Check Your Progress 2.9 Let us Sum Up 2.10 References 36 2.1 Introduction Many people have some type of visual problem at some point in their lives. Some can no longer see objects far away. Others have problems reading small print. These types of conditions are often easily treated with eyeglasses or contact lenses. Visual impairment (vision impairment, vision disability) is defined as a decreased ability to see to a degree that causes problems not fixable by usual means, such as glasses or medication. Visual impairment can be due to disease, trauma, or congenital or degenerative conditions. In the

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United States, the terms "partially sighted", "low vision", "legally blind" and "totally blind" are used by schools, colleges, and other educational institutions to describe students with

visual impairments. Eye disorders which can lead to

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visual impairments can include retinal degeneration, albinism, cataracts, glaucoma, muscular problems that result in visual disturbances, corneal disorders, diabetic retinopathy, congenital disorders, and infection." Visual impairment can also be caused by brain and nerve disorders, in which case it is usually termed cortical visual impairment (

CVI). 2.2 Objectives After going through this unit the learners will be able to - ●●●● State the definitions of important terms related to visual functioning. ●●●● Describe measure to be used in the assessment of loss of visual acuity and loss of visual field. ●●●● Explain the different refractive errors with illustrations. ●●●● Distinguish between vario us refractive errors. ●●●● Describe the common eye diseases and influences upon visual Functioning ●●●● Enumerate the educational implication of different eye disorders. 2.3 Visual acuity: Means Ø

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Ability to discriminate high contrast, fine detail at a distance. ∅ Ability of the eye to			

see details. ∅

90%	MATCHING BLOCK 35/112	SA	Rajesh E- TEXTBOOK ON BASICS OF VISUAL IMPAIRM ... (D143341256)
The power of the eye to distinguish form. ∅ The sharpness and clarity of vision. 37			

∅

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The visual acuity for distance is measured as the maximum distance at which person can see a certain object, divided by the maximum distance at which a person with normal			

eye sight can see the same. Thus a visual acuity 6/60 meter means that the person examined cannot see properly at a distance of 6 meters the object, which a person with normal eye sight would be able to see at 60 meters or, visual acuity of 20/200 means that what a normal person can see at a distance of 200 feet a visually impaired child can not see it properly at a distance of 20 feet. 2.3.1 Loss of visual acuity: ∅ Loss of visual acuity means inability to discriminate high contrast and unable to find detail at a distance. ∅ Lack of clarity and sharpness of vision. 2.3.2 Estimation of percentage of visual loss: (Using best correcting spectacle lens). For purpose of calculating visual acuity loss, distance vision and near vision are equally weighted. Distance (Snellen) vision Near vision Visual acuity Percentage Loss Jaeger Test Type Percentage Loss English Metric 20/20 6/6 0 1 0 20/30 6/9 5 2 0 20/40 6/12 15 3 10 20/50 6/15 25 6 50 20/80 6/20 40 7 60 20/100 6/30 50 11 85 20/200 6/60 80 13 90 Example: If the distance acuity is 20/80 and the subject can read Jaeger 6. Loss of visual acuity= $40+50/2=45\%$ Therefore Visual acuity efficiency= 55% Loss of visual acuity= $40+50/2=45\%$ Therefore Visual acuity efficiency= 55%

38 2.4 Visual Field : Visual field is generally 180 degrees in a normal eye Normal fields in each eye can approximately see 60degrees to the nasal side by fixing on a centre point, 90 degree to the temporal side, 50 degree to the superior side that is up the centre and 70 degree inferior side that is down. This is peripheral field. Restrictions in the normal fields of vision may lead the child seeing only small portion of the environment at a time. It is like figuring out the entire puzzle from one piece. The child may not be able to see the objects on the left side or right side or in the centre. These restrictions in the field can be classified in the following way: Mildfield restrictions: This means loss of peripheral vision and 20-40 degree of central field remains. Not very restricting but mobility problems may be there. Moderate field restrictions: Central field is 10-20 degree or less. Some special consideration has to be given and the aids are to be prescribed. Severe field restriction: When central field is just 10 degrees or less. The field of vision may have restrictions in the central field while the child's peripheral vision may remain.

39 2.4.1 Loss of Visual Field: Definition: Loss of visual field means that the field of vision is very much limited or restricted and hence the area which can be seen without shifting eye gaze is narrowed down to a specific limit. The commonly used tests for assessing field of vision are Lister's perimeter and Bjerrum's screen. A white test object is used in eight meridians as given below. This can be done with a 3mm object at 1/3 metre using a perimeter. Directions Range of minimal Moderate visual Severe visual normal Visual Field field field Temporally 85degrees 60 degrees 30 degrees Down and temporally 85 degrees 40 degrees 30 degrees Down 65 degrees 40 degrees 30 degrees Down and Nasally 50 degrees 30 degrees 20 degrees Nasally 60 degrees 40 degrees 30 degrees Up and Nasally 55 degrees 40 degrees 30 degrees Up 45 degrees 30 degrees 20 degrees Up and Temporally 55 degrees 40 degrees 30 degrees Total 500 degrees 320 degrees 220 degrees Calculation: Visual field = $320 \times 100 / 500 = 64\%$ Moderate Loss of visual field = $100 - 64 = 36\%$ Visual field = $220 \times 100 / 500 = 44\%$ Severe Loss of visual field = $100 - 44 = 56\%$ Therefore, loss of visual field means that the field of vision is very much restricted or limited. Peripheral field loss: loss of peripheral vision causes a restricted field of vision. Objects in the centre remain visible. The causes of peripheral field loss include glaucoma and retinitis pigmentosa.

40 2.5 Colour Vision Defect: Colour vision defects are present in the community with a greater percentage of boys than girls affected. Red-green problems are the most common. The hereditary colour vision problems are present in the visual impaired persons but these are also some eye conditions that affect colour vision. Colour vision and fine detail are processed by the central part of the retina and any condition affecting this area can cause a colour vision defect. There is a small percentage of students who have no colour vision and see everything in shades of grey similar to image on a black and white television. If a colour vision defect is present care should be taken not to use colour cues or direction and when presenting work on the board, some colour will not be seen against the green surface.

2.5.1 Loss of contrast sensitivity: Due to loss of visual acuity and field of vision, the sensitivity of the optic nerve is not actively interpreted with faculty of the brain. In that case, the relative difference between lightness and darkness of things is not observed clearly.

2.5.2 Role of teacher for low vision children: The teacher can increase the amount of information available to a student by maximizing contrast. Sharp contrast between an object and its background makes the object more visible to the students. This is essential in reading, writing, drawing, cutting, pasting and physical education- Ø Black and white or black and yellow provide the best contrast. Intense blue, green or purple on a buff or light yellow background may be preferable if glare is a problem. The student prefers experiment with the colour of paper. Ø Keep the chalkboard as clean as possible. The student may have a preference for yellow or white chalk. Large chalk can be purchased. A white board provides good contrast if glare can be eliminated and a dark marker is used. Ø Reduce visual distractions around an object. Ø Avoid using materials with confusing patterns. Bold, sharp print provides good contrast. When enlarging print copies, try to achieve clear, non-blurry copies.

41 2.6 Refractive Errors and Common Eye Diseases 2.6.1. Refractive Errors

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Refractive Error is defined as a defect in the eye that prevents light rays from being brought to a single focus exactly on the retina" (Bourgeault.

S.E .. 1969). Numerous variables influence upon refraction, e.g. corneal curvature, depth of the anterior chamber, shape of the lens, and length of the eye. Upon entering the eye a ray of light passes through the cornea, the aqueous humour the anterior and posterior surfaces of the lens, and the vitreous to focus upon the retina's fovea. The refractive power of the eye is determined by the radius of curvature of the cornea and the lens as well as the refractive index of the aqueous and the vitreous. This power can change during life with growth, age, or changes in health or exposure to certain drugs or chemicals. A normal physiological alteration in the ability of the lens to change its convexity occurs at a predictable rate from childhood to a later adult life. The lens of the child is very flexible and can readily change its curvature enabling the eye to focus on a very near object as well as a more distant object. As the age of the lens increases, it grows in thickness and is less able to change its curvature. When it loses most of the adjusting mechanism or accommodation, it is termed as presbyopia. 1. Myopia This is the condition

in which the eye is too long and the light is focused in front of the retina.

Distant objects are blurred but the near objects are seen clearly. The eye has too much optical power and to correct it the optical power is reduced by either minus glasses or contact lenses, or by surgery. Description - myopic eyes have too much optical power and so focus the image in front of the retina. This arises as a result of the physiological variation in the length of the eye or an excessively curved cornea. This common condition affects about 1 in 4 adults in the UK and tends to manifest itself in adolescence or early adulthood. It is said to be mild (up to 3.0 D), moderate (3.0-6.0 D) or severe/high- degree 3.0-6.0 D). The latter affects about 200,000 British people and can be associated with degenerative fundal changes (Forster-Fuchssspots). It is also associated with an increased risk of retinal detachment, cataract formation and glaucoma.

42 1. Congenital or developmental ●●●●● Child born with elongated eyes ●●●●● Refraction may be up to -10.0D ●●●●● Typical fundus changes are seen ●●●●● Progress is rare. 1 Myopia : ●●●●● Commonest clinical type ●●●●● Not progress much after the adolescence. ●●●●● May be up to -5D, or -6D. ●●●●● No degenerative changes are seen in the fundus ●●●●● Associated with good vision and good prognosis. 2 Hypermetropia (hyperopia) This is the condition in which the eye is too short and the light is focused behind the retina. The eye has less optical power than is needed. When young the eye can use the lens within the eye to compensate, but reading glasses are needed at a relatively early age. Later, distance glasses (plus) are needed as well, such that glasses for distance and near are required. Description - this is the opposite problem to myopia. In this case, the eye does not possess enough optical power for its refractive length and therefore an object is focused behind the retina, so giving rise to a blurred image. Mild hypermetropia is a common finding in babies and very young children and this usually resolves by about 3 years of age. Persistent hypermetropia is associated with an increased risk of glaucoma, squint and amblyopia. ●●●●● Physiological in almost all new-borns due to shortness of their globes (approx.+2.5D). ●●●●● Pathological: when the retina displaced forward (as in retinal detachment, CSR, orbital tumors and etc..) ●●●●● In microphthalmos or nanophthalmos - where the axial length is less than 20.mm

43 Symptoms: According to the amount of hypermetropia and the age of the patient. 1. Blurred vision - more for near than for distance 3. Eye strain (accommodative asthenopia) 4. Convergent squint - due to continuous effort of accommodation Excess of convergence dissociation of muscle balance convergent squint. 4. Early onset of presbyopia. 3. Astigmatism This is the condition where the eye does not focus the light evenly, usually due to the cornea of the eye being more curved in one direction than the other. It may occur on its own or may be associated with myopia or hypermetropia. Description - not only do light rays have to focus at the level of the retina (as opposed to in front or behind it) but also on a single point. This is achieved through the symmetry of the corneal and lens curvatures around their circumference. In astigmatism, variations in the symmetry of these curvatures (usually corneal) result in rays failing to focus on a single point. The degree of astigmatism is measured in cylinders (cyl). Astigmatism is often present in association with some degree of myopia or hypermetropia. A mild degree of astigmatism is relatively common in childhood and resolves in a number of cases. More severe astigmatism may lead to amblyopia, especially if there is an associated squint. Causes ●●●●● Previous eye surgery ●●●●● Previous corneal injury ●●●●● Corneal dystrophies ●●●●● Congenital cataract ●●●●● Optic nerve hypoplasia ●●●●● Retinitis pigmentosa

44 4. Presbyopia Presbyopia is a condition that occurs as a part of normal aging and is not considered to be an eye disease. The process occurs gradually over a number of years. Symptoms are usually noticeable by age 40-45 and continue to develop until the process stabilizes some 10-20 years later. Presbyopia occurs without regard to other eye conditions. Causes and symptoms In the eye, the crystalline lens is located just behind the iris and the pupil. Tiny ciliary muscles pull and push the lens, adjusting its curvature, and thereby adjusting the eye's focal power to bring objects into focus. As individuals age, the lens becomes less flexible and elastic, and the muscles become less powerful. Because these changes result in inadequate adjustment of the lens of the eye for various distances, objects that are close will appear blurry. The major cause of presbyopia is loss of elasticity of the lens of the eye. Loss of ciliary muscle power, however, is also believed to contribute to the problem. Symptoms of presbyopia result in the inability to focus on objects close at hand. As the lens hardens, it is unable to focus the rays of light that come from nearby objects. Individuals typically have difficulty reading small print, such as that in telephone directories and newspaper advertisements, and may need to hold reading materials at arm's length. Symptoms include headache and eyestrain when doing close work, blurry vision, and eye fatigue. Symptoms may be worse early in the morning or when individuals are fatigued. Dim lighting may also aggravate the problem.

45 2.6.2 Common Eye Diseases Albinism Lack of pigment in all parts of the body, the skin is white and the hair is pale yellow. Albinism often entails photophobia (acute sensitivity to light) Albinism children will exhibit visual effects such as reduced visual acuity for near and distance vision, astigmatism, nystagmus, very photophobic. A void glare of bright sunlight, reflected light from white or shiny surfaces, wearing tinted glasses or dark sunglasses are suggested for these children as safety measures and use of a barrier sun-cream to avoid sunburn. Amblyopia/Amblyopia Ø Amblyopia is known as lazy eye. It is a disorder of the visual system that is characterized by poor vision or indistinct vision in an eye that is otherwise physically normal or out of proportion to associated structural abnormalities. It has been estimated that 1-5% of the population are affected. The problem is that no transmission or poor transmission of the visual stimulation through the optic nerve to the brain for a sustained period of dysfunction or during early childhood thus resulting in poor vision or dim vision. Amblyopia is normally affected by one eye, but it is possible to be amblyopic in both eyes if both are similarly deprived of a good or clear visual image. Detecting the condition in early childhood increases the chance of successful treatment. Symptoms Ø Poor deep perception. Ø Poor spatial acuity. Ø Poor visual image. Ø Poor sensitivity to contrast. Ø Poor sensitivity to motion. Ø Problems of binocular vision, such as limited stereoscopic depth perception. Ø Have difficulty seeing the three dimensional images in hidden stereoscopic displays such as auto stereo grams.

46 Optic atrophy or damaged nerve fibre: Ø Complete or partial destruction of the optic nerve that causes the damaged nerve fibres of the optic disc to atrophy. The primary causes of optic atrophy are an injury to the head, retinal disease affecting the nerve itself and a lack of nourishment of the optic nerve. Optic atrophy can be congenital or acquired in later life Atrophy may be primary due to some diseases of the optic nerve itself, as in neuritis. It may be consecutive from a retinal / lesion such as degeneration of the ganglion cells, as in retinitis pigmentosa. It may also .e be the result of injury, such as a blow to the eye. The optic nerve is part of the brain and has no capacity for regeneration. Hence, there can be no recovery from optic atrophy. The range of impairment can be from moderate to total loss of vision, affecting central acuity and fields of vision and colour vision. Retinitis Pigmentosa (or) Degeneration of Retinal Tissue(RP). Ø Retinitis pigmentosa (RP) is a hereditary slow degenerative disease of the retina. The condition affects the peripheral area of retina including rod cells. It may result into night blindness, tunnel vision and inability to see in dark. Though some children are bom with poor vision, it begins in childhood. It is progressive and results into blindness in middle or advanced age. Visual acuity is often normal, the field of vision is so poor that the person falls in the category of blindness. Ø Precaution: (i) A close watch by parents & teachers to note any changes in the vision. (ii) Sympathetic & proper handling & understanding of socio-psychological & behaviour problems of the individual. (iii) Training in visual skills of scanning and reorientation. (iv) Training in orientation and mobility. (v) Genetic counselling of the individual. Ø Treatment / Management : (i) Treatment by radiation or photo coagulation. (ii) Generally surgery is necessary to remove the affected eye.

47 (iii) Genetic counselling is desirable. (iv) Avoid consanguineous marriage. Retinal Detachment Ø Retinal detachment is disorder of the eye in which the retina peels away from its underlying layer of support tissue. Initial detachment may be localized, but without rapid treatment the entire retina may detach, leading to vision loss and blindness. It is a medical emergency. The retina is a thin layer of light sensitive tissue on the back wall of the eye. The optical system of the eye focuses light on the retina much like light is focused on the film in a camera. The retina translates that focused image into neural impulses and sends them to the brain via the optic nerve. Occasionally, posterior vitreous detachment, injury or trauma to the eye or head may cause a small tear in the retina. The tear allows vitreous fluid to seep through it under the retina, and peel it away like a bubble in wallpaper. It refers to separation of retina from its pigment epithelium layer. From the clinical point of view it is divided into two classes- (a) Secondary detachment due to an obvious mechanical cause, subsequent to other happenings in the eye. (b) Simple detachment due to development of a hole in the retina. It is caused by degenerative myopia, diabetes, inherited diabetic retinopathy. It leads to painless loss of vision, appearance of flashing light, visual field loss and decreased visual activity. Symptoms Ø A flash of light (photopia). Ø A sudden dramatic increase in the number of floaters. Ø A slight feeling of heaviness in the eye. Ø A dense shadow that starts in the peripheral vision and slowly progresses towards the central vision. Ø The impression that a veil or curtain was drawn over the field of vision. Ø Central visual loss.

48 Treatment: Surgical repair should be performed as soon as possible. It is generally treated by laser surgery and cryosurgery. Nystagmus: Nystagmus is an unintentional jittery movement of the eyes. This a condition in which the natural movement of the eye is grossly exaggerated, resulting in uncontrolled eye movements and seriously affects perceptual efficiency. When nystagmus is present, it is likely to be associated with seriously defective vision. Causes: Medication and drugs can cause nystagmus. Causes include excessive drinking of alcohol or use of medications such as those given for seizure control. Diagnosis of Nystagmus Diagnosis is made clinically based on the medical history and physical examination. Treatment of Nystagmus: The reduced vision may be improved with glasses and low vision aids, if the eyes are more stable looking in a certain direction, glasses with prisms or eye muscle surgery may improve the head position and allow better vision. Vitamin-A deficiency: Vitamin-A is essential for the build the surface tissues in our body, including parts of eye. Vitamin-A deficiency may lead to corneal damage, ulceration and blindness particularly in combination with measles or malnutrition. It is also known as xerophthalmia. Keratomalacia is the severe form of xerophthalmia. Night blindness is the earliest symptom of this disease. Night blindness: Ø In this condition the subjects cannot see small objects in dim light. Ø Difficulty in reading in dim light is also experienced.

49 Xerophthalmia : Ø In this condition conjunctiva and cornea appear dry due to the keratinisation of epithelial lining. Ø The conjunctiva is dry thickened, wrinkled pigmented. Keratomalacia: Ø If xerophthalmia is not treated with vitamin-A, it develops into keratomalacia. Ø In this condition, the corneal epithelium becomes opaque, ulceration and bacterial invasion of the cornea bring about its destruction resulting in blindness. Early diagnosis and treatment will be the best way to check this defect. Due to deficiency of vitamin-A complaint from patient are poor vision, difficulty seeing in dim light, eyes become sensitive to bright light. Symptoms: Ø Thick white spots on both sides of the cornea. Ø Spots on the conjunctiva. Ø Conjunctiva becomes wrinkled. Ø Cornea erupts. Suggestions: Ø It is necessary to teach the public to eat dark green vegetables which are rich in vitamin-A. Ø This is particularly important for pregnant woman, weaning children, growing infants and adults. Corneal ulcer: The cornea is the front part of the eye through which the light ray passes prior to forming the visual image in the retina. Two groups of corneal disorders are :- 1. Inflammation of the cornea. 2. Many abnormal growths are appearing at birth or at times later in life.

50 Corneal inflammations may be divided into three types :- (a) Superficial keratitis. (b) Deep dermatitis. (c) Corneal ulcer. Causes : A foreign body is the cause for most common corneal disorders and ulcers frequently occur as complications of corneal abrasions or foreign body. When the foreign body stays in the cornea, it may lead to ulcer which in turn reduces the vision from mere blurring to total blindness. Due to indiscriminate use and abuse of antibiotics and steroids, the corneal ulcer is formed. Some specific viruses such as herpes simplex. etc. may also cause corneal ulcer. Precaution: The eyes should be washed with clean water when the foreign body stays in the eye and on any account the eye should not be rubbed. Trachoma:

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Trachoma is a chronic contagious disease of the conjunctiva and cornea.

It is one of the oldest infection diseases known to mankind. It is caused by chlamydia trachomatis micro-organism which spreads through contact with eye discharge from the infected person (on towels, handkerchiefs, fingers etc.) and through transmission by eye seeking flies. The primary infection affects and conjunctiva follicles and corneal involvement cause ulcers. Basically, trachoma is a socio economic rather than a medical disease. It is found in those areas where living conditions are bad and where people are poor, dirty, ill nourished ignorant. Trachoma goes through four stages: Ø 1-3 weeks the early sign is that the conjunctiva of the upper eyelid becomes red; Ø Small pink bumps appear on the conjunctiva of the upper eyelid, the upper part of the cornea becomes infected and inflamed; Ø Healing now starts with formation of scar tissue on the eyelids, the conjunctiva and the cornea; Ø The disease is, no longer, infections leaving scarring of the eyelids, the

51 conjunctiva and the cornea, together with the turning in of the eyelids and the scratching of the eye lashes against the cornea; leading to a loss of vision and possible blindness. Causes: Ø Caused by an organism chlamydia trachomatis. Ø Spreads by contact from one person to another through dirty hands, contaminated handkerchiefs or towels. Ø Flourishes among people whose surroundings are unhygienic and who are crowded together in an unhealthy environment where there is : lot of dust, poor sanitation, many flies, scarcity of water, open and dirty latrines, open drainage system.

Symptoms: ~ Redness ~ Itching ~ Tearing ~ Irritations. Treatment: Ø Clean the eyes if there is discharge. Ø Sulphacetamide eye drops 10% or 20% instilled at least four times a day for 6 weeks. Ø Advice on personal hygiene and daily washing of face. Ø Check other member of the family for trachoma. Glaucoma or increased intraocular pressure: Glaucoma is very dangerous and it occurs due to the increase in the intra ocular pressure. Glaucoma is not a disease but rather a complex of ocular disorders. The normal pressure level in the eye is 15 to 20 mm Hg. In glaucoma the pressure may be up to twice the normal. Normally the aqueous humour fills the anterior posterior chambers and permeates the vitreous humour. Aqueous humour is produced by the ciliary body.

52 The intraocular pressure is determined by the rate of aqueous humour production and the resistance to out flow aqueous humour from the eye. Normally a constant balance is maintained between the rate of formation and the rate of absorption of aqueous humour. The resulting increase in intra ocular pressure can damage the optic nerve. Glaucoma can occur at birth or develop later in childhood or adulthood. Types: (i) Chronic (open angle) glaucoma. (ii) Acute (narrow angle) glaucoma. (iii) Secondary glaucoma. (iv) Childhood glaucoma. Treatment of glaucoma can only prevent further loss of vision, it cannot bring back sight already lost. There are three types of treatment: Ø Medical-open angle Ø Surgical-open angle Ø Medical and surgical- angle closure Symptoms : (i) An occasional vague headache or itching about the eyes. (ii) An occasional blurring or cloudiness of vision. (iii) An occasional watering of eye. (iv) Diminished side vision. (v) Frequent and unsatisfactory changes of glasses. (vi) Occasional difficulty in the night vision. (vii) Haloes (rainbow ring around bulbs) appear towards evening. Cataract: Opacity of a lens or its capsule is called "cataract". The clouding may be through out the entire lens or may involve a small localized area. If it is confined to the periphery, the vision may be normal or only slightly reduced. If it is centrally located in the direct line of vision it can distort the sight at an early stage of formation.

53 The greatest loss that can be sustained by a contract is a restriction of the ability to perceive light. The vision is lost because the normal clarity of the lens is reduced and the lens cannot focus the rays of light into an image on the retina. Cataracts may be associated with injury, infection, metabolic disorder or toxic condition. Bilateral cataracts in children are often associated with nystagmus and retinal disease. Children with congenital cataracts can be improved by glasses (bi-focal), contact lenses and low vision aids. Cataract surgery involves removing to cloudy lens from the eye replacing it with glasses, a contact lens or a plastic lens. Without effective treatments cataract account for as much as 50% of the world's mass blindness and it is one of the world's leading causes of blindness. Common symptoms Ø Diminished vision Ø Double vision Ø Decrease insensitivity to colour Ø Poor vision in bright light and improved vision in dim light Ø Newly acquired ability to read without glasses. Causes: Ø Aging Ø Long duration of diabetes Ø Dehydration Ø Low levels of calcium Ø Cigarette smoking. Ø Congenital Ø Other eye diseases Ø Diabetes; certain drugs especially cortico-steroids. Ø Injuries to the eye In hot countries there are additional causes: Ø Solar and heat radiation in desert areas Ø Diarrhea in early life Ø Poor nutrition

54 Measures to prevent cataracts: Ø Increased awareness of the need eye for eye safety. Ø Taking of safety measures in certain dangerous jobs. Ø Ensuring the prompt surgical and medical treatment of eyes injures. Ø Early detection of other eye diseases which may lead to cataracts. Ø Monitoring of people taking those drugs which might form cataracts. Ø Control of diabetes. Cortical visual impairment: Cortical visual impairment is the total or partial loss of vision in a normal appearing eye caused by damage to the visual area in the brains occipital cortex. This type of damage is most often caused by loss of blood flow to the occipital cortex from either unilateral or bilateral. Posterior cerebral artery blockage. A patient with critical visual impairment often has little or no insight that they have lost vision, a phenomenon known as Anton's syndrome or Anton Babinski syndrome. Causes The most common causes of cortical visual impairment is oxygen starvation to the occipital lobe caused by blockage to one or both of the posterior cerebral arteries however, other conditions have also been known to cause cortical blindness, including: Bilateral lesions of the primary visual cortex. Side effect of some anti-epilepsy drug. Cortical visual impairment can be associated with visual hallucination, denial of visual loss, and the ability to perceive moving but not static objects. Macular Degeneration: This is a disease of the eye that results in central vision loss. It is more common among older individuals and is often hereditary. Macular degeneration is one of the more common causes of partial blindness in older individuals. The destruction or poor development is the macular (central) portion of the retina. Often undetected in young, its consequence is extremely poor central vision. Age related macular degeneration is one of the leading causes of visual impairment in the world and it presents as two forms.

55 Ø Dry or atrophic. Ø Wet or exudative. The atrophic form is more common than exudative, with about 90% of patients being diagnosed with atrophic age related macular degeneration. The exudative form of disease usually leads to more serious vision loss. It is more common in people over 65years of age and female. Causes: Hereditary factors, age, nutrition, smoking, hypertension are all risk factors. But the exact causes of age related macular degeneration are still unknown. The atrophic form the thinning of macular tissues, amorphous deposits and pigmentation in macula. Exudative macular degeneration occurs when new vessels from a choroidal neovascular membrane to improve the blood supply to oxygen to deprive retinal tissue. These new vessels leak blood and fluid causing damage to the surrounding tissues. Symptoms: Ø Gradual diminution of vision. Ø There may be shadowed area in the central visual field causing difficulty in reading. Treatment: Ø Zinc supplement and antioxidant vitamins may help to lower the progression of age related macular degeneration. Ø Laser photo coagulation is effective in sealing leaking in eyes with "wet" macular degeneration. Management: Patient with central vision loss may benefit from the use of low vision aids.

56 2.7 Educational implication of different eye Disorders: Albinism : i) Environmental concerns such as glare from the windows and light in a classroom must be addressed, since they may cause sensitivity and pain. ii) It is important to consider magnification aids and enhanced print for student such as longer font size and making text bold. iii) Teachers should consider minimizing in small clutter on maps and other diagrams. iv) The role of the orientation and mobility instructor is important in helping to familiarize the student with new areas particularly those which are subject to changing light. Amblyopia (lazy eye): Students with one damaged eye and one healthy one may require the good eye to be patched for a number of hour everyday to encourage development of the pathways from the weaker eye. Cataract: ●●●●● Problems in near and distant tasks. ●●●●● Poor colour vision. ●●●●● Unable to read and write ●●●●● High illumination needs for peripheral loss. ●●●●● Low illumination needs for central loss ●●●●● Difficult to read glare materials. ●●●●● Mobility is restricted ●●●●● Unable to perform in the daily living ●●●●● Also students will need time for adaptation activities to light change. Glaucoma: ●●●●● Adaptations to accommodate reduced Visual acuity or field of Vision, both factors would need to be considered, the student with reduced Visual acuity

57 may need to sit close to the front of the class to see board, low vision Aids as large print may be recommended. ●●●●● Able to read print to a limited extent. ●●●●● Extreme difficulty in travel. ●●●●● Unable or difficulty in reading at night ●●●●● Difficulty in seeing at night. ●●●●● Difficulties in scanning & tracking. ●●●●● Avoid vigorous activities. ●●●●● Reduced Peripheral Vision would have an impact on student's mobility in the classroom. ●●●●● Frequent hospital appointments may interfere with Schooling. ●●●●● Cataracts can affect student's visual acuity and cause decreased reading efficiency and problems seeing the board due to a cloudy Lens. Hypermetropia: ●●●●● Difficulty in reading and other near Vision activities. ●●●●● Eye strain / Fatigue due to excessive accommodation. ●●●●● Learning impacted by reduced or difficult concentration. ●●●●● Interaction with others may be affected by lack of ability to recognize facial expressions and body language. ●●●●● Low Vision aids and text enlargement may assist with the reading of curricular and instructional materials. Myopia (Nearsightedness): ●●●●● The use of eye glasses, contact lenses or low vision aids has proven particularly helpful in viewing distant objects. ●●●●● Learning may be infected by reduced or difficulty with concentration. ●●●●● Students may experience visual fatigue when asked to do a lot of reading. ●●●●● Inability to see black board, objects at a distance.

58 ●●●●● Lack of interest in outdoor games and recreational activities. Nystagmus: ●●●●● Students with nystagmus will often require environment support with lighting. ●●●●● Colour contrast test and other magnification tool will often be required helpful. ●●●●● Tasks such as copying from the board will be difficult as it involves frequent changes of focus, providing student with own copy of work to be copied would be preferable. ●●●●● A student with Nystagmus often suffers from vision fatigue especially when expected to do a lot of reading. ●●●●● Stress also affects the student and has been seen to increase the involuntary movement of the eyes. Optic Atrophy: ●●●●● Problems in reading, if reading into the blind field area. ●●●●● Problems in mobility ●●●●● Good task lighting and high contrast materials (black & White) may improve readings speed. Retinal Detachment: ●●●●● Where students have field loss it is important to recognize what part of their vision is missing and avoid placing objects in these are. ●●●●● Inability to concentrate ●●●●● Bumping into objects, ●●●●● Students with tendency to develop retinal detachment should avoid blows to the head in physical activity; if this occurs then parents should be notified immediately. Retinitis Pigmentosa (RP): ●●●●● The student will benefit from preferential seating and may exhibit eccentric viewing or frequent head turning to compensate for the reduced visual field.

59 ●●●●● Due to reduced vision in low light the student will benefit from good, even lighting. ●●●●● Mobility may also be affected due to reduced visual field. Retinopathy of Prematurity: ●●●●● Depending on the severity of the visual impairment which may vary from low vision to blindness the student will require either large print or Braille, If the student is not a Braille user, he will likely need low vision aids used as magnifiers or a monocular. ●●●●● It is important to be aware of proper illumination for the student while trying to avoid glare. ●●●●● Orientation and mobility training is essential. 2.8 "Check your progress" 1. What is legal blindness?

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..... 2. What is visual acuity?

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..... 3. What is visual field?

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60 6. How can the visual loss be calculated?

 7. How can you estimate percentage of visual loss?

 8. How can you calculate loss of visual field?

 9. The Normal visual acuity of eye is a) 6/60 b) 6/18 c) 6/6 d) 6/21 8. Normal field of vision is a) 900 o b) 1800 o c) 2700 o d) 3600 o 9. What represented by a fraction relating to the distance of objects seen by an individual ? a) Fusion b) Visual acuity 61 c) Refraction d) Depth perception 10. Nearsightedness refers to a) Myopia b) Hyperopia c) Presbyopia d) Astigmatism 11. Myopic eyes are corrected by a) Concave lens b) Convex lens c) Bifocal lens d) Prism 12. Cataract means a) Defective Lens b) Dislocation of the lens c) Development of the thin membrane over the lens d) Opacity of the lens 2.9 Let us Sum Up ●●●● Visual acuity refers to sharpness of vision. ●●●● Visual field refers to the entire area which can be seen without shifting the gaze. ●●●● Markedly reduced functional vision is called as low vision ●●●●

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Refractive error is a defect in the eye that prevents light rays from being brought to a single focus exactly on the retina			

can corrected with lenses. ●●●● Myopia is the condition in which the eye ball is excessively long and focuses light in front of retina; nearsightedness. ●●●● Hyperopia is the condition characterized; refractive problem in which the 62 eyeball is excessively short and light rays are focused beyond the retina; farsightedness. ●●●● Presbyopia is a normal and gradual decrease in power accommodation in the eye due to physiological change that starts in the middle age. ●●●● Common causes of blindness are cataract, glaucoma, corneal ulcer, conjunctivitis, Trachoma etc. ●●●● Visual impairment may also result from other eye disorder like retinal detachment, Albinism, astigmatism, Nystagmus, optic atrophy, retinitis pigmentosa etc. ●●●● Glaucoma is the condition characterized by high pressure inside the eyeball. ●●●● Trachoma is an infection caused by a specific virus which produces severe scarring of the eyelids and cornea. ●●●● Corneal ulcer is developed due to bacteria, viral infection, fungus, vitamin deficiency etc. ●●●● Cataract is the condition characterized by the eye lens becoming opaque and cloudy. 2.10 References 1. Fernandez, G. Koenig. C., Mani. M. N. G, and Tesni, S. (1999) . See with the Blind Bangalore: Books for change and CBM International. 2. Jangira, N.K Mukhopadhyay, M ., Mani, M.N.G., & Roychoudary. M Source book for the teaching of visually Disabled Children. New Delhi: NCERT, World Health Organization. 3. Lowenfeld, B., (Ed.) The Visually Handicapped Child in school. New York: John Day. 1973. 4. Mani, M.N.G., Status Report on Visual impairment. Rehabilitation Council Of India: New Delhi. 5. Mani, M.N.G.,. Techniques of teaching of Blind Children, New Delhi: Sterling Publishers. 1992. 6. Punani, B. and Rawal, N. Visual Impairment Handbook, NAB, Ahmedabad. Bishop, V.E., Teaching the Visually limited child. Springfield, IL: Charles C. Thomas, 197.

63 Unit-3 □□□□□ Implication

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of Visual Impairment and Needs of Visually Impaired Structure : 3.1 Introduction 3.2 Objectives: 3.3 Psycho Social Implications of Visual impairment: 3.3.1			

Basic Effects of blindness 3.4 Factor affecting

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implications of Visual impairment: Age of onset, degree of vision, type of vision loss, prognosis, and socio economic status of the family 3.4.1

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Age of Onset 3.4.2 Degree of vision 3.4.3 Type of Vision Loss 3.4.4 Prognosis 3.4.5 Socio economic status of the family 3.5 Effect of visual impairment on growth and development: Physical, Motor, Language, Socio-emotional, and cognitive development. 3.5.1

Physical

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Development 3.5.2 Motor Development 3.5.3 Language Development 3.5.4 Socio-emotional development 3.5.5 Cognitive Development 3.6 Educational needs of the visually impaired and need for Expanded Core Curriculum

for Visually Impaired children 3.6.1

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Educational needs for the Visually Impaired Children 3.6.2 Need for Expanded Core Curriculum For Visually Impaired Children 64 3.7 Implications of Low vision and needs of Children with low vision 3.7.1

Low Vision 3.7.2 The needs of people with low vision 3.7.3 Teaching Implication 3.8 Check your Progress 3.9 Let us sum up 3.10 References 3.1 Introduction As much as 90% of what we know is learned through vision. Children with no, partial or distorted vision will have difficulty in accessing information, leading to a typical knowledge and skill development. Unless aggressive efforts are made to Compensate for the reduced access to the environment, Children with visual impairment may have limited development of concepts and the world around them. There is no separate psychology of persons with visual impairment. There are some psychological effects which emerge because of disability. A teacher should necessarily study the psychosocial implication of blindness in order to guide the children properly. The process of growth and development for any individual child is at same time similar to and different from that for any other child. It is similar because growth is sequential, with identifiable stages through which all children progress; it is different because each child progress at his own unique rate as a result of his own individual needs. This principle applies visually impaired children as well, and in general their similarities are greater than their difference from sighted children. The rate of growth of visual impaired children is affected by the visual impairment. However, visual impairment has either direct or indirect influence on the rate of growth and development of visual impaired children. Development is normally defined as a continuous process of change. Studies on child development primarily focus on language development, motor development, personality development, emotions, cognitive functions, and the inter-relationship between them. Development in these areas is considered essential for every child

65 irrespective of his/her disability. However, blindness results in some implications on the psycho-social developments of these children. This chapter enumerates the developmental stages in the life of the child, psycho-social aspects of visual disability, mannerisms and verbalisms, and the implications of blindness on education. The Success of students with visual impairment is measured by their ability to adapt to the regular curriculum and classroom expectations, and to perform the same way as their peer Although academic success is important, it should not be the only yard stick in measuring a student's future success at employment, life after school and personal independence. Special educators for children with visual impairment recognize that a unique, specialized or disability specific curriculum is essential for all children with visual impairment to ensure optimal access to the academic curriculum in the schools, as well as future success in life. Development is normally defined as a continuous process of change. Studies on child development primarily focus on language development motor development, Personality development, emotions Cognitive functions and the inter relationship between them. Development in these areas is considered essential for every child irrespective of his disability. But Blindness results in some implication on the psycho- social development of these children. Blindness is a medical phenomenon. It relates to impaired sense of vision. Stated simply, it only means that the person suffers from the loss of sight. But the matter is not so simple. Blindness in all countries through ages, has come to develop as a connotative word; it evokes different emotional reactions in different persons. The societies, across the globe have developed their own perspective of blind persons, regarding their capabilities and their limitations. Parents, as part of the community, share social ways and attitudes but when a blind child is born to them, they find their personal ways to cope.

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The visually impaired person and his/her family face serious social challenges. Directly and indirectly visual impairment interferes with many daily activities. In the case of adults the possibilities for gainful employment are severely limited as is their participation in many activities. To this is often added a loss of social status and self- esteem. The physical limitation and psychological implications of visual impairment 66 cannot be measured in exact monetary terms. Nevertheless, it is clear that they diminish the quality of life not only for blind persons but for their families as well.

As a person with visual impairment adjustment to life in a seeing world is a complex process. After carrying out a review of studies on psychological adjustment of low vision children, Morse (1987) concluded that children with low vision tend to be more unsettled by the limits of their vision than compared to those whose handicap are more severe. The dynamics which impels one to adjust is necessity. But blind persons vary in their response to this demand of necessity due to various factors, among which are - i) age of onset of blindness, ii) Degree of vision and type of vision and type of vision loss iii) Prognosis and iv) Socio economic status of the family. The visual system's immediate and simultaneous processing of extended spatial information affords fundamental information of depth, object permanence and constancies, brightness, and color. Loss of vision requires the successful integration of successive stimulus information from intact sensory systems, primarily touch and hearing. Such loss impacts negatively on perceptual, motor, cognitive, as well as social interpersonal behavioral development. The amount of visual difficulty depends on the eye condition, so some babies and children have more difficulty than others. Most babies with limited vision tend to see very little in the early months, though the vision of most will improve. The rate and degree of improvement of vision varies in each child. In a very few eye conditions it is known from early on that the child will not develop any more vision. For most children with limited vision, there is uncertainty and it is important with these children to help them develop their vision to its maximum potential. The possible effect of visual impairment on attachment and socialization has also been suggested, and the increased prevalence of specific emotional and behavioral problems, as well as developmental delays, among visually impaired children has been established Therefore the mutual effect of emotional problems on the development of visually impaired children, and vice versa, is of great importance. Such an understanding may influence treatment strategies that are related to development at different ages, particularly among infants and young children like these are.

67 3.2 Objectives : After studying this unit the teacher trainees will be able to - ●●●● Describe the psychosocial implication of blindness. ●●●● Discuss the implication of child blindness for the parents and the family. ●●●● Analyze the effects of family and community attitudes on the blind child. ●●●● Explain his or her own role as a teacher in relation to the visually impaired child, parents and the community. ●●●● Describe the

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factors affecting implications of visual impairment. ●●●● Enumerate the effect of visual impairment on growth and development. ●●●●●

Identify the educational needs of visual impaired children. ●●●●● Describe the needs for expanded core curriculum for the visual impaired children. ●●●●● Differentiate between blindness and low vision. ●●●●● State

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the educational needs of children with low-vision. 3.3 Psycho Social Implications of Visual impairment : 3.3.1 Basic Effects of

Blindness : The effects of Blindness are basically cognitive, since blindness relates to the sensory deficit of vision and because senses are the gateway to knowledge. Moreover vision is the most actively used sense of man and hence his knowledge grows chiefly from his visual experiences. The resulting effects have been discussed widely but the most accepted interpretation has come from Dr. Berthold Lowenfeld. In his own words, "Blindness imposes three basic limitations on the individual". 1. In the range and variety of experiences 2. In the ability to get about 3. In the control of the environment and the self in relation to it. These three obstacles to independence and self-fulfillment are responsible for the special educational provisions for the blind child. A brief look at the three limitations may be helpful in understanding the losses in depth.

68 It has been estimated that 90 – 95% of all experiences comes through the eyes. Vision is the major mode of acquiring information about people, places and processes. Therefore, the blind child, by definition, is experientially deprived. The blind child learns in pieces. He learns in a fragmentary way. He requires enough time to put, these bits and pieces together to a clarity Concept which is not exactly like ours but which is enough like ours so that we can communicate. And that is the restriction in the 'range and variety of experiences'. Secondly blindness tends to create a very sedentary kind of existence. A blind person will just sit unless he is pulled out, motivated to get out and move about independently. He sits because of fear. He sits because of lack of skill in using information available in his environment and lack of skill in moving about within it. Certainly the ability to get about is restricted. Thirdly a blind person talks loudly in a room that is too small for a loud voice or he talks to a corner, or to an empty chair rather than to another person, the common reaction is akin to a silly man. But it is not silly. It simply shows how a blind person is very much at his disadvantage. Not knowing where one is, being unable to control one's environment and oneself in relation to it is a significant deficit.

Verbalism : Verbal learning without adequate concrete experience is considered to be a significant problem in the education of the blind. The visually impaired child frequently accepts verbal descriptions from the sighted instead of having them based on his own concrete experience. This is not surprising since he has limitation in exploring the world around him and at the same time, he is tagged constantly in visual term. In gaining concrete experience he cannot touch objects that the sighted can see, such as the moon, waterfall, a rainbow, certain animals, fire or lightning and he cannot conceive of colours therefore, he must accept many visually oriented verbal descriptions from the sighted. The sense of sight permits much greater perceptual activity than the sense of touch. Although in time he is able to describe visual concepts well verbally he still may have a hazy, partial and inaccurate understanding of them. This phenomenon is called verbalism which is closely related to concept formation. Mannerism: The psychological implication is that blindness does not mean 'loss of life' since

69 blind persons are more like than unlike sighted persons in terms of basic needs. The educational implication is that the reduction of experience caused by blindness can be overcome by appropriate training to the affected individual. Education and rehabilitation programmes for visually disabled children are growing in large numbers in the present scenario and the independence of disabled person is assured in every respect. These objective effects certainly result in some mannerism such as head movement, tapping on the floor, clapping to find the way out etc. Conscious efforts must be made by the teachers to teach the visually disabled child, what mannerism is acceptable and which ones are unacceptable for his/her inclusion in the society. Community Attitudes and Reactions : Unfortunately the deficits are caused by the community as they occur to the individual. The reactions, however, vary from community to community depending on its traditions, culture and belief. Certain communities used to kill a disabled child as the community which depends on skills of war for its survival could not accord a place to a handicapped child. As the society progressed towards becoming a welfare state rather than warfare state, so did the changes occur in the total outlook. The blind person became members of the society who needed to be looked after but not at the equal level with others they were to live on 'charity'. It has also an under tone of religious belief. Today, the scenario is changing. The Community is based on the principles of equality and fraternity. Later is a rare phenomenon. The motto is equal opportunities for all including handicapped people. But this motto is a recent development. It is dangerous to generalise without sufficient experience and exposure to the characteristics of blind. As one comes across very few blind person in life-time, we tend to generalise about blindness on the basis of limited experiences. Due to the place accrued to the blind being that of 'charity' general tendency is to perceive a blind person as one who can make a livelihood only through begging, hence, blindness implies low level of living. They depend on senses of hearing and touch as the light is denied. People need to be educated to write about blindness accurately and carefully. The public needs information not only on the realities of blindness but also on the techniques which make both the blind and the sighted person comfortable. How do you manage a blind person? How do you behave when you teach a blind person? How do you show a blind person where to sit down? How do you talk to some of one who is blind?

70 Need For Community Orientation : People need to be educated about visual disability. There is a need to present the positive sides of the lives of disabled persons too, to change the stereotype attitude of the society. The community needs information not only on the realities of visual impairment but also on the techniques which make both the visually impaired and sighted person comfortable. Print and non-print material on themes such as how do you manage a visually impaired person? etc. need to be developed for orientation of the community. Some people are so inhibited that they hesitate about being with a visually impaired person. They also become hyper sensitive. They are afraid to use certain words such as 'see' and 'look'. Regular classroom teachers are frequently faced with this problem and instead of saying "look at this to mean explore and learn to understand this". Most people are well intended but miss-directed in this way. They do not want to offend a visually impaired person. Proper community education is the answer to these misplaced misconceptions. Parental Reaction to Blindness : We form our reactions to unknown and inexperienced on the basis of our general impressions. Blindness causes many types of reactions. When we come across a blind child, the general attitude is of sympathy or at times neutrality but seldom of empathy. The reason is the general reaction "Such things happen to others and not us". But when it does happen, the parents feel at a loss. For so many social-Personal and psychological reasons, the reactions occur on a continuum of neglect to over protection. Due to inability of most parents to understand the implications of an impairment, the impairment is perceived as a handicap. On one extreme is the response of neglect, because it is felt that a blind person is devoid of all normal human functions of being an active Member of the society. Not only this, even parents at times feel the birth of a blind child to be the result of some sin. Hence in their own frustration, the child is ignored and naturally, 'the expectancy prophency' come to be true, the child develops into a person who cannot contribute socially or economically to the society. Neglect causes certain personality problems but the child has to learn certain basic living skills. Over protection is more dangerous. It denies the child of all the natural demands or expectations of the society.

71 The social structure is such that we try to say or act what is socially acceptable. Real feelings are rarely expressed especially when they are contrary to the socially desirable ones. The parents of a blind child at times, pose the full acceptance of the blind child as an overt behavior because today society expects parents to stand by their children. But it is difficult to accept a child who becomes a liability, a reason for social talk and criticism. Overt rejections is manageable but covert rejection does not deceive a child. It hurts him psychologically. It affects not only his growth and social relationships but also his own self-concept, the very basic of a person's development. Role of peer groups : Peer group influence is substantial in the making of individuals whether it is in the childhood, adulthood or in old age. A disabled individual should have better interaction with other disabled persons of the same age group. Experiences have revealed that disabled children integrated with the mainstream programme tend to accept the disability condition and move forward for constructive life. Therefore, disabled persons should be main streamed as early as possibly to experience the positive effects of personality development on the individual with disability. Role of Teachers : The teachers should help the parents to observe disabled children in the classroom setting and notice the nature of training he or she requires –proper language, Cognitive, motor, emotional and social developments. The teachers should encourage parents to ask questions and clarify doubts. Moreover, the parents should be oriented by the teachers to identify the areas where the child needs maximum assistance. In general. The close collaboration with the teachers and parents of disabled children could cast a tremendous impact on the overall development of the child. Often, teachers are looked upon by parents and disabled children as the major source for guidance. As teachers are trained to handle children with disabilities in the professional way, their influence on the personality development of the child is undisputable. They should act as mentors for children with disabilities and their parents. If possible, making visits to the families of children with disabilities and interacting with the child, their parents and siblings may have a positive influence on the personality development of the child.

72 Psycho-Social Effects on the child : Really speaking, psycho-social development of a blind child is not affected so much by blindness as it is disrupted by the emotional overtones of blindness, for the parents and the community. It is now a well-known fact from research that children tend to achieve as much and only as much as their parents aspire them to achieve or the significant persons in their environment expect them to achieve. But, once, the community does not treat them as individuals they are lost in a crowd, the crowd of blind persons-beggars, musicians or do whatever they like. Once, the parents stop treating the child as a developing individual, once they refuse to accept his capabilities and limitations both, in a realistic and positive manner, his self-concept is bound to be severely affected. Overprotection robs him of his independence, neglect turns him to undesirable behaviour. 3.4 Factor

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affecting implications of Visual impairment: Age of onset, degree of vision, type of vision loss, prognosis, and socio economic status of the family. 3.4.1.

Age of Onset : Development "norms" are based on observation of sighted children. Although it - appears to be true that the more likely he/she is to develop at a normal rate there is little research to support a direct comparison of blind children to sighted norms. In fact current research suggests that blind children may have their own set of norms (i.e. they may not follow all of the same sequences, in the same order, at the same time, as sighted children). Human life can be divided into four broad stages; Infancy, childhood, adolescence and adulthood - the first three of which correspond roughly to the Piagetian stages of sensory-motor (0-2), Pre-operational(2-7), Concrete operation(7-12) and formal operation (12 onward). The stages can again be divided into early and late sub-stages. In shaping personality and attitude each stage has its own contribution to make. Orientation is the ability of the visually impaired child to perceive and understand his/her position and location within a given environment. Mobility is the ability to move within a given environment. This ability does not suddenly appear at a specified time or age, but has an underlying conceptual foundation which begins at birth. For visually impaired infants, many factors contribute to the qualities of these emerging

73 conceptual foundations. Initial mobility factors are largely motor based, and depend to a great extent on the development of the motor system. Milestone skills such as head control, sitting unsupported, independent hand/arm use (as in grasping and reaching) creeping / crawling, standing alone and walking independently are all pre- mobility skills. In childhood - the period between 6 and 12 the chaotic and disorganized emotional life of the infants becomes more stable, and definite social relations are established. The main characteristic of this period is socialization of the child owing to more diversified, and at the same time, more selective activities. A child who loses his sight during this period is suddenly pushed off the track which he was following so long. Emotional disturbance may not be as severe as we understand in the adult sense, but social bonds being snapped, his ability to establish social relation may become less effective. Isolation from the peer group and lack of activities tend to produce anxiety and tension which, when unresolved may lead the child to non-coping and non-adjecutive, mannerist behaviour and verbalism. The effect of onset of blindness in adolescence period is more complex. Theoretically it may be true that, as the individual has already passed through the previous stages undisturbed there would not be great developmental deficits in the psychomotor and cognitive areas due to blindness, but from the personality point of view, the effect may be highly damaging. The human being who is getting ready both physically and mentally to become a full-fledged individual in this world, suddenly becomes a non-person at the blow of blindness - at least, he or she feels so. The budding self-image and self-concept of the adolescent, who already having the normal quota of "Storm and Stress" of this period is shattered with the onset of blindness. An adult also experiences almost the same emotional instability after losing eyesight. 3.4.2. Degree of

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vision: Visual impairment refers to a significant loss of vision in both eyes which may vary significantly, which means that each student with low vision or blindness needs individual adjustments to learn most effectively. There are two main categories of visual impairment: Low vision

and blind. The classification of

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visual impairment varies worldwide. The "WHO" classifies levels of visual impairment based on visual acuity and visual field limitation, and 74 defines blindness as profound impairment. The "WHO" definition of blindness specifies visual acuity less than 20/400 and or remaining visual field less than 10 degrees in the better Seeing Eye. Visual acuity of 20/70 to 20/400 (inclusive) is considered moderate visual impairment

of or low vision. The national eye institute defines low vision more loosely as a visual impairment not correctable by standard glasses, contact lenses, medication or surgery that interferes with the ability to perform activities of daily living. Though the dictionary meaning of blindness is lack of sight that is total absence of vision, in reality we find blind persons not all of them are totally blind but with varying degree of visual loss. We would get different degree of visual ability in the intermediate stages like "light perception" (the ability to differentiate between light and darkness) "light projection" (the ability to detect the direction and source of light), and gradual increase in low vision up to 20/200 ft.. Different degrees of visual disabilities affect the individual adjustment to their handicapped differently. Every case requires individual attention. 3.4.3. Type of Vision Loss: There are some children who are not blind in the medical or legal sense of the term but their visual impairment is serious enough to call for special help in education. They are called partially sighted. They are not admitted in to the institutions for the visually handicapped as they do not generally use touch as the main mode of learning. With the help of optical and mechanical aids, they can read prints. But due to constant pre- occupation with vision and efforts to see a little better, the partially sighted child, who acquires somewhat abnormal gaits and posture, may become self- centered and sluggish in social behavior. Most of eye disorders is considered to affect the human being which is most commonly of two types. One is adult vision problems which consist mostly. i) blurred vision (Called refractive errors) ii) Age related macular degeneration iii) Glaucoma iv) Cataract v) Diabetic retinopathy. On the other hand, most of childhood vision problems are like (i) Blurred Vision (called refractive errors) (ii) Crossed eyes (called strabismus) (iii) Lazy eye (called amblyopic) (iv) Albinism.

75 Blurred Vision (Refractive errors) : ●●●● Near sightedness (called myopia) is when we can see clearly the close ups but blurry in the distance. ●●●● Farsightedness (called hyperopia) is when we can see clearly in the distance but blurry ups close. ●●●● If you are older than 40 and have trouble reading small print or focusing a close-up this is usually due to a condition called Presbyopia. ●●●● Astigmatism is another condition that causes blurred vision but it is because of the shape of the cornea. Crossed eyes (Strabismus) : Strabismus occurs when the eyes do not line up or they are crossed. One eye however, usually remains straight any given time. Common forms of strabismus include - ●●●● Esotropia: One or both eyes turn inward toward the nose. ●●●● Exotropia: One or both eyes turn out, also called wall -eyed. ●●●● Hypertropia: One or both eyes turn up. ●●●● Hypotropia: One or both eyes turn down. Lazy Eye (amblyopia): Amblyopia often called lazy eye is a problem that is common in children. Amblyopia is a result of the brain and the eyes not working together. The brain ignores visual information from one eye, which causes problems with vision development. Treatment for amblyopia works well if the condition is found early. If untreated, amblyopia causes permanent vision loss. Albinism: Albinism is a pigment deficiency causing several physical condition including vision problems. People with albinism often have low vision including severe light and glare sensitivity.

76 Effects on Vision : Albinism is a non-progressive condition and so as the individual ages it will not. Albinism can cause Photophobia (an aversion to bright light) A student may notice their vision is worse in bright light and better in dim light (especially central vision). Along with light sensitivity the student may also have astigmatism, lowered visual acuity and nystagmus (side to side rhythmic eye movement). Cataracts: Cataracts are the leading cause of preventable blindness worldwide. They are responsible for over 50% of the world's blindness, over 20 million people. Cataracts are a clouding of the lenses of the eye that cause light to be diffused as it enters the eye impacting the clarity of the visual image. Most cataracts are a natural result of aging out they can also happen due to trauma to the eye. Effects on Vision : The lens of the eye is affected by cataracts. Often the lens becomes cloudy and prevents light from refracting onto the retina at the back of the eye. Retinopathy of Prematurity Retinopathy of prematurity is characterized by the abnormal growth of blood vessels in the retina of some premature infants. The use of oxygen administered to premature babies in incubators was suspected as a possible cause of the abnormal growth of the blood vessels. Other factors include low birth weight, premature birth 32 weeks or younger and the baby being severely ill at birth. Effects on Vision: The retina is affected because blood vessels do not reach the edges so blood flow is disrupted. If there is normal growth of the blood vessels, the area is well supplied with nutrients and oxygen. The optic nerve and macula are affected as well as the mid and far periphery. Retinopathy of prematurity can range from a mild reduction in visual acuity to complete retinal detachment and blindness. Glaucoma: Glaucoma is the most common eye disease, affecting more than 80 million people worldwide. Glaucoma involves damage of the optic nerve, usually caused by 77 fluid buildup and increased pressure inside the eye. The result is a loss of peripheral vision and often difficulty seeing in dim lighting. Effects on Vision: Early detection and intervention can control the pressure and reduce the impact on vision. Blindness can occur in a few cases, the combination of eye structures affected with the addition of amblyopia caused by visual deprivation in the formative years contribute to the visual impairment. Peripheral vision often first affected as nerve fibres from the peripheral retina are most susceptible to raised pressure. Some students experience photophobia.

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Age related Macular Degeneration (AMD) : Age related Macular Degeneration (AMD) is the

foremost cause of Vision loss among all over the world people who are 60 and older. AMD involves damage to the macula in the back of the eye, resulting in loss of central vision to effect on many tasks, including reading and writing. This can result in a loss of independence. Retinitis Pigmentosa(RP) : Retinitis Pigmentosa is the general name given to a wide range of genetic eye conditions predominantly characterized by problems with the rod photoreceptors, however in advanced cases the cones may also be compromised. Specific eye conditions associated with Retinitis Pigmentosa are Rod Cone Dystrophy, Leber's Amaurosis and Usher's Syndrome. RP usually progresses slowly. Cataracts and retinal swelling are also associated with retinitis pigmentosa. Effects on Vision: Usually the rods are more affected than the cones meaning night vision and movement of things are compromised. There will also be a loss of peripheral vision. If the cones are affected then there will be central and colour vision loss. Stargardt Disease : Stargardt disease is the most common form of inherited juvenile macular degeneration, occurring in one in every 8000 to 10,000 people worldwide; It causes gradual loss of central vision. It usually develops during childhood or adolescence resulting in a loss of the center part of the visual field.

78 3.4.4 Prognosis What is Prognosis? : "Prognosis means what is expected in the future?"

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In general vision loss does not improve over time. There are exceptions of course such as when you are correcting a problem such as amblyopia or

near sightedness.

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In addition, as a visually impaired infant grows and develops, they may be better able to use their vision and demonstrate what they see, so that it appears as though improvement has been made. But vision loss that is present from birth or early childhood, particularly when it occurs with other disabilities will usually not get better. However with the right training, technology and other assistance,

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child can live a full life even with vision loss. Children with vision impairment may have some delay in development related specifically to not being able to interact with their environment visually since much of what a child learns comes from visual clues. As

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child receives vision supports and early intervention services, these gaps will close. If

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child has other disabilities, along with vision loss, one can still give one's baby a high quality of life through early intervention services, adaptive devices and other methods of treatment. 3.4.5 Socio economic status of the family : The

family plays in shaping our personality. It is the first social environment that a child gets in its life. It has been proved that the adjustment problems of each individual member in the family are usually related to inter dependencies with other members. The culture, socio-economic status, the educational level of the family particularly the parents and their relation with the visually handicapped child determines the level and quality of adjustment of the child to his own disability and to the society. The role of the parents, especially the mother, is most crucial in this process. An analysis of the global distribution of visual impairment shows a disproportionately large prevalence in low income developing countries. In these countries cataract and trachoma are the greatest causes of avoidable blindness. The lack of and inequity of access to prevention and eye care services severely limit in these regions

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of the world. The lack of economic development is a factor that aggravates the prevalence of visual impairment. For this reason, blindness prevention programmes must concern themselves not only with the elimination of avoidable blindness but also with concurrent economic development. The cost of rehabilitation and care provided to the visually impaired are the most obvious. Less apparent but just as significant however

is the indirect cost resulting from the loss of productivity. Family can be the most important factor in a child's success in recalling his or her full potential. The efforts of a child family to provide life experiences and obtain necessary services can make a tremendous difference. In addition to finding knowledgeable, medical and educational professionals who can help meet the needs of their children. Families can help a visually impaired or disabled child grow and develop by having expectations that their child will in fact do exactly that. When children are a part of family life, they learn about the world around them about the people in that world and about themselves as a person as well. For that reason, It is important for a child to be involved in meal times in home, even if she may not eat solid food using a fork, knife, or spoon, sitting at the table with the rest of the family gives her the chance to be social and to communicate. Perhaps you may need feed her before everyone else because she's on a particular schedule or is to be fed, but finding ways to bring her to the table when the rest of the family eats can be important for her and for all as

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family. 3.5 Effect of visual impairment on growth and development: Physical, Motor, Language, Socio-emotional, and cognitive development. 3.5.1.

Physical Development The child's rate of physical growth begins to taper off after toddlerhood, the period when physical development is at its greatest. Yet body proportions continue to change, and motor skills continue to be refined at a relatively fast rate, enabling children become more adept at dealing with their own needs and coping with their physical surroundings. By the age of 5, the average child stands 43 inches tall (about 3.5 feet), which is just over double the birth length, and weight 42.8 lbs., approximately five times the weight at birth. At birth, the head measures between 12 to 14 inches in circumference. By the first year it has increased 33 percent, and at the fourth year the head has increased approximately 48 percent. And by the end of the sixth year,

80 the head has attained almost 90 percent of its adult size. The brain, growing in relation to cranial growth, has attained 75 percent of its adult weight by the fifth year, as the billions of nerve fibers become increasingly myelinated and the dendrites in all layers of the cortex increase in both size and number. These maturation processes will enhance the connectivity and transmission of nerve impulses, which is critical to more complicated brain functions. Physical Changes during Preschool Years By the time children enroll in nursery school or kindergarten, there have been noticeable physical changes in their bodies. This is largely due to a growth spurt that affects height, as well as to the preschooler's participation in numerous and diverse physical activities, which affect muscular growth and body building. Changes in postural patterns also become quite evident during the early years. Force of gravity. The force of gravity affects the body (the center being the trunk), whether sitting, standing, or running. Each child must maintain equilibrium in order to produce good posture and balance. With age, body proportions change, and the centre of gravity drops lower in the trunk. This makes it easier for the child to maintain equilibrium in the standing position Type of body build. Posture is also affected by the child's body build. Correct posture is also influenced by the strength of the bones, the firmness of the muscles, and the kinesthetic sense. Course of development. The stages of the child's development are another factor to consider the early phases of locomotion, for example, influence certain parts of the body, such as the neck muscles or the lumbar curve in the lower part of the back. When walking, the weight of the body falls on the inner part of the foot, resulting in the foot's sagging in the area of the ankle. Interactions with the environment. Environmental factors, such as nutrition, rest, and activity also are important to posture. The child now has incentives to excel in certain areas, such as sports, to be physically attractive, or to perfect certain motor skills. All of these may encourage a child to learn proper body balance and posture.

81 3.5.2. Motor Development Generally, either no delay or only slight delays have been reported in motor- skills of blind children that require stable, in-place movement (such as sitting, rolling, and standing alone). However, more severe delays have been reported for those associated with locomotion (holding-up head, crawling, creeping and walking). There can be a longer delay between crawling and walking for children who are blind relative to their peers with vision. Motor skill development rapidly accelerates in the physical play world through such activities as jumping, climbing, running, and tricycle riding. Knowing what preschoolers are physically capable of undertaking and their degree of efficiency is important not only to parents but also to day-care and nursery-school teachers, people who will be structuring their physical activities. Adults need to develop children's motor skill activities so that they may alleviate any frustration. Hand

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Although the hands are a major perceptual organ, a blind infant has significant developmental delays in his ability to employ his hands functionally. Even at 5 months a blind infant's hands will be fisted and held at shoulder height. There will be no mutual fingering, no engaging at the midline. At this age, a sighted child practise coordinated reaching and transference of objects from one hand to another. This delay in hand utilization will result in delayed fine motor and gross motor development.

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Body A blind infant usually achieves control of his posture at approximately the same age as sighted Infants through the following normal progression: ●●●● sits alone momentarily ●●●● rolls from back to stomach ●●●● sits alone steadily ●●●● takes stepping movements when hands are held ●●●● stands alone ●●●● bridges on hands and knees 82 However, the achievements that require self- initiated mobility are significantly delayed: ●●●● elevated on arms in prone ●●●● raising to a sitting position ●●●● pulling to a stand ●●●● walking alone Until a blind child will reach out to grasp a sound cue (12 months), he will not move out in space either on hands and knees or feet.

Milestone's in Preschool Motor Developments. Age Gross Motor Skills Fine Motor Skills 2.5-3.5 Walks well; runs in straight line; Copies a circle; scribbles; can use years jumps in air with both feet eating utensils; stacks a few small blocks 3.5-4.5 Walking stride 80 percent of adult; Buttons with large buttons; copies vears runs at one-third adult speed; simple shapes; makes simple and catches large ball, but stiff- representational drawings 4.5-5.5 Balances on one foot; runs far Uses scissors; draws people; copies years without falling; can swim in water simple letters and numbers; builds for short distance complex structures with blocks 3.5.3. Language Development The foundation of communication starts in the earliest days, when babies express their feelings and parents respond to their cries or vocal sounds. This helps babies learn to influence their parents and to attract their attention. During the first year they become more purposeful in communicating their wishes and needs. This is done through vocal and emotional expressions, eye contact and/or body movements. In the second year, children start using language to communicate their wishes and needs, to request and refer to things and to draw attention to events of interest. The toddler years are typically the time of great language development as children begin to make connections and verbally label and identify objects. Children who are 83 blind or visually impaired will not have the same opportunity to casually observe and make connections with gestures and materials in their environment. Unless the student was intentionally taught through direct experiences paired with language, their language development will undoubtedly be delayed. To encourage the student to develop language, it is important for the student to be exposed to good language models in active learning environment. The following strategies can help a student develop their language skills: ●●●● Pronounce the language properly. ●●●● Speak with grammatical accuracy. ●●●● Build vocabulary. ●●●● Understand and produce longer stretches of speech, such as stories, directions, or instructions. ●●●● Use the language to accomplish purposes and get things done. ●●●● Use words and ways of speaking appropriate for different situations. ●●●● Interact with other people appropriately when talking with them. ●●●● Understand more about what the people are like and why they behave the way they do.

Verbalism It is common for a student to talk about people, objects, and events without having the understanding of the concepts. Because they haven't had the experiences related to the topic, but have heard others talk about the said topic. Having a vocabulary or language without the understanding is called verbalism. It is the ability to talk about a subject without the concepts or understanding related to it. Echolalia Many students who are blind or visually impaired learn to talk by echoing or copying phrases or sentences even if they do not understand it. They may echo what they just heard, or have delayed echolalia where they repeat language heard earlier in association with a particular subject. Sustaining Conversations Students who are blind or visually impaired also can have difficulty sustaining conversations. They can tend to focus on their own interests and not appear to have 84 an interest in others. Students may need explicit instruction in participating in conversations. Preschooler's language development can be improved responding to an encouraging young child's speech, Adults can do a great deal to help facilitate overall language development. Adults should consider the following suggestions: (1) Establish a satisfactory speech model. (2) Encourage verbal and nonverbal communication. (3) Provide experiences that will make words meaningful (4) Encourage listening and attention skills. (5) Encourage speech as a substitute for action (6) Use exact terminology and talk with children at their level. 3.5.4. Socio-emotional development During early childhood, children start to develop a "self-concept", the attributes, abilities, attitudes and values that they believe define them. By age 3,(between 18 and 30 months), children have developed their categorical self, which is concrete way of viewing themselves in "this or that" labels. For example young children labels themselves in terms of age "child or adult", "gender", physical characteristics "short or tall" and value, "good or bad." The labels are used to explain children's self-concept in very concrete, observable terms. Children's social-emotional development influences all other areas of development: Cognitive, motor, and language development are all greatly affected by how a child feels about herself and how she is able to express ideas and emotions. Professionals sometimes define healthy social-emotional development in young children as early childhood mental health. Healthy social-emotional development includes the ability to: 1. Form and sustain positive relationships 2. Experience, manage, and express emotions 3. Explore and engage with the environment Children with well-developed social-emotional skills are also more able to : Express their ideas and feelings ●●●● Display empathy towards others ●●●● Manage their feelings of frustration and disappointment more easily

85 ●●●●● Feel self-confident ●●●●● More easily make and develop friendships ●●●●● Succeed in school Social-emotional development provides the foundation for how we feel about ourselves and how we experience others. This foundation begins the day we are born and continues to develop throughout our lifespan. The greatest influence on a child's social-emotional development is the quality of the relationships that he develops with his primary caregivers. Positive and nurturing early experiences and relationships have a significant impact on a child's social-emotional development. They also influence how the young child's brain develops. Social interaction Several researchers have noted that whereas sighted children spend most of their playtime interacting with other children, children who are blind spend about half their time in solitary play. Children who are blind are also more likely to choose to spend playtime with adults than age-peers. Blind children in nursery school were observed to have severe difficulty in social interactions with sighted peers. In contrast to normal exploration, behaviours such as eye-pressing, body-rocking, and head-nodding can present serious problems. Such behaviours, which are described as "stereotyped behaviours", "blindisms," or "mannerisms," are prevalent among children who are blind or visually-impaired, although they are not found only in this population. The behaviours usually decrease with age, but can persist to adulthood. Possible reasons for these behaviors include monotony, boredom, stress, and excitement. 3.5.5. Cognitive Development A general issue relevant for school aged children is the possible impact of vision impairment on areas of cognitive development that are associated with interpreting information available to the senses. Examples of such areas are classification, conservation, spatial knowledge, and memory. Cognitive development refers to such skills as reasoning, storing and remembering information, seeing relationships and differences, classifying things, defining and describing, evaluating, comparing and contrasting, inventing, problem solving and other higher order skills. Non-disabled children of this age group are usually able to perform the following tasks. 1. Asking question for more information 2. Building blocks 3. Identification of basic colours 4. Awareness of age and name of self 5. Symbolic and thematic kinds of play activities 6. Creative responses 7. Matching three dimensional objects and pictures 8. Imitating adults Visually impaired children have the same potential for cognitive development as non-disabled children during this age.

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Construct of World The blind child has limited ability to coordinate and organize elements into higher levels of abstraction, and to verify the information. Therefore, he constructs a reality that is different from the sighted child's. The process of establishing concept- defining attributes and relationships is more problematic for the blind child and less accessible to guidance. The blind child is continually involved in problem solving, but this process, which is essential to future development, is more difficult and less rewarding for him. Object Permanence A stable visual field is the basis of object permanence and other conceptual tasks. Object permanence cannot be obtained by a blind child until he has the ability to reach for objects based on sound cue alone. It is acquired nearly a year later than in sighted children. Causal Relationship Since the results of actions cannot be seen, the blind child may not be motivated to action. He may not understand his ability to cause things to happen or to retain pleasurable stimuli. 87 Constancy Understanding how to align blocks or orient his hands on a page in order to duplicate a pattern will be difficult if he hasn't observed objects in various orientations to know that an object is the same regardless of its position in space. 3.6

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Educational needs of the Visually Impaired and Need for Expanded Core Curriculum

for Visually Impaired children 3.6.1. Educational needs for the Visually Impaired Children The challenge for educators of visually impaired children, including those with other disabilities, is how to teach skills that sighted children typically acquire through vision. Visually impaired students have used a variety of methods to learn to read, write, and acquire other skills, both academic and nonacademic. For example, for reading purposes, some students use braille exclusively; others use large print or regular print with or without low vision aids. Still others use a combination of methods, including braille, large print, low vision aids and devices with computer-generated speech, while others have sufficient functional vision to use regular print, although with difficulty. Parents along with other team members are responsible for providing opportunities at various stages to identify variables to be considered and decisions to be made as the challenges increase. As progress is made and children become more responsible, the focus gradually changes to the individual for more involvement in educational and personal decisions. Promoting education for children with visual impairment

- Determine what medium is best for an individual child through the Learning Media Assessment. ●●●● This may be braille, print, dual media, auditory strategies, objects, symbols, or some combination.
- Provide books and literacy tools in a format that is accessible to the child.
- Read aloud using stories and books that are interesting and appropriate for the child.
- Create a literacy-rich environment, in which the child knows that others are reading and writing.

There are a variety of methods that students with visual

88 impairments use to read. Often a single student will use different strategies in particular settings or for specific materials or content. There are six stages in development in which parents and various team members are involved as children's educational development.

1. Infants and Parents, (from Birth to 2 years) Parents are dealing with emotional issues of shock, trauma, and grief associated with the first diagnosis of visual impairment. Confusion and uncertainty cloud their thinking until they can begin to understand and accept the reality of the situation. By then, they need to seek information through support systems, reading and learning what to do. Certified Orientation and Mobility Specialists (COMS) begin to teach infants orientation to touch, sound, and visual objects. They give checklists of activities for parents to follow, and model teaching to reach, learning to sit alone, to crawl, and later to encourage walking. They also teach body parts, body positioning, spatial concepts, and body movements.
2. Preschoolers, (from 2-4 years) This is the stage when a child is striving for independence. Parents (or primary caregivers) are still the primary members of the team. The major decision is to determine who gives the regular care during the day; parents, another family member, or day care. One-on-one teaching of skills and language is a necessity. Preschool teachers begin to be the leaders for learning development and diagnostic assessments and report to parents and therapists. It may best for the student to be placed in a regular classroom with a consulting teacher of students with visual impairments (TVI) or a special classroom, whichever is most appropriate for the child.
3. The Primary Grades, (from 5-7 years) Parents, in consultation with teachers have important decisions to make in regard to placement and instructional service delivery depending upon the child's readiness for and progress in the general and YI-specific expanded core curriculum. The visual status of the child is not the only determinant in placement. At home, the parents are challenged to encourage more independence in personal and home activities. Play opportunities with peers are especially critical as is time with parents to talk about incidents of the day.

89 The Educational Diagnostician is part of the team to develop educational and cognitive measures as indicated, and share assessment data with parents and teachers to develop the individualized educational programme (IEP). 4. Middle to Late Elementary School, (from 8-12 years) The key challenge is to develop the learning scope and efficiency of the students as a priority to make maximum progress possible. Instructional decisions based upon student achievement will determine the type and amount of VI specialized instruction. New skills to be emphasized are keyboarding for the computer and other technology- related instruction. Social skills are important to enhance communication and interaction with peers and teachers, and as a means to effect natural independence as a prelude to middle and high school. 5. Middle School and High School, (from 12 to 18 years) The early and later teen years indicate the need for additional members of the previous teams to ensure a broader scope of academic, vocational and job-seeking considerations. Rehabilitation counselors and/or job coaches, adults with visual impairments as role-models, and extended family members are valuable members of the team. 6. Transition to Adulthood, (from 18 years and beyond) The major decisions center around, i. what now? ii. Where do I live? iii. Where can I work? iv. Should I pursue further education? When an individual has other disabling conditions, these decisions require consultation with team members about the optimal situation for each individual. Some may be unable to live away from home or other protected environments. Creative personal living and working situations, including sheltered or supported employment, may be suitable for those with limited independence. So there are various range of inclusive teaching strategies that can assist all students to learn but there are some specific strategies that are useful in teaching a group which includes students with visual impairments. In considering alternative forms of assessment, equal opportunity, not a guaranteed outcome, is the objective. You are not expected to lower standards to accommodate students with a disability, but rather are required to give them a reasonable opportunity to demonstrate what they have learned. Disability-specific compensatory skills refer to the use of strategies, techniques, and adapted materials that students with visual impairments need to access the general education and common core curricula.

90 BLINDNESS AND ITS IMPLICATION FOR EDUCATION 1) In learning visually disabled Children to perceive an idea through 'structure' rather than 'form' as in the case of sighted children. Therefore, visually disabled children are likely to miss specific information of the learning activities. 2) Visually disabled children may take more time for forming a concept Since the tactile and auditory perception cannot replace visual perception and not even match the experiences formed out of visual perception, visually disabled children tend to attain reduced experiences. 3) The visually disabled child may need to be given direct assistance to learn systematically even the simple skills which sighted children learn almost spontaneously through imitation and contact with the environment. 4) Due to the lack of visual feedback, the visually disabled child may skip a number of intervening steps of an activity which requires more visual orientation. 5) The visually disabled child may have difficulty in forming exact concepts as he has to manipulate from part to whole. 6) The visually disabled child may develop verbal expression without associating proper meaning for that expression. 7) The visually disabled child may show deficiencies in some subjects when he is untaught. Predictions should not be made that he is unteachable. Efforts are necessary to teach him difficult concepts too 8) A misconception that visually disabled children possess extra power in their auditory and tactile ability should be overcome. They need sufficient practice for developing these skills in them. 3.6.2. Need for Expanded Core Curriculum for Visually Impaired Children The expanded core curriculum (ECC) is used to define concepts and skills that often require specialized instruction with students who are blind or visually impaired in order to compensate for decreased opportunities to learn incidentally by observing others. In addition to the general education core curriculum that all students are taught, students with visual impairments, starting at birth, also need instruction in

91 the ECC. The ECC areas include needs that result from the visual impairment that enable the student to be involved in and make progress in the general education curriculum and other educational need that result from the child's disability" The Expanded Core Curriculum, first developed by Halted (1997), defines the concept and skills typically learned incidentally by sighted students that must be sequential presented to the blind students or low vision. Components of the expanded core Curriculum have been adopted as the essential core curriculum for student with visual impairment. These unique curriculum areas need to be included in the personal programme plan. Concept Development Students with blindness need assistance in making the connection between vocabulary and real objects, body movements and abstract ideas. ●●●● Pre-teach vocabulary and key concepts which relate to the curriculum through verbal The explanations and concrete experiences using a multisensory approach. ●●●● Pre-teaching can be provided by someone other than the teacher, such as a peer, an older student, a teacher assistant or a parent. ●●●● After the student has participated in pre-teaching and classroom instruction, it is crucial to review concepts and vocabulary. Organizational Skills ●●●● Organizational skills are an integral part of student success and are essential for the student with blindness. ●●●● Have the student organize, use and take responsibility for his/her personal work space. ●●●●

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Provide the student with a definite place to put things,

with the expectation that the student uses this space. ●●●● Use containers and zippered pencil cases to store objects. ●●●● Use techniques for safely locating and searching for dropped objects. ●●●● Attach braille labels to binders and folders for the student.

92 ●●●● Provide sufficient space for materials and equipment. Often a special room is required for storage and use of specialized equipment. A desk may need to be adapted to provide a larger working area. ●●●● Brailled texts require more storage space and should be stored upright. Communication Listening Skills A student with blindness learns through listening, so it is important that he/ she develops good listening skills. Listening skills are taught as an integral part of the language arts curriculum in the elementary grades and a student with blindness will benefit from these activities. ●●●● Discriminate between different sounds; ●●●● locate the direction of sounds; and ●●●● Associate sounds with objects and situations. Listening and interpreting oral information: ●●●● to listen for sequence; ●●●● to listen for details; ●●●● to listen for main ideas; ●●●● to listen to follow instructions; and ●●●● New vocabulary. Check that the vocabulary is within the student's experience and has meaning. Listening to audiocassettes: ●●●● minimize distractions to increase attending; ●●●● read the questions to be answered before listening to the information; ●●●● listen to the pertinent parts of the tape prior to the lesson; ●●●● play a short portion of the tape, then stop to write notes; and ●●●● adjust the speed of the recorder. Listening to a reader: ●●●● Having someone read to the student has the following advantages:

93 ●●●● the student has immediate access to the same reading material as other students; ●●●● the reader can scan the text to find appropriate material; ●●●● the reader can give information on spelling and punctuation; and ●●●● this is an option when taking tests. Braille Reading Skills The student will require a pre-braille and braille reading program, in addition to participating in the regular reading programme. Writing Skills ●●●● Teach a student who uses braille to write his/her signature. Raised lined paper and signature guides are available. ●●●● Teach keyboarding skills (grade 3 or 4) after the braille writing skills are established. ●●●● Provide access to a computer at an early age. Adaptations may be necessary. ●●●● The student should be able to spell words letter by letter as well as by using braille contractions. Speaking Skills - A student should: ●●●● look directly at the speaker; ●●●● learn to participate in a discussion; ●●●● learn when to speak; ●●●● learn to use and interpret voice modulation; ●●●● learn to initiate and contribute to a conversation; Mathematics Skills There may be a number of gaps in the student's general knowledge that would normally have been gained through visual observation. Math for the student with blindness is prepared in Nemeth code. ●●●● Speed may be improved by adapting or shortening assignments. ●●●● Make or purchase braille flash cards. ●●●● Raised pictures, diagrams and concrete objects are necessary to develop concepts. Simple raised outlines are preferred.

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Independent Living Skills This area of the expanded core curriculum is often referred to as "daily living skills." It consists of all the tasks and functions persons perform, in accordance with their abilities, in order to lead lives as independently as possible. These curricular needs are varied, as they include skills in personal hygiene, food preparation, money management, time monitoring, organization, etc. Some independent living skills are addressed in the existing core curriculum, but they often are introduced as splinter skills, appearing in learning material, disappearing, and then re-appearing. This approach will not adequately prepare blind and visually impaired students for adult life. Traditional classes in home economics and family life are not enough to meet the learning needs of most visually impaired students, since they assume a basic level of knowledge, acquired incidentally through vision. The skills and knowledge that sighted students acquire by casually and incidentally observing and interacting with their environment are often difficult, if not impossible, for blind and visually impaired students to learn without direct, sequential instruction by knowledgeable persons. Recreation and Leisure Recreation and leisure

activities will vary with the student's age and functional vision. These activities may range from pretending and playing with toys to artistic abilities and using technology, equipment and tools. Recreation and leisure offer opportunities for students to use their abilities, be active, feel self-worth, release tension, show others what they can do, get along with others and receive recognition or rewards. Many recreation and leisure activities promote lifetime skills that play an important part in developing a satisfactory life. Recreation and leisure activities provide opportunities for students to integrate and apply skills acquired in many curricular areas. Students with blindness need additional encouragement to pursue these activities. The student should develop: ●●●● an awareness of leisure activities and the skills to manage leisure time well; ●●●● skills for solitary play and solitary leisure activities; ●●●● skills for social play and social leisure activities; ●●●● an interest in learning about or joining a community club or group; ●●●● an interest in physical play, physical games, physical fitness and sports; ●●●● an enjoyment of pets and nature; ●●●● an enjoyment of music and dance; ●●●● an interest in a hobby; 95 ●●●● skills for reading, writing, speaking and drama as leisure activities; ●●●● skills for using science and technology for leisure purposes; ●●●● an interest in taking lessons (music, gym, drama, swimming, dance); and ●●●● an interest in attending camps.

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Knowledge of the Eye Condition A student needs to understand and be able to tell others comfortably about the cause of his/her

blindness. Understanding of the following leads to acceptance and dealing with the blindness: ●●●● Name, cause, implications and prognosis of the student's eye condition; ●●●● Genetics counseling; ●●●● Eye care and service; and ●●●● Knowledge of factors secondary to the eye condition (diet, medication). Orientation and Mobility Orientation and mobility (O & M) instruction prepares a student with visual impairment to travel independently and safely. Orientation skills help a student to be aware of his/her own body in space and the surrounding environment. Mobility skills are specific techniques used to enable a student to move easily from one place to another. Orientation and mobility includes both mental orientation and physical locomotion. Orientation and mobility skills contribute to development in social skills, mental and physical interactions and the general well-being of the student. These skills are needed for the student with low vision as well as the student with blindness.

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As a part of the expanded core curriculum, orientation and mobility is a vital area of learning. Teachers who have been specifically prepared to teach orientation and mobility to blind and visually impaired learners are necessary in the delivery of this curriculum. Students will need to learn about themselves and the environment in which they move - from basic body image to independent travel in rural areas and busy cities. The existing core curriculum does not include provision for this instruction. It has been said that the two primary effects of blindness on the individual are communication and locomotion. The expanded core curriculum must include emphasis on the fundamental need and basic right of visually impaired persons to travel as independently as possible, enjoying and learning from the environment through which they are passing to the greatest extent possible. 96

Orientation & Mobility should be incorporated into the student's Programme and timetable. An individual program is determined by considering the following factors: ●●●● diagnosis and degree of visual impairment; ●●●● prognosis of visual impairment; ●●●● functional vision; ●●●● presence of other disabilities; ●●●● age; ●●●● cognitive functioning; ●●●● general health; ●●●● school and community environment; and ●●●● family, school and community resources.

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Technology Technology is a tool to unlock learning and expand the horizons of students. It is not, in reality, a curriculum area. However, it is added to the expanded core curriculum because technology occupies a special place in the education of blind and visually impaired students. Technology can be a great equalizer. For the braille user, it allows the student to provide feedback to teachers by first producing material in braille for personal use, and then in print for the teacher, classmates, and parents. It gives blind persons the capability of storing and retrieving information. It brings the gift of a library under the fingertips of the visually impaired person. Technology enhances communication and learning, as well as expands the world of blind and visually impaired persons in many significant ways. Thus, technology is a tool to master, and is essential as a part of the expanded core curriculum.

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Technology for Students with Blindness A computer system for a student with blindness will include a computer or laptop with the following components. ✓✓✓✓✓ Screen

Reader/Speech Synthesizer ✓✓✓✓✓ Voice Access ✓✓✓✓✓ Scanner ✓✓✓✓✓ Optical Character Recognition Software 97 ✓✓✓✓✓ Electronic Braillewriters ✓✓✓✓✓ Print-to-Braille Software ✓✓✓✓✓ Braille Printer or Embosser ✓✓✓✓✓ Calculator ✓✓✓✓✓ Cassette Recorder ✓✓✓✓✓ Descriptive Video Service (DVS) ✓✓✓✓✓ Language Master

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Career Education There is a need for general vocational education, as offered in the traditional core curriculum, as well as the need for career education offered specifically for visually impaired students. Many of the skills and knowledge offered to all students through vocational education can be of value to visually impaired students. They will not be sufficient, however, to prepare students for adult life, since such instruction assumes a basic knowledge of the world of work based on prior visual experiences. Career education in an expanded core curriculum will provide the visually impaired learner of all ages with the opportunity to learn first-hand the work done by the bank teller, the gardener, the social worker, the artist, etc. It will provide the student opportunities to explore strengths and interests in a systematic, well-planned manner. Once more, the disadvantage facing the visually impaired learner is the lack of information about work and jobs that the sighted student acquires by observation. Because unemployment and underemployment have been the leading problem facing adult visually impaired persons, this portion of the expanded core curriculum is vital to students, and should be part of the expanded curriculum for even the youngest of these individuals.

Self Concept and Socialization Social and life skills that other students can learn naturally through observing others and modeling, must be taught specifically to the student with blindness. aaaa Teach the student to turn and face the speaker. aaaa A student with blindness may have mannerisms, such as rocking or repeatedly 98 rubbing the eyes. Such mannerisms can interfere with social interactions. This is a sensitive issue; professional advice should be sought. aaaa Encourage the student to initiate a conversation or play activity. The student will often wait silently until someone else takes the initiative. aaaa Help the student to understand and respect the personal space of others. The student will also need to be able to ask others, in a courteous way, to respect his or her personal space. Social interaction skills needed to respond appropriately and participate actively in social situations, such as: ●●●● shaking hands ●●●● turning toward others when speaking or being spoken to ●●●● using language to make a request, decline assistance, or express a need ●●●● expressing emotion and affection appropriately ●●●● participating appropriately in conversations in various situations 3.7.

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Implications of Low vision and needs of Children with low

visions 3.7.1

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Low Vision Students with low vision exhibit a wide range of visual impairment. Teachers should be aware

of

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that no two students with low vision have the same functional vision. Even if they are diagnosed as having the same eye condition and similar acuity. Vision may fluctuate and be influenced by such factors as fatigue, light glare, lighting conditions and time of day. Therefore special attention must be given in assessing the needs of the students with low vision

and A 1 education of them requires unique strategies.

Definition of low vision : "Persons with low vision" in the PWD act means persons

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with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device. 99 The

points to be emphasized from the definition of low vision are: ●●●● There is significantly reduced vision. ●●●● This can affect the performance. ●●●● The vision can be used for various purposes including reading. ●●●● There is need for assistive devices. ●●●● Assessment has to be made of the distance and near visual acuity and other visual functions such as contrast, light sensitivity, colour vision and visual field. Difference between blindness and low vision: a) Blindness can be defined as having no vision or no significant usual vision while low vision involved significant usable residual vision. b) Blindness mean visual acuity of less than 3/60 and

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low vision means visual acuity of less than 6/18 but equals to or better than 3/60.

Some of the characteristics of low vision children that are important for a teacher to know are : Ø Limited opportunities for incidental learning. Ø Limitation in the range and variety of experience. Ø Limitation in the ability to get around. Ø Limitation in interaction with the environment. Specific implications of low vision For each person it is necessary to ●●●● Determine the activities normally done by the person with low vision and other people in the same community and what visual skills are required to carry these out. This may be at school, in the village, or at work. The person should be assessed in a place appropriate for those tasks. ●●●● Analyze the visual elements of a task so that the task can be modified and the environment adapted to the special equipment used ●●●● Observe the visual environment and assess/observe the person under different environmental conditions. Vary aspects of the environment also, e.g. distance from the task, lighting, contrast, colour and time allowed.

100 ●●●● Determine which sense is the most efficient for a particular task. For example, vision, enhanced vision, auditory, tactual, or some combination of these senses. In order for students with low vision to achieve high levels of academic and social success, the following recommendations must be incorporated into the educational program:/for these students. Families, teachers, and students need to recognize the unique skills that students who have low vision must be taught and maintained throughout their formal education. 1. Students with low vision must be given opportunities by teachers and family members to understand and communicate their visual impairment and their visual needs to others. Beginning in the preschool years on, it is incumbent that professionals and families work together to assist students who have low vision to understand and to communicate their vision needs in a straight- forward manner to their teachers, peers, and members of the community. Initially students should be able to identify the name of their visual impairment. As students mature and gain more social competence, they must be able to explain their visual impairment to others. Students should also be able to communicate their needs resulting from visual impairment in a succinct and straight-forward manner, given their age and developmental levels. 2. Students with low vision must receive guidance in strategies to promote effective interactions in a variety of social situations. This is especially important for students with low vision who have additional disabilities. Strategies and curricula must be provided to help students with low vision to become more socially competent in the following areas: ●●●● Developing effective interaction skills that include social initiations, turn taking, gaining entry into a group, using auditory cues to assist with the interpretation of body language. ●●●● Learning to use a combination of senses to help support and interpret social encounters with peers, family members, and co-workers. ●●●● Asking for assistance when needed in social situations. ●●●● learning effective communication techniques to promote confidence in a range of situations ●●●● Providing opportunities for the students with low vision to practice communicating A I their needs and concerns with family members in a safe, nurturing environment.

101 3. Students with low vision need guidance to develop strategies to promote self-advocacy skills in schools, communities, and vocational settings. Students with low vision, including those with multiple disabilities, need to be able to ask for assistance, and make their needs known in a clear and socially-acceptable manner. Teachers, families, and other professionals can support students in this area by providing the following opportunities: ●●●● Meeting and interacting with role models who have similar visual impairments. ●●●● Engaging in consumer-related activities through organizations such as the All India Council of the Blind, the National Federation of the Blind, and the National Association for the Blind. ●●●● engaging in role play situations in which the need to use self-advocacy skills, such as asking for front row seating at a concert, or the opportunities to use low vision devices in school situations. ●●●● Providing information regarding modifications for accessible materials and clinical low vision evaluations. ●●●● Providing direction and advice in a range of real life experiences where students can learn to cope with a variety of independent activities. ●●●● Providing effective strategies to ask for assistance from others. ●●●● Learning strategies to promote positive social relationships in work situations. ●●●● Encouraging families to provide safe situations in which students must advocate for themselves. 4. Students with low vision must be supported in establishing an identity that is unique to themselves that is neither as a blind individual or an individual who is sighted. Ongoing support is required for students whose vision loss is progressive and who may eventually require sight substitution techniques. It is essential that students who are low vision have an identity that is their own. Identifying oneself as low vision should not be viewed as a negative, but rather as a unique part of the student as an individual entity. Promoting oneself as an individual with low vision enhances social and emotional stability. The following strategies may help to support the importance of establishing a strong identity as a person with low vision: ●●●● Engaging in activities that promote a positive self-image by having students identify their strong attributes.

102 ●●●● Providing opportunities for the students with low vision to enhance their physical appearance through the selection of clothing, use of make-up, use of attractive low vision devices, and by learning strategies to improve body stance and posture, gestures, and facial expressions. ●●●● Providing experiences that allow students with low vision to discuss their visual impairment with peers and trusted adults in a safe and nurturing environment. ●●●● Providing experiences that allow students with low vision to excel and to demonstrate specialized skills or strengths. ●●●● Allowing students who are low vision to feel comfortable with identifying themselves as a person with low vision, and promoting their status as an attribute. ●●●● Providing opportunities for students with low vision to discuss strategies for disclosing their visual impairment to others. ●●●● Providing experiences for students with low vision to drive, and to develop strategies for non-driving. ●●●● Encouraging families to provide opportunities in the home environment for students to take responsibility for chores, homework assignments or projects, and personal belongings. 3.7.2 The needs of people with low vision This includes individuals trying out different optical and electronic aids in their home environment. The challenge is in finding the right balance between visual performance, comfort and aesthetics so that people can easily and happily integrate the right solution for them in their daily life. Lighting Lighting is one of the most important and simple aids. One of the key aspects of any low vision assessment is to check the lighting to ensure there is the right lighting and it is positioned correctly. Some types of light will work better than others depending upon the eye disease. Having good lighting while reading, writing or undertaking fine work is very important; it can make a huge difference to the ability to see the task being undertaken.

103 Talking aids: There is a large range of talking aids available including talking scales, timers, clocks, watches, calculators, good thermometers, key chain alarms, key ring voice memo devices, vibrating and beeping liquid level indicators and talking colour detectors. Large Print Books: Large print books are usually printed in 16 or 18 point font and this can be a good option if sight allows for this level of print size. A selection may be available from the local library or a low vision service to borrow or purchase. Reading: Reading guides are simple devices that enable better focus when reading either normal or large print. They are simple black cards or sheets with a block cut into them to guide the writer or reader. Reading stands and lap desks with built in lighting can help with correct positioning while reading. Writing : There are a number of writing aids available including large print or tactile address books, diaries, organizers and notebooks along with: ●●●● Writing frames or simple rail line guides, available in various formats including envelopes guides and signature guides, raised line or bold writing paper ●●●● A range of thick felt tip pens Optical Magnifiers: There is a large range of optical magnifiers in different magnification strengths and sizes. The more powerful magnifiers are smaller, and need to be held close to the eye when being used. ●●●● Hand-held magnifiers, some with built-in lighting ●●●● Bar magnifiers that can magnify one line of writing at a time ●●●● Dome magnifiers which many find easier to use ●●●● Fixed stand magnifiers which keep your hands free for reading, writing and

104 other activities such as signing a cheque. ●●●●● Spectacle binoculars available in clear or tinted colour for reading or close detail work. Primary Aids : Canes Many people with low vision may never need or use a cane but it can be very useful for negotiating the environment. Many people find that a cane gives them much greater confidence to move about. Technologies Audio Books Audio books or talking books are available from a range of providers including low vision agencies, council libraries and audio book websites. Some local newspapers are also available in audio format. Television To help with TV viewing there are large screen televisions and universal remote controls with large buttons. Electronic magnifiers Electronic magnifiers are excellent for high magnification reading and writing to support a wide range of daily living Computers There is a range of ways to assist those with low vision to use a computer including a large screen to increase the viewing area and ways to increase the size of items on the screen. For those with low vision, simple fonts without decorative curves are easier to read (eg Arial or Calibri) and use upper and lower case instead of typing in all capitals. Also, when typing, try to add extra spacing between words and lines of text so the breakdown of sentences and paragraphs is clearer. Close Circuit Television (CCTV): An electronics projection magnifier that enlarges reading materials by projecting on the screen. Talking

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Calculator: Calculators with voice output allow studenfto do a wide variety of mathematical calculation. 105

Screen

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Enlarger Screen enlarger software programmes display information on a computer screen in a variety of magnification levels. The entire screen, a portion of the screen or just one line may be enlarged. Students with low vision may benefit from these

programmes (ZoomText, MAGic, VisAbility).

93% MATCHING BLOCK 77/112

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Screen Reader/Speech Synthesizer Screen readers provide auditory feedback when using the keyboard as well as auditory access to information displayed on the monitor. These systems consist of a software programmes and speech synthesizer. The software programmes sends information from the computer to the synthesizer, where phonemmes are combined into words and the words are spoken. Most systems allow choices in volume, voice quality and speed of output. Students with limited vision will find these devices useful, especially when connected to a regular printer for output (JAWS, Intellitalk, IBM ScreenReader/DOS). Voice Access Voice access systems allow the user to interact with the computer screen by using voice commands instead of the keyboard. They are particularly useful for students who have difficulties with fine motor control as well as visual impairments. These systems include special software and sound cards to allow for voice output of information on the screen. As with screen readers, they can be connected to braille and regular printers for output (DragonDictate, Naturally Speaking). Scanner The scanner will scan print text of good quality. It must be used in conjunction with optical character recognition software. Then the scanned text can be

saved to be printed in braille or accessed through a speech synthesizer.

100% MATCHING BLOCK 78/112

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Cassette Recorder Cassette recorders can be used as writing tools as well as reading tools. Students with no vision,

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as well as those with limited vision can benefit from the use of cassette recorders. 3.7.3

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Teaching Implication : ★★★★★ A programme plan is usually develop on an annual basis by the student's support team and is reviewed regularly. 106 ★★★★★

87%

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Talk while you teach. The student may miss visual clue and written. ★★★★★

Make the lesson attractive by using colourful sketches pictures and charts. ★★★★★

100%

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Teach in close proximity to the student when doing demonstration or using visual aids. ★★★★★

100%

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Allow the student to go up to the board or move the desk closer in order to view or copy the material. ★★★★★ Check regularly to ensure that the student is making accurate notes. ★★★★★

Replace the print with large size if there is a need or use appropriate spacing, contrast or a projection device. ★★★★★
Never use glossy paper as it has glare. Putting a transparent sheet on the pages can reduce the glare. ★★★★★ Alternate visual task with nonvisual task to avoid eye fatigue. ★★★★★

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Provide extra time to the student he/she will take longer to complete most tasks. The quantity of work required may be decreased. ★★★★★

The good contrast light yellow-red, light blue-red in visual materials like charts diagrams make these accessible to a low vision child. Contrast light brown-maroon are of no use of these children. ★★★★★ Use of bold line paper can help in keeping the lining of writing straight. It is the darkness and not the thickness of the lines that helps a low vision child in writing. ★★★★★ Question papers can be written with felt-tip pens for low vision children. ★★★★★ Some cases oral exams or a scribe to write exam answer. ★★★★★ Encourage use of tape recorders talking books whenever there is need. ★★★★★ Teacher has to encourage and motivate the child to continue his/her reading and writing. ★★★★★ The student's

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with low vision may need extra explanation of some materials. ★★★★★

The child may have difficulty reading cursive hand writing. A void using it on the black board. ★★★★★

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The student's ability to participate in certain activities such as physical, 107 Educational, Science, labs and visual arts may be affected by his/her functional vision. Modification may be required. ★★★★★

Use real life objects

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concrete and tactile materials as much as possible. This provides opportunities for kinesthetic and tactile learning. ★★★★★

Never allow student to continue struggling with print. ★★★★★ The light from the lamps should never come from the front. It should always fall on the back from left or right side or even from behind the child. Glossary Assessment: A procedure to determine self-sufficiency of low vision involving functional and clinical measurements. Braille: A tactile method of reading and writing, generally used by the blind. It involves combinations of six raised dots punched into paper, which can be read with fingertips. Cane: A mobility aid that helps in knowing the obstacles while the person is moving. Close Circuit Television (CCTV) - An electronic magnifier that enlarges reading material by projecting on the screen. Disability: Results from a loss of physical functioning or difficulties in learning and social adjustment that significantly interferes with growth and development. Field of Vision: defects of degree of an angle that a person can see without turning his/her head or moving the eyes. includes the limits of peripheral sight or that which lies to the sides of straight ahead Filters: Illumination control device used to provide excellent protection from glare. They can be used with most optical aids systems. Functional Vision: the level and use of residual vision to cope up with requirement of daily life. Handicap: Refers to a disadvantage imposed by the environment and the person's capacity to cope up with the disadvantage.

108 Impairment: Refers to identifiable defect in the function of the organ. Subject of medical profession. Individualized Educational Plan (IEP): - An educational plan tailored to an individual students needs. Magnifiers: Use of deep plus lens to magnify small objects so that they can be seen more easily. Non-Optical Aids: Aids used to enhance vision through non-optical means, for example illumination, contrast etc. Ophthalmologist: Medical personnel involved in examining a person with visual impairment and prescribing medical treatment. Optical Aids: Lenses placed between an eye and an object to alter the retinal image of the object. Orientation: Understanding of one's own relative position in space that restricts movement. Pinhole Aperture: A device to control illumination. Placing it before an eye reduce blur. Retina: Neural tissue that sends impulses to the cortex (brain) via the optic nerve for visual perception. Tactile Clues: Learning about various objects in the environment through the sense of touch. Tracking: Concentrate .following of the objects with eyes. Typoscopes: A piece of black cardboard with a slit in it, to block out all but the line of print view while reading. 3.8 "Check your Progress" I. Choose the correct response 1. The ability to locate one self in one's environment is known as a) Orientation. b) Daily living activities.

109 c) Sensory training. d) Mobility. 2. The ability to move in the environment from one place to another is called as a) Orientation. b) Daily living activity. c) Sensory training. d) Mobility. 3. Introduction of daily living skills to a visually impaired child depends on the assessment of his : a) Social achievements. b) Maturity level. c) Independent mobility. d) All the above. 4. Language development mainly depends on a) Understanding of syntax b) Ability to hear to sound properly c) Reading great classics d) Proper attention 5. 'Verbalism' develops in visual impaired children due to a) Poor vocabulary. b) Good vocabulary. c) Lak of personal direct experience. d) Misunderstanding word meaning. 6. Communication with the blind child in the initial years must be through a) Dialogue b) Imitation

110 c) Facial expression d) Direct physical contact 7. Stereo type attitude means a) Conventional behaviour b) Unhealthy behaviour c) Aggressive feeling d) Favourable towards blindness 8. Reduction in the range and variety of experiences a) Is a subjective effect of blindness b) Is an objective effect of blindness c) Is impersonal loss of visual impaired children d) Reduction in experience provided to children II. State true or false for each of the following statements 1. Blind persons do not have to learn special technique for all the activities of the daily living. 2. 'Orientation mobility' is essential for independent living of the visual impaired persons. 2. Senses are the gateway to knowledge. Hence the effects of blindness are not basically cognitive. 4. All blind are special talent like musical talent and fantastic memory. 5. Although blind children may have delayed physical development due to their inability to do some physical activities, they typically do not differ in physical ability from normally seeing children. III Answer the following questions 1 Observe any six manneristic behaviours which are found in visually impaired children and investigate why such behaviours are present in them? 2 Verbalism is mostly found in V.I.C. Investigate why such behaviour present in them?

111 3 Compare the concept development skills of non-disabled children and visually impaired children with additional disabilities? 4 Identify one object in your surrounding, which you find that a visually impaired child differently and modify it to his needs. 5 Discuss with five visually impaired to find out the extent of their social and emotional development. 6 Prepare a case study of a visually impaired child's language development processes. 7 Anita lives in a urban slum area. She was detected with central vision loss at birth. Discuss how his psychological development will be affected. 3.9 Let us Sum up ●●●●● The societies, across the globe have developed their own images of blind persons, of their capabilities and of their limitations. Even beyond that, they have developed their own ways of coping with the capabilities and/or limitations of the blind. ●●●●● All low vision children are different from each other and their functioning level depend on what area of their visual system is damaged. ●●●●● Presence of just one or two symptoms does not indicate low vision. ●●●●● Verbalism and word-mindedness is reported to be exhibited by the visually impaired children due to absence of sight. ●●●●● Visually impaired children may experience developmental delays in acquiring concepts because of their visual loss. ●●●●● Low vision children with additional disabilities have more learning problems and psychological problems as well. ●●●●● The doctor has to indicate whether the vision will deteriorate further or remain as such. The decision to learn braille, use of magnifiers in some cases or reading prints can also depend on this. ●●●●● Children's with peripheral vision can read and write but may find moving about difficult.

112 ●●●●● Whether a child with low vision enters adulthood with an inferiority complex or with a positive self-concept depends on his/her teacher, parents and other significant people in his life. The child should be treated normally like any other child except for having special needs. ●●●●● No one educational plan is beneficial for all low vision persons. ●●●●● Each individual child has to be comprehensively assessed. ●●●●● Cognitive development is the result of sensory development, perceptual development in the way in which the child interprets sensory impulses received by him, as well as the ability to form concepts, exercise judgment, reason and solve problems. ●●●●● Development of proper mannerism contributes to the social integration of the visually disabled child. Unwanted mannerisms of visually disabled children could be controlled through timely invention and substitute activities. 3.10 Reference ●●●●● Bishop, V.E. Teaching the Visually Limited Child. Spring Field, IL: Charles C Thomas. ●●●●● Hernian, K.A. Teaching the visually Handicapped, Charles, E. Merril Publish Company ●●●●● Harley, R.K. Verbalism among Blind Children, New York; American Foundation For the Blind. ●●●●● Jose.R.T(1983), " Understand of Low Vision". New York: ●●●●● Kundu, C.L., Mani, M.N.G and others (2008), Status report on disability 2000. (Visual disability) New Delhi; Rehabilitation Council of India. Hand book of visually Handicapped. ●●●●● Lowenfeld, B. The visually Handicapped Child in the School of London, Constable 1784 Chapter 25. ●●●●● Lowenfeld, B. Effect of Blindness on the Cognitive Functions of Children, Nervous Child, 1988, 7,45-54.

113 ●●●●● National Council of Educational Research and Training, Central Resource Centre (PIED)(1987). Source Book For the Teacher of the visually Impaired. New Delhi. NCERT. ●●●●● National Council of Educational Research and Training, Low Vision Children, A guide for primary school teacher. ●●●●● Shanmugarn, L.(200 1). Low vision care in ordinary schools. Guide to resource teacher. ●●●●● <http://www.perkinselearning.org/developing-social-skills-in-children-blind- visually-impaired>.

114 Unit 4 □□□□□

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Identification and Assessment of Visual Impairment Structure 4.1 Introduction 4.2 Objectives 4.3 Interpretation of clinical assessment of vision 4.3.1

Importance of Early Identification and Intervention 4.3.2 Tools for Low vision Assessment 4.3.3 Clinical Low Vision Assessment: 4.4

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Functional Assessment of vision : concept, need and methods 4.4.1 Concept 4.4.2 Need for Assessment of functional vision 4.4.3 Areas and skills

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functional vision 4.5 Tools for functional assessment 4.5.1 Functional Skills Inventory for the Blind (FSIB) 4.5.2 Low vision Assessment by Jill Keeffe 4.5.3 LEA

vision Test System 4.5.4

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Portfolio Assessment 4.6 Tools for Psychological assessment of the visually Impaired 4.6.1 Vithoba Pakinikar Performance Test 4.6.2 A short scale I.Q. measure for the Visually Impaired based on WISC-R 4.6.3 Adapted EPQ (Eysenck Personality Questionire) 4.6.4 Adapted Blind Learning Aptitude Test 4.6.5 Concept Development for blind children 4.6.6 Reading Preference Test

for Children with Low Vision

115 4.6.7 Cornell Medical Index for Visually Handicapped Children 4.7 Report Writing 4.8 Check Your Progress 4.9 Let Us Sum Up 4.10 References 4.1 Introduction It is important to identify children who have impaired vision. The children with visual problems can be identified with some simple techniques; Vision may be improved with spectacles, treatment or operation. Early intervention services have significant impact on improving visual functioning of the visually impaired infants and toddlers. Thus, it is important to identify children who have impaired vision at an appropriate time. The identification of these children must be carried out on the basis of objective assessment of the eye condition and visual functioning. This assessment provides information regarding a student's ability to use his vision within the learning environment. In this unit we shall discuss the meaning, need and importance of clinical and functional assessment procedures – attention, tracking, visual closure visual background, from constancy, eye- hand coordination and eye-foot coordination and the activities to improve the visual efficiencies. The report on the "Global initiative for the elimination of avoidable blindness by the World Health Organization" documents that there are 8.9 million blind people in India. The definition of Low Vision defined by WHO-ICEVH conference on the "Management of the

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Low Vision in children is: A person with low vision is one who has impairment of visual functioning even after treatment or standard refractive correction and has a visual acuity of less than 6/18 to light perception, or a visual field of less than 10° from the point of fixation, but who uses, or is potentially able to use vision for planning and / or execution of a task."

This is a functional / working definition of low vision. It recognizes that people with limited amount of vision are low vision. While the educational service for blind persons in India is more than 100 years old, the education of low vision is of recent origin. In the 1980s, education of low vision was provided with non-visual methods. In this unit, we shall analyze the maximum use of remaining vision to increase the visual efficiency that all children and adult get the greatest benefits from whatever sight they have. In this unit, we shall analyze the concept of clinical

116 evaluation, functional vision, visual efficiency and activities to promote visual efficiency etc. The Importance of early identification and intervention, clinical assessment, activities for functional assessment and the use of adapted tests for assessment are discussed in this unit. Vision is responsible for 80 to 90% of what a child learns during the first six years of life. A child uses vision in real life situations and these real life situations are the environments which promote his/ her growth and development. Functional vision refers to an individual's ability to use his/her vision in the everyday tasks of real life, such as reading, doing house work, getting around place to place. A functional vision assessment measures how well a child uses his/her vision to perform routine tasks in different places and with different materials throughout the day. This information gathered in the assessment enables the Low Vision teacher and the parent/ caretaker to develop an educational programme which will further enhance the development of functional vision. The assessment of functional vision aims to determine:

- What people see
- How they can see and use their vision
- Under what conditions they can see

The information can be used to understand why people can or cannot do particular activities. The purpose is to provide information about the use of vision plan training to enhance visual skills. A functional vision assessment is conducted by rehabilitation professional –a low vision specialist, or a teacher who is specially trained in low vision; Information about how the child uses his / her vision is gathered from parents/caregivers and other teachers who know the child well. Specialist will review records and may talk to the eye doctor to learn more about the child's visual condition. Functional Assessment can be done at various places and with a variety of materials. It is crucial to assess the child in everyday setting at home (indoors and outdoors); school(in the classroom or playground); or in the community, doing his/her usual activities and tasks. The low vision specialist will observe the child in his/her usual surroundings to learn how the child uses vision. It is essential to evaluate the child's effective use of vision

117 Factors that affect how well a person sees

- Visual Acuity
- Visual Field
- Control of eye movements
- Light
- Colour
- Contrast
- Duration and severity of low vision
- Use of low vision at an early age/ visual experience
- Intelligence

* What is Functional Vision? Functional vision is the use of vision for particular activities. Functional visual skills are required to carry out every day activities.

4.2 Objectives After studying this unit, the learners will be able to:

- Identify the children with visual problems
- Define and describe the need and importance of intervention
- Understand the importance of clinical assessment
- Distinguish "clinical evaluation" from " functional vision"
- Describe visual efficiency and suggest activities to promote visual efficiency to the visually impaired person;
- Explain the optical and non-optical devices that are used to increase visual function
- Suggest activities to promote visual efficiency training programme for the visually impaired person;
- Identify the useful activities to improve eye hand coordination and eye foot coordination;
- State the importance of guidance and counselling to promote visual efficiency training programme

118 • Use commonly adapted tests for visual assessment • Carry out functional assessment to low vision children. After studying this unit the students will be able to learn :— • What is functional assessment of vision. • How the assessment of functional vision aims to determine. — What people see — How they can see and use their vision. — Under what conditions they can see. • Factors that effect how well a person sees. 4.3 Interpretation of clinical assessment of vision

4.3.1 Importance of Early Identification and Intervention: Child development research has established that the rate of human learning and development is most rapid in the infant and toddler stage. Neglect of appropriate eye check-up of children reporting eye problems runs the risk of damaging the vision of children who otherwise can be helped to make the best use of their remaining vision. This will also run the risk of missing an opportunity to learn during a state of maximum readiness. Karnes and Lee (1978) have noted that only through early identification and appropriate programming can children develop their potential. Children with low vision experience challenges in playing communicating, interaction, learning, problem-solving skills, and performing in daily routines and activities. Early intervention plays a significant role in preventing and reducing the extent of developmental delays. Early intervention applies to children of school age or younger who are discovered to have or be at risk of developing handicapping condition. These children can be helped in overcoming their difficulties by appropriate provision of services for the purpose of lessening the effects of the condition. Early intervention is a part and parcel of total rehabilitation process. It is individual based. It aims to help attain independence in children with special needs resulting from low vision condition. Early intervention can be remedial or preventive or remedying the existing developmental problems or preventing their occurrence. Early intervention focuses on the child alone or the child and the family together. It could be centre-based, 119 home based, hospital based or a combination of these. Early intervention may begin at any time between birth and school age. There are three primary reasons for initiating early intervention. They are: 1. To enhance the child's development 2. To provide support and assistance to the family 3. To maximize the child's and family benefit to the society. 4.3.2. Tools for Low Vision Assessment The tools for low vision assessment are long handled occluders, Janelli's and Halberg clips, printer, trial lens holder, clip-on pin-hole, universal and paediatric trial frames, Jackson's cylinders up to 2 diopters, ruler and torch. The tools also include a full aperture trial lens set and a good range of auxiliary lenses like Stenopic slit, red green filters, prisms, etc. These may include Snellen's, ETDRS LogMar, Sloan's Letter, Lea's symbols, VA Tester, Lea's preferential looking paddles, paediatric low vision test, Fienbloom distance test, Bailey-Hall Cereal test. Other tests include brightness acuity test for glare assessment. Panel D15 for quantitative colour vision assessment, Lea's low contrast symbol test for contrast sensitivity assessment, Amsler chart manual for central visual field assessment and Ishihara test for colour blindness. Following is the routine for a low vision examination. Steps of Low Vision Assessment 3 Steps: 1. Clinical Evaluation 2. Functional Evaluation 3. Vision Rehabilitation It involves a complete understanding of the condition, its symptoms and concluding the management of the low vision patient. Careful observation of the client's behaviour and his physical status can provide an insight to the severity of the problem. Importance of Diagnosis: the clinical team is primarily responsible for diagnosing the low vision client accurately as the functional implications of the cause of low vision is different in each eye disorder. The areas of intervention are specific to certain eye 120 disorders. Similarly, the age and the status of the eye disorder, whether progressive and non progressive also has a bearing on the interventions planned for the low vision client. 4.3.3 Clinical Low Vision Assessment: A. Observation Patients can be observed as they enter the room to see whether they walk unaided or are supported, whether they feel for a handrail or easily recognize open doorways. Wearing dark spectacle lenses or holding the head down may imply sensitivity to light, although this head position could be due to arthritis. Other things to look for are difficulty in holding things or, tremor. Many elderly low vision patients may attend with a care taker or relative. To summarize observe the following : 1. Mobility 2. Fixation 3. Posture 4. Psychology of patient • Ready to accept the services • Motivated/ depressed B. Interview and History Taking Interviewing is important in order to understand the emotional status and individual needs of the client. The interview also works as a platform for developing a rapport between the examiner and the client. The interview starts with the case history with emphasis on the visual problem. This is followed by the individual's personal history that includes occupation, education, living status and specific functional aspects, like independence, orientation, mobility and activities of daily routine. The daily routine of the client can identify the needs of the individual and areas where help may be needed. Brining to focus activities that may be possible can help in narrowing down the objectives of the client. All the data from the interview have to be recorded in an organized manner so it could be used effectively in finding the solutions. History taking is one of the most important aspects of any low vision evaluation It is critical for the development of appropriate and realistic evaluation and management strategies. Following points should be covered.

121 * General Information • Demographic Information • Interaction between the patient and the accompanying family member • Marital Status/ Living Situation * Ocular History • Ocular history correlates the onset of specific visual complaints with disease appearance, progression or treatment • Diagnosis and onset of symptoms • Past, current, or planned surgeries or treatments • Stability of vision • Family history of eye disease • Previous history of eye disease or vision problem • Current or previous use of spectacles, contact lenses, or low vision aids • Patient's understanding of vision condition and implications for functioning • Virtually, very ophthalmic intervention has functional consequences * Systemic History • Many systemic illness have direct ophthalmic effects, one of the most obvious being Diabetes. • General health review • Current medications • Hearing impairment or other handicapping conditions • Self- care needs (e.g., ileostomy, diabetes) • Orthopaedic handicaps • Psychology considerations (e.g., denial, depression, co-dependency, or suicidal tendencies) • Activities critical to manage are:- * Educational or Vocational Status • School requirements 122 • Seeing blackboard • Computers • Reading Instrument • Retired • On leave from work due to low vision • Homemaker • Has the client considered retiring or resigning because of the vision • Social activities hampering * Financial Status • It's important to understand the commitment to the device • Basic needs of the client • Affordability of the device * Task Related History • It is most important as it provides insight into day-to-day problems that the patient faces. Task –related history should also focus towards the occupation of the patient. It helps the practitioner to understand the basic requirement of the patient. • Visual tasks can be divided into * Lighting Situation We also need to check the lighting situation to understand the patient's problem whether he is able to tolerate sunlight, having difficulty in seeing in dim light, Whether any difficulty in going from bright to dim light. Whether comfortable with sunglasses or requires more bright light(incandescent or fluorescent.) Depending on patient's needs one's recommendation can differ from patient- to patient. It helps you to recognize patient potential as well as limitations and suggests possible interventions. C. Visual Acuity Measurement of visual acuity is one component of the evaluation that allows one to quantify the degree of high-contrast vision loss and, in many cases, clearly identifies 123 the patient's visual impairment as it relates to the chief complaint. Measuring visual acuity also allows the clinician to:

- Help determine best corrected visual acuity (BCVA) • Monitor the effect of, stability and progression of the treatment of a disease • Assess eccentric viewing postures and skills cases, afford the patient an opportunity to experience process • Furthermore, the result of visual acuity testing are the basis for determining initial magnification requirements and the potential for specific rehabilitation strategies. Estimate the dioptric power of optical aids necessary for reading regular print size • Verify the person's eligibility for tasks such as driving • Classify patients as "legally blind" for the purposes of government, insurance and other benefits of exemptions • The methods of assessing distance and near visual acuity in visual acuity in visually impaired patients may be modified to address specific concerns. C.1- Visual Acuity Assessment (Distance) The visual acuity assessment begins with determining the distance acuity of the patient. The procedure involves showing the patient large size numbers on sheets from a particular distance and asking him or her to identify them. Optotypes, single –letter chart gratings and crowded letters of different size may be shown to the patient alternatively. The same procedure is repeated for each eye individually also. 1. Traditional methods of testing acuity are not practical for low vision patients. 2. Vision charts designed for low vision are hand held or movable rather than fixed or projected. Each line contains several characters so memorization is less likely 3. ETDRS charts are recommended for more accurate recording. 4. Patients feel more confident when they are able to read more letters and the start of low vision is with a positive note. 5. The hand held charts avoid glare, give better contrast and can be moved closer so that letter size is doubled

124 6. Changing testing distance requires recalculation of acuity. 7. All patients should be examined first in daylight condition 8. Special charts with grey background should be used in patients with glare problems 9. Bailey & Lovie charts are the logarithmic scale. Main advantage of chart is that it's near vision equivalent; greatly simplify the process of calculating the estimated magnification required by a patient. 10. Log MAR chart- ETDRS uses sloan optotype. Essentially it is same design as Bailey Lovie charts but differ in actual letters used. * LogMAR Charts • Principle of a LogMAR chart is that it uses a logarithmic scale. LogMAR means Log Minimum angle of Resolution • Ian Bailey and Jan Lovie first to incorporate a log scale which has stepwise changes • Calculation of required magnification easy • Five letters per line. There is constant size progression ratio of 5/4 and line is 1.25 X bigger/ smaller than previous * Advantage of a LogMAR chart: Design feature and advantages 1. Equal number of optotypes per line and allows the use of single –letter scoring which reduces test-retest variability 2. Equal logarithmic interval between lines 3. Equal average legibility for each line. It ensures that letter size is the sole determinant of difficulty on a given line 4. Consistent spacing between letters and line i.e..proportional inter-letter and inter- line spacing 5. Geometric progression of letter sizes and allows testing distance to be variable. Vision recording is done at 4m to 2m to 1m. Correction factor of 0.3 should be added to the Log score when the distance is halved.

125 F N P R Z E Z H P V D P N F R R D F U V U R Z V H H N V R D U P R N H Z X V O P R U A D T A T X Z O * Pinhole Acuity Assessment Pinhole acuity test is used to assess the presence or absence of a refractive error improvement in vision and whether indicates that the person may benefit from refractive correction. * Low Contrast Visual Acuity 1. The vast majority of our visual interaction with the world involves resolving low contrast details. Variation in contrast in everyday tasks is undertaken by all patients. 2. Bailey- Lovie low contrast chart, Pelli Robson charts; symbol charts- Lea's symbol charts, hiding Heidi charts with smiling faces to measure low contrast acuity. 3. When optotype based letter charts are used for assessing contrast sensitivity, patient should be given enough time to recognize the letters (temporal summation)

126 4. Practical relevance of low vision contrast visual acuity is that it helps the patient for better understanding of the nature of their visual impairment. 5. Patients feel relieved to see a clinical test that equates to their experience. C.2-Near Acuity Assessment In this step the patient identifies or reads certain typeset of a smaller size from a nearer distance. The distance is accurately recorded. The typeset size is denoted in M units. Reading acuity is the patient's ability to read a more congested and complex typeset prints from a measured distance. Near Vision Testing 1. In low vision near vision is recorded as the size of print that can be read fluently and easily. 2. Perform near vision at two distance allow the patient to read at his/ her preferred distance. Measure the distance 3. Secondly measure functional reading ability for each eye at 40 cms. 4. For both near testing situation use reading cards specifically designed for low vision. 5. It is imperative to undertake near vision assessment only after having completed an accurate refraction and having determined optimal distance vision, low contrast vision, contrast sensitivity measurements. 6. Use M System along with testing distance for recording visual acuity. Discrepancy of more than two M units between the two eyes when tested at same distance, in this case better seeing Eye alone can be corrected by low vision aids. 7. Record near acuity as fraction – the reading distance in cms is the numerator. The print size in M units is denominator eg. 40/4m 8. Use single character visual acuity 9. Evaluate word recognition abilities. 10. Measure continuous text visual acuity. Graded continuous text materials will provide a more accurate measure of reading ability than single optotype measures and are recommended for evaluation of performance with reading devices.

127 11. Assess effects of illumination. 12. Use appropriate vision charts (Lighthouse near acuity chart, near ETDRS chart, LVRC, Sloan M series charts- these are calibrated in meter equivalents (M Units); and these simplify calculation of magnification. 13. Final determination and prescription of low vision device should be based on performance (i.e., reading actual printed materials such as newspaper and labels not printed acuity charts.) 4.4 Functional Assessment of Vision : Concept, need and methods 4.4.1 Concept Functional vision is the ability to use vision to perform desired tasks. Because of impairment in the eye and other parts of the system, low- vision children will not learn visually without intervention and help. Selection of instructional programmes and techniques requires a thorough assessment and understanding of the child's capabilities. This is mostly done by the educators. In vision evaluation procedures, there are two levels- the screening and grouping of children with different degrees of impairment, and assessment of the disability of the child. The children can be classified into several groups: those with Light perception Light perception without projection Visual acuity less than 3/60 Visual acuity 3/60-6/24 The children are assessed for visual disability- Dr Jill Keeffe's procedure of screening for impaired vision can be adopted. The assessment is done for distance visual acuity, near vision, visual field, contrast sensitivity, and colour vision. The functional vision skills of individuals are also assessed. The functional assessment explores how the child uses vision, at what distance he/she sees object, at what distance certain size symbols can be read, the visual language understood by the child and other educationally and related skills. Observation should be made to determine the technique that the child presently uses in communication, orientation, mobility and daily living skills.

128 After assessment, a training programme should be planned. The training programme includes appropriate sequential visual stimulation activity which would help the child to enhance visual efficiency. 4.4.2 Need for Assessment of Functional Vision This assessment provides information regarding a student's ability to use his vision within the learning environment. It includes acuity, colour, field and environmental accommodations. It will include a list of recommendations for modification and adaptations of instructional materials. The clinical evaluation of a student with visual impairment does not always reflect the student's true visual abilities. It is the responsibility of teachers of visually impaired to gather assessment data of a student's functional vision, it is recommended that materials be used with which the student is already familiar and which are at the student's current level of functioning. The activities used for the functional vision assessment should be drawn from a variety of task, i.e. academic, non-academic, extracurricular, and special context. In addition to the visual functioning information, information should be gathered from parents and the staff involved with the students. A functional vision assessment tends to be subjective; therefore, care must be taken into account. Children develop visual skills at different rates. The specific nature of visual impairment will influence the rate and level of achievement. In other words, visual functioning is related in part to the condition of the eye or the structure of impairment. The use of

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functional vision may be improved with training. Many children can learn to make better use of their residual vision and can function effectively with only small amount of visual information. Objects and print can be recognized even when they are blurry or even if only parts of them

can be seen. * Aim of the Assessment of Visual Functioning • To Determine current visual functioning level of the child/ adult • To determine the visual stimulation and instruction needed to help the person make use of remaining vision • To help the child to use this limited vision to the highest potential. • To plan programmes for specific curricular areas like orientation and mobility training or adaptive training in use of optical devices like magnifiers, telescopes etc. and non-optical a devices like reading stands, table lamp etc.

129 • To find which visual stimulation materials is most appropriate to the child • Determine nature of the primary reading medium-i.e., whether the child will need to be taught Braille or can he use large print. 4.4.3 Areas and skills covered in functional vision Visual skills used for functional vision follows the sequence of normal visual development. These visual skills are used to carry out every day activities. The assessment of functional vision has been based on the Low Vision Kit. The seven areas of skills to be assessed are: 1. Awareness and attention to objects Finding an object or target and looking at it (fixating) long enough to be aware of it or recognize it. Importance of assessment: Can a person see objects close to them? Does the person search for objects visually or with their hands? What makes objects easier or possible to be seen? Factors that affect how easy an object is to find or recognize are: • Size • Distance • Contrast • Familiarity (makes it easier to recognize) 2. Control of eye movements –Tracking Being able to follow moving objects with the eyes or hand movement Reason for assessment: can the person follow the movement of objects without “losing” where they have gone? Different direction of movements should be tested: • Up and down • Side to side • Diagonal and • Near to far 130 3. Control of eye movements- Scanning Accurately moving eyes and shifting his/ her from one object to another. Reason for assessment: Some people with low vision have to search around for a long time to find objects, and others may find it difficult to change from looking at near objects to look for something further away. 4. Discrimination of objects Recognizing objects from an outline or general shape. Reason for assessment: to learn if a person can discriminate between people and objects recognize familiar objects, recognize different or similar object. Objects can be discriminated because of their colours shape, contrast with the back ground, position or size, its distance the type of object, how familiar it is, and whether the objects is moving or still etc. Good scanning and discrimination skills is needed to discriminate an object. 5. Discrimination of details to identify actions and match objects The discrimination of details to identify an object is more difficult than seeing the object. Features of the object have to be identified. Reason for assessment: Most learning occurs from visual awareness and imitation. It is important to know what can be seen and how the environment (Such as lighting) affects what can be seen. The factors of distance, size, colour and contrast are very important. 6. Discrimination of details in picture Pictures can be simple outline or complex, detailed. The important features (parts) in pictures have to be identified so that the meaning of the picture can be understood. Reason for assessment: Pictures give useful information on posters , advertisement or in books, objects in pictures may be difficult to find and recognize 7. Identification and perception of patterns, numbers and words Matching letters and number by their similarity or their differences; this does not require reading but is a necessary skill for reading. Reason for assessment: to find out if a person can discriminate between similar and different shapes and letters. The result will help in making decision on whether a person should use normal size print, large print, low vision devices or needs Braille. *

Guidelines to develop better functional vision

131 • Recognize full sensory utilization and encourage it • Get visual attention to all tasks • The utilization of residual vision of low vision children should be stressed. • Makes the class room visually attractive • The school should maintain a case study containing Ø Eye report Ø Referral reports • Just having sight does not mean that we all use our eyes well. We have to train our brains to interpret what our eyes see. A person with low vision does not automatically try to make himself see unless he is extremely motivated to do so. He needs to be helped to interpret what he sees. He can develop good functional vision. • Visual functioning relates to how well a child is able to use his or her remaining vision for his or her everyday tasks. According to Barraga (1980), visual functioning is a learnt behaviour, primarily developmental, the more visual experiences the child has, the more the pathway to the brain is stimulated, which leads to a greater accumulation of a variety of visual images and memories. • It is the role of the special educators and parents to participate in the assessment of the low vision child. Assessment should address the implications of the child’s visual, social, emotional, and cognitive development. It is particularly important that functional vision assessment and observation should be done in the child’s everyday environment. • In the area of education, the resource teacher, itinerant teacher often function as a low vision instructor responsible for assessment. This allows for more communication between a regular teacher and the resource teacher which helps the low vision child to function well in the classroom. The modification needed should be based on the implication of the visual loss. The accessor’s cooperation and interaction, the school personnel and their understanding of low vision are the factors to be considered for effective learning. • The effectiveness with which a student is learning to use vision can be predictor of future success with aids. Some students compensate so well with visual skills that they may consider optical aids to be “too much trouble”. Some students hardly use their vision because they have encountered psychological difficulties or never have learned certain visual skills. They rely on other modalities from sighted helpers.

132 • The development of visual ability is not an inert overcome reflex but one aspect of the total behaviour of a person in the specific environment. Visual acuity is a misleading quality in estimating a person's seeing ability. Visual ability is not necessarily related to the kind of degree of impairment or loss of vision. It is a sequentially learned skill. • Even though the basic conditions of the eye remains unchanged, training and experience have been contributing factors in improving development of visual process, especially the degree of visual efficiency. The visual efficiency is essential to plan more precise programme for the use of how he/she is using vision and increases the students' efficiency. • There are a few research studies done on visual efficiency in relation to visual behaviour and the involvement of the resource teachers and special educators in developing the visual efficiency. • Implement the low vision stimulation programme for the integrated and the special school programme and improve the visual efficiency of the low vision children • Many of the programmes that have already started special training for the low vision have wound back due to the feeling expressed by their totally blind students that they are given less importance compared to the low vision students. Efforts have to be made to make the totally blind students understand that it is the need of the low vision students and not a factor of importance for them. • The low vision students have to be developed as a compliment to totally blind students. • Follow up result information related to the low vision child. 4.5

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Tools for functional assessment of vision and skills: Functional Skills Inventory for the Blind (FSIB), Low Vision Assessment by Jill Keeffe, Lea Tests, and Portfolio Assessment. 4.5.1

Functional Skills Inventory for the Blind (FSIB) The success of an assessment depends on the object chosen. So use objects which are familiar to and interesting for the child being assessed. The size, distance, contrast, 133 colour, position and light on an around object are factors needed to be considered while testing. * The

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Visual skills used for Testing Functional Vision 1. The Visual skills used for testing Whether the child has functional vision are listed here in

the order in which they should be assessed. The order of the skills follows the sequence of normal visual development. A child with low vision may be able to progress through all the steps without special training. Some skills may not be achieved but the child can still progress on to later steps. The areas of skills to be assessed are explained and examples are given of how the skills are used. These visual skills are used to carryout everyday activities. The methods of assessing the visual skills are described in the following section. 2. Awareness of Attention to objects The aim of this test is to find out the ability of the child to attend to an object. Choose a bright or shiny object like toys or balls about the size of your hand. Hold the object at the child's eye-level, standing one metre away from the child. Let the child look at the object. Ask him to reach for it and touch it. If the child doesn't show any response to the object (because he cannot see the object from a distance of one meter) the same procedure is followed by standing half a meter away from the child. If the object cannot be seen at less than half a meter, try to attract the child's attention with sound or movement. 3. Control of Eye Movements Tracking – Following a moving object. Activity: A bright ball can be rolled towards side of the child in a well lighted area. Stand beside the person and show him the object. Tell him to watch the object as you roll it and ask him to walk to it where it has stopped. You need to watch the child to see how far he was able to follow the object with his eyes. Note the distance he was able to track. Activities are provided to the child's

134 central and peripheral (Side) field of vision. When the child is able to track the ball, as next activity, a ball which is smaller in size or has less brightness can be used. When the child's performance is not appropriate, training is given to achieve the activity. Repeat the activity using shorter or longer distance depending on the result and record the distance till which the child was able to track the object.

4. Scanning – searching for a particular stimulus Among Other Visual Stimuli. Use two different objects about the size of your hand. Stand one metre from the child. Hold the objects in outstretched hands at your sides and front of the child at eye level. Name the object held in each hand. Let the child look at one object and then to the other object in turn. Show one object and then the other. Repeat this at least once. Example, look at the fruit, now look at the tumbler, back to fruit and to the tumbler. Activity Search for different shapes in the given shape card. There should be distinct horizontal eye and head movements from one object to the other. If the object cannot be seen from a distance of one metre move closer and record the distance at which the child could scan both the objects.

5. Visual Discrimination: It is the ability of the child to distinguish between near distant object. Choose objects which are familiar to child (coin, piece of food, spoon or plate).

135 The objects have to be recognized by looking at them without touching them. Record the distance needed to recognize near objects. Activity An activity for two dimensional items (Picture card) is given Discriminate the one which is deferent from the four figures given. Take the child to outside place where a variety of a activities are happening and where there are variety of objects. Note if the child recognizes objects, people and activities, record the distance for recognizing objects, people and activities.

6. Visual Figure-Ground Discrimination This refers to the ability of the child to isolate a particular picture/ object from the background, i.e. seeing the distinctive feature of an object. Ask the child to locate a particular spot on the picture. The child can be asked to identify buttons, belt, and shoes and also recognize actions in the picture. Activities Identify the stars which are similar to one in the smaller box

136 If the answers are not correct, ask the child to describe what he sees in the pictures. Record the answers and the distance of the eyes from the page.

7. Visual Memory This refers to the child's ability to store and recall past experiences and integrates those with new ones. Hide the objects the child has seen in the environment and ask him/ her to describe them. Present object/ pictures (like play activity e.g., Cricket or picture of zoo etc.) of an activity sequence on flash cards in a particular order and then remove them. Ask the child to recall the sequence in which the cards were presented. Give diagram of activity sequence on flash cards. Record the child's answer. Activity This type of informative picture can be given for a few minutes say one or two minute to observe. Get back the picture. Ask the child to describe what she has seen in the picture.

8. Visual Closure It is the ability of child to perceive a total picture or object when only a part is visible/ available. Ask the child to identify the missing part in an object/ figure. Note whether the child is able to do so or not. E.g. picture of animals, jug or a chair in part. Activity Provide a part of picture and ask the child to identify what they are: From Constancy It is the ability of a child to perceive the same object at different angles. Objects like comb, fruit can be held at different angles for identification. Picture of a tree, bucket, chair, spoon etc, can be pasted at different angles and the child should be asked to identify the object. Record the result.

137 Activity Pictures are examples of tree in different position. Ask the child to identify picture :

9. Eye-Hand Coordination It is the ability of a child to perform a task using hands and eyes in harmony. Ask the child to put a particular coloured bead in the thread provided. Ask the child to tear waste paper along the lines that you have marked Ask the child to colour a particular object in a picture Ask the child to throw the ball below the net Activity Ask the child to join the numbers in order and record the result

10. Eye- Foot Coordination It is the ability of a child to perform a task using eyes and foot in harmony. Choose an outdoor pathway. It could be a path from one building to another building or through the bush. The pathway should contrast with the ground on either side. Ask the child to walk in front of you. Follow closely to keep the child from coming to harm by falling or bumping. Observe if the child is aware of the sides of the path to follow. Check if he can see turns in the path and does not trip over rocks or hit over hanging branches.

138 Activity A circle with white chalk can be drawn on the floor like cited below and ask the child to step on the markings. The results give an understanding of the effects of the Low Vision for each child and how residual vision can be used. The results show the importance of factors such as distance, size, contrast and light for each child. The result should be discussed with the child with Low Vision, his family and other such as teachers and community based workers. It can be used to plan and execute a vision training programme. 4.5.2 : Low Vision Assessment by Jill Keeffe Simple but effective tests have been developed by Dr. Jill Keeffe for the WHO annual –Programme for the Prevention of Blindness. These tests of distance and near vision based on E - test have been field tested in 32 countries and found to be appropriate for developing countries and their effectiveness for screening for low vision has been confirmed. The tests are simple to learn to use. The result can be easily interpreted and the test materials are portable. This screening helps to detect people with impaired and those with potentially normal or low vision. Testing the Distance Visual Acuity. The first step is to test distance visual acuity. It does not matter if a person cannot read for this assessment using the E test card. The test distance is 6 metres (20 feet) for distance vision. The person must stand at 6 metres from the assessor. Six metre distance must be measured using measuring tape.

139 If measuring tape is not available, a six metre cloth tape preferably white in colour, marked at each metre can be used or the assessor may measure or count the number of his/her steps equal to six metre. The chart should be placed at a distance of 6 metres from the child. The E chart may be placed hanging against the wall or held at the hand. Whether it is hung or held at hands it should be at the eye level of the child / client being assessed. The child should be explained that the arms of the letter E are directed in different directions. For younger children an E cut out made of black cardboard can be given in their hands to show the directions. The visual acuity measurement can be started by testing the smallest symbol that can be (the directions) recognized. But due to limited visual ability it can be begun with the top line on the chart and proceed downward to the child's limit. Light should shine without glare on chart. Room illumination should be constant without light shining into child's eyes. Visual acuity is represented as a fraction. Acuities First Line 6/60 Second Line 6/36 Third Line 6/24 Fourth Line 6/18 Fifth Line 6/12 Sixth Line 6/9 Seventh Line 6/6 The numerator indicates the distance from the chart at which the test is conducted. The denominator means the smallest line of letters that the child can read from the testing distance. Procedure for Assessment • Test eye separately • Always begin with the right eye.

140 • Occlude or close one eye. In the case if right is being assessed, left eye is occluded. After testing each eye separately, test both eyes. If the child wears corrective lenses (spectacles) test child with lenses. Begin testing the visual acuity without spectacles and then test with the correcting lenses. The measurement of visual acuity while wearing spectacles should be considered. • The child should identify characters by pointing when using E chart. • Record the last line the child read and that is the visual acuity of the child. For example, if the child reads the third line and could not identify the characters in the next line (fourth), the child's visual acuity recorded as 6/24. If 3 responses out of 4 are correct no further testing of distance vision is needed. Record the visual acuity. In case where the child is unable to read the uppermost letter on the chart, he/she should walk one metre. After one metre forward, until the child can see the top line or symbol. The distance between child and chart becomes the numerator and vision is recorded as such 5/60, 4/ 60, 3/60. Test visual acuity with the large E at 2 or 1 metre. If the child does not recognize the top letter from a distance of less than one metre from test whether the child identifies finger counting or only hand movement or able to perceive only light or total absence of light. The child may have usable vision and it is important to discover the amount and quality of vision even though it is limited. If the vision is being tested, the World Health Organisation (WHO) categories should be used. • Normal vision is acuity of 6/18 or better • Low vision is acuity less than 6/18 • Blindness is acuity less than 3/60 For functional description low vision is considered vision up to light perception because the child with light perception can use the vision to identify doorways, discriminate day and night, for direction concept, mobility etc. For child with low vision, spectacles may improve the vision but not correct it to normal.

141 The Assessment Form : ANNEXURE- 1 Screening of Impaired Vision Name of the child : Standard : Cause of Visual Impairment : I. Visual Acuity (Distance Vision) Without correction With correction R.E _____
_____ L.E _____ Both Eyes _____ II. Near Vision N 48 N 20 N 8 III Visual Field Normal/ Restricted/Severely Restricted Date : Signature of the Assessor Testing near vision The purpose of testing near vision is to determine whether the child can perform near vision task like reading or what changes the child needs to perform the task or modification in the environment require or visual aids would be useful. The results of a near vision show the child's ability to see the details of near objects within the arm's distance from the body. Near tasks include eating, personal care and hygiene, leisure activities, sewing and reading. Near and distance vision is not always affected to the same degree in all eye conditions. In children near vision is often not as severely affected as distance vision.

142 The near vision test card has three sizes of Es. The smallest size of the Es is N8 which are similar to the print size of the adult or children in middle school level. The middle size Es are N20 which are similar to the print size books of children in standard –I. The largest size of Es is N48 which are similar to headings in books and newspaper. E E E E E E E E E E E E E E Testing procedure • No standard distance is required. • The test card is held at the distance preferred by the person. • The light should come from behind and to one side of the window. Make sure that the person is not looking towards the sun or other bright light. • Start with large Es. If the child cannot see these, tell him to hold the card closer to eyes. • Record the smallest the child is size the child is able to read correctly. For example if the child reads the smallest size of the letters in the card, record the near visual acuity as N8. 4.5.3 : LEA Vision Test System For Assessment and Screening The International Classification of Functioning, Disability, and Health (ICF 2001, ICF- CY2007) is the basis for assessing functioning and disabilities and requires consideration of all impairment and disabilities. The ICD- based measurement of visual acuity and visual field is adequate for reporting visual impairment in surveys, where visual acuities are reported for both distance and vision (WHO/PBL/03.91,http:// whqlibdoc.who.int/ hq/2003/WHO_PBL_03.91.pdf).

143 Visual acuity test is the test most frequently used to assess visual functioning. These tests are designed so that geometric progression is the same at all visual acuity levels and spacing is proportional, i.e. on each line it is equal to the width of the optotypes on the line. Only a limited number of tests have the required structure. They include test based on Sloan letters like the ETDRS test (Ferris et al 1982), on British letters (Bailey and Lovie1976, Salt et al 2007), and on LEA symbols and LEA Numbers (Vaidhyan et al 2007). These tests have been calibrated against the reference optotype, the Landlot Ring, and provide similar visual acuity values. The small differences found in visual acuity values in several studies depend on the structure of the cohorts. Some studies included extrafoveal measurements, which affect the values specifically for each set of optotypes. In an ideal test, the optotypes blur equally at threshold (LEA test). If differences exist with optotype recognition, optotypes are selected to include a certain number of easy and difficult optotype on each line (Sloan letters). Visual Acuity The LEA test require recognition optotype. This requirement differs from resolving the direction of lines in the E-test or the gap in the C-test. In the assessment of visual acuity the goal is to measure the ability to recognise pictures of common objects, as well as characters and numbers. Children's visual functions and communication during the assessment vary. Therefore, several tests have been designed to assess visual acuity in difficult test situations. Visual acuity test includes: - Test with single symbols for measurement at distance and near - Line test for measurement at distance and near - Test with tightly spaced optotypes - Test at low contrast 25%, 10%, 2.5% and 1.2% Near and distance test based on the same optotype reveal difference in visual acuity between distance and near vision and are, thus, an improvement compared with the present situation in many countries where near vision is measured with text tests only. LEA symbols visual acuity tests are single optotype test, standard line test, and line test with tightly grouped optotype. Single symbols test from near (40cm) and distance (3m) are the easiest optotype tests because there is no interference by surrounding visual information. LEA Numbers visual acuity tests are fewer in number than the symbols test because there are less often difficulties in communication in the assessment of school children and adults. The visual acuity line tests have 100% spacing between

144 optotypes. Near test includes spacing of 50%, 25% , and 12% to assess vision for reading and detect difficulties with other crowded information. To achieve accuracy in measuring visual acuity, the tester should not point to individual optotypes. Pointing gives a visual reference, which improves fixation and visual acuity. Pointing to individual optotypes is likely to reduce amblyopia detection. The tester can cover the line above the line to be read that the tester and the child are reading the same line. If a child's oculomotor functions are irregular, the screening test with more space between the lines in the near test and only one line visible on each page in the distance test facilitate testing. If fixation is stable but the saccades are irregular, the LEA puzzle can be used as the key card, which will allow child to feel the optotype forms without having to look at them. Many Young Children need a training period with the LEA Puzzle to learn matching or naming. While the child is playing with the LEA Puzzle, the test may observe the child's eye-hand coordination and visual and motor spatial memory by the turning the Puzzle board without the child noticing. The detailed instructions for testing are on the homepage www.lea-test.fi. Grating Acuity Grating acuity is measured either as detection acuity with LEA Grating in a preferential looking situation or as discrimination acuity using LEA Grating Acuity Test, which requires the ability to define and show or describe the orientation of the line. Contrast Sensitivity Contrast Sensitivity is measured with optotype and grating test. If the result from the measurements of contrast sensitivity, visual acuity value, and grating acuity value are marked on the recording form, the type of visual information transfer at different contrast level is clearly depicted. Colour Vision "Colour vision Testing Made Easy", created by Terrance Waggoner, OD, works well in testing young children's colour vision. Quantitative measurements are possible with the Panel 16 colour vision test. The test can be trained at www.lea-test.fi section Games. Motion Perception Detection and discrimination of slow movement can be tested with the pepi test, which can be copied from www.lea-test.fi. This test can be used to assess the vision of infants by observing the following movements. Older children can describe whether or what 145 they see. Johansson's " Walking Man" can be used to test perception of biological movements. Visual Adaptation Visual adaptation changes early in many retinal disorders. The functionally important cone adaptation can be observed during the CONE adaptation test game. This test requires a room where the illumination can be changed quickly from photopic to mesopic luminance to measure cone adaptation time. Direction and Length of Lines These two basic structures of pictures may be falsely encoded when entering the brain or distorted in the higher visual functions. This can be tested using the LEA Mailbox and LEA Rectangles. Heidi Expressions Children may have specific loss of perception of facial expressions. To discuss facial expressions with young children, the Heidi Expressions cards can be used as a matching game. If you have not used the test before, practice with normally sighted infants and children with age appropriate behaviour. When you feel comfortable holding the test and can concentrate on observing child's way of answering, you are ready to set children with disabilities.

4.5.4 Portfolio Assessment

Historically, the traditional school examinations consisted of a set of questions to be answered orally or in writing. In either case, the examinee composed and formulated the response. The term "essay question" come to be used broadly to cover all free- response question, including not only those demanding a lengthy essay but also those requiring the examinee to produce a short answer or to work out the solution for a mathematical problem. "Objective question," by contrast, were those that called for the choice of a correct answer out of the alternatives provided for each question. Although there are several kinds of items that require examinees to select a response, such as true-false and matching, the multiple-choice question has been, by far, the most widely used, the most thoroughly studied, and, also, the most frequently criticized type of test item.

146 Critics of the multiple-choice format argue that it promotes rote memorization and learning of isolated facts rather than development of problem-solving skills and conceptual understanding. In addition, many uniformed people within the educational and political establishments equate multiple-choice items with standardized testing and disparage both of these elements of assessment methodology at once. In an ironic turn of events, the same standardized testing programmes used to chart educational progress often have been seen as contributing to the educational deficits they have uncovered. Unfortunately, the criticism about excessive and inappropriate use of standardized test as been thoroughly justified in some cases. At any rate, charges that testing drives the curriculum and that both are in urgent need of reform have emanated from educators at all levels and have grown increasingly stronger in the past two decades. Advocates of educational reform believe that a major overhaul is needed in curricular goals and instructional method, as well as in the tools of assessment, and they perceive all of these areas as inextricably tied. Since the philosophical, political, and practical aspects of educational reform are beyond the scope of this book, we shall confine ourselves to discussing some of the proposed alternatives in assessment methodology. These alternatives are described by various rubrics, such as "performance-based" assessment, "authentic" assessment, and "direct" assessment. The method known portfolio assessment provides another set of alternatives. This type of evaluation tool is aimed primarily at making the process of educational assessment as meaningful and realistic as possible. Although there are a wide range of procedures to which the term is applied, a portfolio usually consists of a cumulative record- collected over an extended period of time- of samples of students' work in specific areas, such as writing or any other endeavour that involves a process in which progress can be documented. The portfolio method of assessment offers a great deal of flexibility and can be implemented more or less formally and with various degrees of collaboration between the student and the teacher. The reader will have gathered even from this brief overview that a great deal of attention is being paid to the means by which evaluation of learning and of students' work are conducted. This concern extends not only to what different items measure and how well they measure it, but also to other psychological aspects of test items. For example, Zeidner (1993) has investigated students' attitudes toward item formats and found that they prefer multiple-choice items rather than essays. Lu and Suen's (1995) research indicates that performance based assessment tends to favour field-independent over field dependent students. Other investigators have looked into the relationship between test anxiety and item type and found that scores on constructed response test seem to be more affected by anxiety than those of selected response tests. At the same time, the empirical literature concerning the strictly psychometric properties of performance based tasks used in academic settings has been accumulating gradually. Both the pace of the research and the direction of the result differ widely depending on the specific types of items in question. A fairly large number of students have investigated the reliability of the scoring procedures used for constructed response task.

4.6 Tools for psychological assessment of the Visually Impaired 4.6.1 : Vithova Pakinikar Performance Test It would be worthwhile, at the outset, to describe, in brief, the development of Intelligence Testing from Binet, the pioneer in this field to the present day problems in this field including the work done that is useful in measuring intelligence of the blind. Measuring intelligence by age Scales is the first stage. Binet's tests were first published in a graded form in 1905. They were again published in 1908 and 1911 in the form of an age scale ranging from year three to adulthood. D. Wechsler's Bellevue Intelligence Scale (1944) both verbal and performance has shown a good way to get over the difficulties referred to above. His method of converting total scores into I.Q.'s as standard scores is most useful from the practical point of view. The above scale is a point scale as distinguished from age scale. The method of finding I.Q. by this scale is easier than one of finding M.A. and then I.Q. Mr. K.K.Pakinikar has followed D. Wechsler's method of finding I.Q.'s. Apart from the above Wechsler Bellevue Intelligence Scale (WBIS), he has to his credit the following viz. Wechsler Adult Intelligence Scale (WAIS) and Wechsler Intelligence Scale for Children (WISC). All are widely used. Then comes the stage of performance Test for measuring intelligence. The pioneers in this field were Healy and Fernad (1911). Other prominent names in this field are: Fnox Pintner and Patersen, Gwyn kempf Schmitt, Hall Bruckner and King Gluk, Anderson, Kohs, Woodworth, Wells, Goddard and Alexander. At the beginning single tests were standardized. But to arrive at subject's I.Q.s a scale of scale performance Test was needed. The first of this kind is given by Pintner and Paterson (1917). Individual standardized Performance Tesst were included in the scale to form a battery of performance Test.

148 A significant point about performance test has not been referred to so far. Originally they were designed for measuring intelligence of the physically handicapped, or of those who had language difficulty. They were also used to supplement the finding arrived at by verbal tests. Whether they will be most suitable for measuring intelligence of the blind will be seen in the discussions that follow. Obviously, the blind can take verbal test using their auditory power. But then the tests are to be presented orally only. This necessity will certainly put limitations to the presentation of the test. The experiences usually better gained by sight, e.g. forms of objects are out of question in an oral test. Secondly, the oral test will be time consuming. There is another handicap for the blind in having a test with the help of a printed question. It cannot be in the usual script. It must be in Braille and if it is presented in Braille and the test cover all aspects of intelligence. The bulk of paper to be handled will be big and the taking of the test will be cumbersome and time consuming for the blind. Earlier the writer has referred to the inherent difficulties in standardizing a verbal test for the blind. Difficulties in administering it are also noted. Individual performance tests, though standardized, will not give true picture of the intellectual potential of the blind unless they form a battery of tests. Secondly, individual performance tests that are now used with the blind are given with suitable modifications in the original tests for the sighted. Comprehensive Performance Scales for the sighted have not as yet been tried on blind population. These Scales also are time consuming and in certain sub-test there is an element of trial and error. Hence the need of comparatively shorter battery of performance tests for the blind, which are nearly void of any chance element in them. The writer has genuinely tried to give to the blind population such a battery of Performance Tests. The writer has already referred to the experimental finding that visual impairment does not impair the intellectual potential. Human experience shows that there have been intellectual giants and mental defectives among the blind. The writer knows many blind geniuses. During the testing programme in blind Schools the writer came across mental defectives who were a great strain on teachers' capabilities for handling the handicapped during teaching periods. Predictive value of intelligence tests is unquestionable now. Problems of the blind have now passed from the social level to the educational. A shorter scale of performance Tests, therefore, is needed to spot out the genius and to weed out the M.D. from the population in schools.

149 Selection and description of performance tests for the blinds The tests that are included in the present performance Scale are based on the tactual and kinaesthetic experiences only of the subjects to be tested. Visual experiences though the richest –in-life, are out of question here. The other Performance Scales referred to test of memory, e.g. repetition of digits by tapping blocks in a particular order, number formation by means of dominoes and actual repetition of digits or consonants. The first two tests require visual experiences and the third auditory ones. The first two are out of question with the blind. The third type may be included in a performance Scale for the blind. During the testing programme, we used tests of repeating digits in the same order or the reverse according to the scheme at different age levels as given by Kamat in this revision of Binet's scale. This was continued till more than 150 subjects were tested. The experience was discouraging as in general, the blind subjects did not pass the test at their age levels. When inquired, otherwise intelligent subjects, remarked that they could not easily attend to the repetition of digits by the examiner. This finding goes against the general impression that auditory experiences of the blind are better than those of sighted persons. It would be worth while if we quotes significant observation of Dr. Kamat under 'repetition' tests in this scale. 1) It is difficult to secure attention to the repetition of digits by the examiner. 2) Trial series are, therefore, included in a repetition test. 3) Repetition test should not come first. It should be taken later after the examiner sees that the subject is taking tests easily. 4) Several repetitions of practice series may be required. 5) Three trials are given and the subject should pass at least in one trial. 6) Even with repetition of meaningful syllables a second repetition may be required. If the subject passes, do not count success but go to the next trial. 7) A repetition test puts strain on the mind. Hence it should not be given at the end of the examination. Fatigue is setting in them. 8) Even with the repetition of meaningful syllables the subject's attention may flag. So two trials with one error each may be taken as a success. 9) Practice may begin with a trial at a lower age level. 10) Memory for digits falls off after 16. The Paknikar has purposely quoted these observations to show that a 'Repetition of Digits' Test seems to be a handicap to a blind subject. Why should another handicap be added to the natural one or one brought by misfortune namely, loss of sight? He has dilated on this point as objection may be raised to his omitting 'repetition of digits test in the thus barring the subjects auditory experiences leaving only two types of experience, viz., tactual and kinaesthetic to be used. Secondly, the tests are included in the scale according to the criteria that are generally accepted. The criteria are statistical and other.

150 1. The nature of the scale, whether age or point, should be next consideration. The Paknikar has discarded the age scale as he thinks that deciding upon the median time for successful performance at each age level, for assigning age to each test is a very laborious process. He has also refer to the drawbacks of an age scale. It is easier to fix points to each test if highest time limit for complete performance at lower age level is considered. This has been strictly followed. Success with in time will earn some points. Success beyond time-limit will earn zero score. 2. The scale should not measure any specialized ability. The test materials is so simple that even manipulative skill is out of question. 3. Maximum scores should not be obtained by most subjects. There has been gradual rise in average score from the lower age level to the higher age level. 4. The tests should discriminate well at all levels of intelligence from the lower to the higher. The results show that subjects at higher ages take less and less time to complete a test as compared to subjects at lower ages. 5. There should be no cases where subjects of higher age fail while subjects of lower age pass. No such cases are found with the exception of M.D's. 6. On actual try out it was found that tests 1 to 5 worked well. There was a short pilot study. At the first stage, these tests were tried by three sighted adults blindfolded to see how they would work with the blind. They had the impression that latter tests would not work well. Then they were tried by a blind pupil from a secondary school. Surprisingly, they worked well with the blind subject. She was successful in even those tests in which the adults failed trying them blind-folded. Later some sighted children also tried these tests blind-folded with interest. These cases are not included in the sample on which norms are based. The usual method of a pilot study could not be adopted as the subject in pilot study cannot be included in the actual data. In the case of blind population this would entail a loss in actual data which is available with great difficulty. Hence the objective in this pilot study was to see how the tests of circle formation would work with the blind. 7. Experience with the test should determine the validity of the scale. Generally correlation with recognize tests and teachers' rating are considered. 8. The test should lend themselves to scoring with relative ease. 9. An average individual with average opportunity should be able to acquit of himself well. It is so with the tests.

151 10. There should be increasing frequency of success in test with higher intellectual level. It is so found. 11. There should be some order of difficulty in the test. When the nature of test is similar they are arranged according to difficulty- from simple to complex. 12. The test should be interesting to the subject. Mr. Paknikar experience with the blind subjects tested was that their interest did not flag during testing time. 4.6.2

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A short scale I.Q. measure for the Visually Impaired based on WISC-R

The intelligence scales developed by David Wechsler include several successive editions of three scales, one designed for adults, one for school age children, and one for preschool children. Besides their use as measures of general intelligence, the Wechsler scales have been investigated as a possible aid in psychiatric diagnosis. Beginning with the observation that brain damage, psychotic deterioration and emotional difficulties may affect some intellectual function more than others, Wechsler and other clinical psychologists argued that an analysis of the individual's relative performance on different subtests should reveal specific psychiatric disorders. Antecedents and Evolution of the Wechsler Intelligence Scales. : The first form of the Wechsler scales, known as the Wechsler –Bellevue Intelligence Scale, was published in 1939. One of the primary objectives in its preparation was to provide an intelligence test suitable for adults. In first presenting this scale, Wechsler (1939) pointed out that previously available intelligence test had been designed primarily for schoolchildren and had been adapted for adult use by adding more difficult items of the same kinds. The content of such tests was often of little interest to adults. Unless the test items have a certain minimum of face validity, rapport cannot be properly established with adult test takers. Many intelligence test items, written with special reference to the daily activities of the schoolchild, clearly lack face validity for most adults. It was in order to meet these various objections that the original Wechsler Bellevue was developed. In form and content, this scale set a basic pattern for all the subsequent Wechsler intelligence scale, each of which has, in turn, added some refinements to its immediate predecessor. In 1949, the Wechsler intelligence Scale for Children (WISC) was prepared as a downward extension of the Wechsler Bellevue (Seashore, Wesman, & Doppelt, 1950). Many items were taken directly from the adult test, and easier items of the same type were added to each subject. The Wechsler Bellevue itself was supplanted in 1955 by the Wechsler Adult intelligence Scale (WAIS), which corrected some of the

152 earlier scale's technical deficiencies with regards to size and representativeness of the normative sample and reliability of the subtests. The development of the WISC was somewhat paradoxical, since Wechsler embarked upon his original enterprise partly because of the need for an adult scale that would not be a more upward extension of available children's scales. The first edition of the WISC was, in fact, criticized because its content was not sufficiently child-oriented. In the revised edition (WISC-R), published in 1974 and designed for 6 to 16 years-olds, special efforts were made to replace or modify adult oriented items so as to bring their content closer to common childhood experiences. In the Arithmetic subtest, for instance, "cigars" was changed to "candy bars". Other changes included the elimination of items that might be differentially familiar to particular groups of children, and the inclusion of more female and Black persons in the pictorial content of the subjects. Several of the subtests were lengthened in order to increase reliability. Improvements were also introduced in administration and scoring procedures. Description of the Scale: By now, each of the three Wechsler scales has gone through one or more revisions. The current versions, published under the name of David Wechsler even after his death in 1981, are the Wechsler Adult Intelligence Scale- Revised (WAIS- R-Wechsler, -1981), which covers the age span of 16 to 74 years; the Wechsler Intelligence Scale for Children- Third Edition (WISC-III-Wechsler, 1991), intended for children aged 6 years to 16 years and 11 month; and the Wechsler preschool and primary scale of intelligence revised (WPPSI-R-wechsler, 1989), which now covers the range of 3 yers to 7 years and 3 months. WAIS- III has been revised in 2005 and named WAIS- IV. WAIS- III has some advantages. Its major advantages are as under: i) It incorporates the modern multidimensional nature of human intelligence, including fluid intelligence and processing speed. ii) It incorporates the possibility of pattern analysis. iii) It is appropriate most suitable for assessing adult human intelligence. iv) It uses deviation IQ. v) It has impressive degree of reliability and validity. vi) It uses a point scale. 153 vii) It makes provision for index score which provides a support to multidimensional nature of human intelligence. However, WAIS – III has also some disadvantages as under: i) It is a poor measure of extreme levels, that is, high or low level of intelligence. ii) It does not take into consideration the theories of multiple intelligence as enunciated by Gardner(1983). iii) It has poor reliability for the individual subtests. The WAIS-R, WISC-III, and WPPSI-R share many features, including their basic organization into Verbal and performance scales each of which consists of a minimum of five subtests (and a maximum of seven) and yields separate deviation IQs. The individual scores on all 10 of the regularly administered subtests (11 for the WAIS-R) are combined into a Full Scale IQ which has a mean of 100 and an SD of 15, as do the Verbal and Performance IQs. Of the 17 different kind of students used in the WAIS-R, the WISC-R, the WISC-III, and the WPPSI-R, eight(5 verbal and 3 performance subtests)are common to all three scales. In administering the scale, the verbal and performance subtests are alternated and given in a predetermined sequence that varies with each scale. The information subtest is the first verbal subtest to be administered in all three scales and serves as a good rapport builder. Efforts have been made to avoid specialized knowledge. The first items are easy enough to be passed by the vast majority of examinees, unless they are mentally retarded or have reality orientation problems. In such cases the examiner may quickly decide to discontinue the testing. The question in the WAIS-R and WISC-III version of Information cover facts that most person in the United States would have had a chance to learn, such as "What month comes right before December". The WPPSI-R has similar questions, albeit at a lower difficult level. The Arithmetic subtest is another verbal measure that illustrates the wide range of difficulty across the Wechsler scale. The easiest WPPSI-R Arithmetic items require pointing to the one object pictured in an array that illustrates a quantitative concept (such as "smallest" or more) The performance subtest of the Wechsler scale typically require the manipulation of

154 various objects. Such as puzzles and blocks, or the visual scanning of printed materials, like pictures or symbols. They all place time limits on the test taker, who in most cases is also given bonus points for speed. In the verbal scale, by contrast, only one subtest (Arithmetic) is speeded. Picture Completion is a performance subtest shared by all three Wechsler scales; it requires the examinee to identify what important part is missing from pictures of common objects or scenes. The items for the earlier ages rely on basic visual inspection—for example, by presenting the picture of an animal with a limb missing. Concluding Remarks on the Wechsler Scales The successive edition of the three Wechsler scales an increasing level of sophistication and experience in test construction, corresponding to the decades when they were developed. In comparison with order individually administered tests, their principal strengths stem from the size and representativeness of the standardization samples, particularly for adult and preschool populations, and technical qualities of their test construction procedures. The treatment of reliability and validity in the WISC-III manual is especially commendable. The popularity of the Wechsler scales assures them of a constantly expanding research base for the time being. However, some critics have noted that even the latest, most improved versions of the Wechsler scales may soon become obsolete in light of the current demands for links between assessment instruments and intervention strategies. In this regard, the weakest feature of all the Wechsler scales has been their lack of theoretical grounding, which makes it hard to find a coherent basis for interpretation. Furthermore, the composition of the scales seems to presume that the ability domains tapped by their subjects across age levels are the same because of the superficial similarities among test materials and tasks.

4.6.3 Adapted EPQ (Eysenck Personality Questionnaire)

Based on a lifelong programme of factor analytic questionnaire, Eysenck and Eysenck (1975) developed a series of test designed to measure normal and abnormal dimensions of personality. Eysenck identified three major dimensions of personality: psychoticism (P), Extraversion (E), and Neuroticism (N). The Eysenck Personality Questionnaire (EPQ) comprises items that intend to measure these three dimensions of personality. The EPQ consists of 90 statements to be answered in terms of either Yes or No and is specially suited for persons aged 16 and old. It also incorporates a Lie (L) scale to assess the validity of the testee, or examinee's responses. Also a junior EPQ is available for assessing these dimensions among children aged 7 to 15 and it consists of 81 statements. A brief description of these three scales are as under:

1. P Scale: P scale assesses the dimension of psychoticism which is not equivalent to psychosis such as schizophrenia although a schizophrenic is expected to score high on P scale. It assesses traits like poor concentration, poor memory, insensitivity, liking for unusual things, disregard for danger and convention, cruelty, lack of caring for others. Such persons are considered peculiar by others. A high score on P scale indicates impulsivity, aggressive and hostile traits, empathy defect and a preference for liking odd or unusual things. Antisocial personality and schizoid personality often obtain high scores on this dimension. A low score on P scale indicates some derivable characteristics like empathy and interpersonal sensitivity. A few examples of items of P scale are: Do you take risk just for fun? (T) Do you often break the rules? (T)
2. E Scale: E scale assesses the dimension of extraversion and its polar opposite introversion. High scores on E scale indicates tendency to be outgoing, preference for activities involving contact with other people, desire for novelty. Such persons are fun-loving and gregarious. Low scores on this scale indicate introverted traits such as preference for solitude and quiet activities. Such persons show tender mindedness, introspectiveness and seriousness. A few examples of items of E scale are: Do you like plenty of excitement? (T) Are you quiet when with other? (T)
3. N Scale: N scale assesses the dimension of neuroticism that includes traits like slowness in thoughts and actions, suggestibility, tendency to repress unpleasant fact. Lack of sociability, below average emotional control, will power and capacity to exert self. A high score indicates that the person is nervous, maladjusted and over emotional and a low score indicates that the person is stable and confident. A few examples of items N scale are: Are your feelings easily hurt? (T) Do you feel dullness in life? (T)

156 A major focus of research with the EPQ has been to find out the empirical correlates of extraversion and its opposite introversion and such researches have linked several perceptual and physiological factors to the dimension E-I. Some of the important such linkages are: (I) Extroverts have a greater need for entertaining external stimulation. (II) Extroverts are readily conditioned to stimuli associated with sexual arousal. (III) Extroverts are more suggestible than introverts. (IV) Introverts are vigilant in watch keeping. (V) Introverts' performance on signal detection tasks are comparatively more improved (VI) Introverts are less tolerant of pain but more tolerant of sensory deprivation. The psychometric properties of the EPQ are satisfactory. The one-month test-retest reliabilities were .78(P), .89 (E), .96 (N), and .84 (L). The internal consistency reliabilities were in the .70s. for P and the .80s. for the remaining three scales. The construct validity of EPQ is also well established in several studies using emotional, behavioural, attentional, learning and therapeutic criteria (Eysenck & Eysenck, 1975,1985).

4.6.4 Adapted Blind Learning Aptitude Test

Testing the blind presents a very different set of problems from those encountered with the deaf. Oral tests can be most readily adapted for blind persons, while performance tests are least likely to be applicable. In addition to the usual oral presentation by the examiner, other suitable testing techniques have been utilized, such as tape recordings. Some tests, such as the College Board Scholastic Assessment Test (SAT), are also available in large-type formats or in Braille. The latter technique is somewhat limited in its applicability, however, because of: the greater bulkiness of materials printed in Braille compared to those provided in ink; the slower reading rate for Braille; and the number of blind persons who are not facile Braille readers. The test taker's responses may likewise be recorded in Braille or on a keyboard. Specially prepared embossed answer sheets or cards are also available for use with true-false, multiple-choice, other selected response items. In many individually administered Tests, of course Oral or gestural responses can be obtained.

157 Among the earliest examples of general intelligence test that have been adapted for the blind persons is the Binet. The first Hayes-Binet revision of testing the blind was based on the 1916 Stanford-Binet. The most recent adaptation comparable to the Stanford-Binet from L-M is the Perkins -Binet test of intelligence for the blind. The Wechsler Scales have also been adapted for the blind test takers. These adaptations consist essentially in using the verbal tests and omitting the performance tests. A few items inappropriate for the blind are replaced by alternates. In general, the studies of children who have poor vision or blindness suggested that these conditions may have a negative impact on their cognitive development, even the verbal area, because of the limitations such condition impose on the range and variety of their experiences. Very few instruments have been developed specifically for use with visually impaired persons. Possibly the best known example of these is the Blind Learning Aptitude Test. (BLAT). The BLAT is an individually administered test that incorporates items adapted for other tests such as Raven's progressive Matrices, and other nonverbal items, and presents them in an embossed format. Emphasis is placed on the learning process rather than on products of past learning, which might handicap the blind child. Information regarding reliability and validity is scant and requires further research. Nevertheless, the BLAT can be useful component along with verbal tests, in the evaluation of blind children elementary school age. The Intelligence Test for visually impaired children incorporates haptic or tactile versions of tasks such as Block Design into a Battery that includes several on verbal and verbal subtests. As in this case all the other special conditions discussed, visually Impaired occurs in a wide ranges of gradations and quite often combination with other problems. Thus, the decision of whether to use standard tests, adaptations of them, or specially designed tests for the blind depends on the objectives of the assessment and the unique characteristics of the persons in question. In general, tests users should always remember that modifications tests such as tactile presentations of Visual design or extended time limits, cannot be assume the same constructs as the Original Versions.

4.6.5 Concept Development for blind children

Concepts grow out of the perceptual process and become enriched as the child develops language. The breadth of concept development is dependent in large measure on the breadth of the perceptual experiences. Because the blind child lacks one source of

158 sensory input, his perceptual processes are deficient. He may never grasp some concepts and need more experience than the sighted child to grasp other. A concept is a network of significant inferences by which one goes beyond a set of observed criteria properties exhibited by an object or event to the class identity of the object or event in question, and thence to additional inferences about other unobserved properties..... the network of inferences that are may be set into place by an act of categorization. The developmental theory of Piaget will from the frame reference for identifying mental developmental needs. Piaget's stages of intellectual development are outlined very briefly here. (For more details, see Flavell, 1963; Ginsburg & Opper, 1969; and Maier, 1665) The first 2 years of life are described as the sensorimotor stage. The infant progresses from purely reflex activity to more systematic and organized behaviour. He learns that he has some control over object world and will search for a toy he has lost. He learns that objects are independent for himself. Finally he learns to imitate and to respond to people through imitative behaviour. At approximately 2 years of age the child enters the symbolic pre-conceptual phase. The imitative behaviour of the previous period becomes internal imitation (accommodation) and provides the child with symbols which acquire meaning through assimilation. He will apply his symbols in a playful make-believe fashion to other situations as he tests out their appropriateness. He begins to use language for objects and events that may not be present at the moment. The child enters the phase of intuitive thought at about 4 years of age. This phase and the preceding pre -conceptual phase are sometimes called the preoperational stage. Language now becomes repetition, monologue and collective monologue; it is described by Piaget as egocentric, that is, the child is neither concerned with nor interested in what another is saying. By contrast, communication is based on interaction with others and has as a purpose the relaying or sharing of information. During this period, the child employs imitation more or less consciously in a pre-identification fashion. Further, he broadens his social horizons and interest in the world about him. From approximately 7 to 11 years of age the child passes through the stage of concrete operations. During these years, the child acquires the ability to order and to relate his experiences into a gestalt, or organized whole. He establishes system of classifications and moves from inductive to deductive thinking. While language is now a tool of

159 communication, he still employs symbolic speech without true understanding of meanings. He looks beyond his family for models to imitate. At about the age of 12, the child enters the stage of formal operations, the final period of intellectual development. During this stage, the adolescent moves from the concrete to the abstract. He enters the world of ideas. He formulates hypotheses concerning the various results of an action and considers what might occur. He utilizes language as a means of communicating thoughts and ideas. He reaches an understanding of his world and where he fits in that world. It should be remembered that the ages attached to the stages in this outline are approximate, and that development through the stages may not proceed evenly on all fronts. In case of blind children abstractions such as a concept of colour may never be formed, since the child has no possibility of acquiring a background of sensory input for this concept. His understanding of this group of concepts will of necessity remain on the verbal level and be based on what others have described to him. Thus, his grasp of such concepts will come only through various experiences and cannot truly be his own. In this area, he may have difficult moving beyond the stage of concrete operations. The concepts of distance and time illustrate another group which eventually may or may not be grasped, depending on the variety and number of experiences designed to give them meaning. For example, the sighted child may acquire some meaningful concept of distance by visual input, that is, how far he can see, and later through an understanding of relative as shown on a map drawn to scale. While the blind may reach some understanding of distance through his kinesthetic sense, he encounters difficulty in doing so. Walking a specific distance would be the most meaningful procedure, but a walk of sufficient length to give an idea of great distance would not be feasible. Further, his deficiency in grasping what distance is prevents his making maximum use of maps through his tactile sense in order to acquire a concept of relative distance. He needs many concrete experiences through his kinesthetic sense in order to use maps effectively. Educators need to be aware of potential difficulties of the visually impaired children in the area of concept formation and particularly should emphasize meaningful concrete experiences in order to maximize concepts that have relevance for the child.

4.6.6 Reading Preference Test for Children with Low Vision A research on "Development of Low-Cost Functional Assessment Kit and studying the Relationship Between Visual Acuity and Visual Efficiency of Low Vision Children " was conducted by the Dr. M.N.G. Mani from 1994-1997. This research work was

160 supported by the Educational Research Innovations committee of the National Council of Educational Research and Training, New Delhi. The study was conducted with 321 low vision children in the state of Tamil Nadu, India. It reveals that majority of low vision children do not have formal visual efficiency training. Moreover, there is empirical evidence that the higher visual acuity of the child does not mean that the visual efficiency too is better. The research reveals that visual efficiency skills of low vision children improve only through systematic visual efficiency training. Large print materials should be prescribed for some low vision children and not for all. While deciding about print reading, certain components such as prior familiarity of print letters, print size required, distance at which reading task is performed, fatigue, etc., have to be considered. Research reveals that a low vision student may use his vision for reading large print for a brief time may not be able to use it for a prolonged time. Similarly another student may use 30 points print size comfortably but all books cannot be presented such a magnified manner. Even use of magnifiers may reduce the field of vision. Still in some other cases, the vision in the low vision students may be deteriorating. Therefore all low vision students may not be benefited by large print materials or magnifiers. They require Braille for reading purposes while the residual vision can be used for mobility, reading news headline, etc. Therefore it is most essential to know the reading preference of a low vision child before prescribing large print or Braille. The Reading Preference Test (REPT) has emerged out of a thorough research and helps any practitioner to determine the print or Braille reading preference of a low vision child. The areas, which are considered as vital, in the assessment of the reading preference of a low vision child are: 1. Light perception: sunlight/Dim light difference 2. Light perception: Good light/ poor light difference in a class. 3. Light tracking 4. Detecting hand movement 5. Distance of detecting hand movement 6. Finger counting : Fingers raised one at a time 7. Finger counting: Fingers spread apart 8. Finger counting- (general): Fingers closed together 161 9. Finger counting inside the classroom with good lighting condition 10. Finger counting inside the classroom with poor lighting condition 11. Visual background 12. Colour detection 13. Visual Closure 14. Form constancy 15. Eye/hand coordination 16. Eye/ foot coordination 17. Print size preference without magnifiers 18. Print size preference with magnifiers 19. Time taken to read a passage (Mother tongue/ English) 20. Skill in reading both print and Braille 21. Ability to write 22. Writing speed. The REPT is not accompanied by a TESTING KIT. A testing kit was deliberately avoided to improve the usage of the test even in rural areas. Through some concepts like 'lighting condition' can be tested better under controlled and laboratory conditions, the test does not envisage children being tested so. The description of 'good' and 'bad' lighting condition is viewed in the context of the available lighting condition in the school or locality where the child with low vision is identified. Whatever condition perceived by majority of seeing children as 'bad' and 'good' lighting condition should be used with low vision children too. A contrived situation for testing not created. We are fully aware of the fact that such testing may not be accurate. However, it would be definite be indicators about the reading preferences of the vast majority of low vision children. Experiments with the most of the low vision children reveal that the environmental conditions created in REPT are appropriate. However, the reading preference of 2-3% of low vision children may not be detected by REPT. As the objective of REPT is to make reading preference assessment a mass movement for all low vision children in the rural areas, the expected benefits for low vision children far outweigh the forced limitation of the Test. Therefore, the limitation of the test is not by its construct by its concept.

162 The assessment items and the accompanying self- instructional guidelines are enumerated as follows: 1. Can the child distinguish between the light Perception in sunlight and the same under Cloudy Conditions? How to Test? If the child has light perception, he should Detect It when the sun comes out of the cloud. Therefore, the testing Should be done in such a natural condition. If the child succeeds, proceed to item 2. If no, the assessee is a child without light perception he is certainly a Braille reader. 2. Can the child localise the light source? How to test? For testing this, move a Torchlight in front of the child and see Whether or not he/ she is able to track The light source. If the child succeeds, he/she can involved in various educational experiments in science which involve light (for example, light rays pass in a line) but Still the child may be a braille reader. In Such a condition more difficult conditions may be tested. If no, light perception of the Child has only a very limited use in education. 3. Can the child detect hand movement in front? How to Test? For testing this, move your hand from left to right and vice versa in front of the child If yes processed to item 4. If no, the child will certainly be a Braille reader, but the residual vision is useful for mobility and other purposes. Yes: No: Remarks: Yes: No: Remarks: Yes: No: Remarks:

163 4. Can the child count fingers when they are Kept together? How to test? Show the palm with fingers with put together and ask the child to count fingers. If the child succeeds, see whether the child can perform the task under different lighting condition. If no, the child cannot succeed in print reading. Teach Braille but orient the child to scrip letters too. He can read large print with difficulty. 4.6.7 Cornell Medical Index for Visually Handicapped Children The Cornell Medical Index (CMI) was created in 1949 and its purpose as stated in the original manuals was:

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to meet the need for an instrument suitable for collecting a large body of pertinent medical and psychiatric data at a minimal expenditure of the physician's time. It serves as a standardized medical history and as a guide to subsequent interview: The original CMI was validated through several studies on populations of varying sizes.(

See: Lowe, DJ. The Cornell indices: A bibliography of Health questionnaires. 1975 : The Cornell University Medical College Library, New York, NY.([PDF copy available]) form

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Its inception through the 1970s, the CMI was widely used both at new York Hospital(

Now New York-Presbyterian

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Hospital) and throughout the country. It was considered valid, reliable, and reputable particularly since it bore the name of Cornell. The CMI had been copyrighted by Cornell University Medical College (now

the Joan and Sanford I. Weill Medical of Cornell University) so individuals wishing to use the CMI

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purchased the questionnaire forms and the manual from the medical college. By 1980 the situation had changed. The questionnaire was becoming out of date, particularly

in the language that was

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used. The supply of questionnaires was depleted and a reprinting was required. There was a concern about reprinting the CMI without some revision so the questionnaire was revised but only at the level of the wording. No substantive revision was made in the nature of the data collected by the questionnaire. The revised questionnaire was completed and

copy righted in 1986 and a new printing was completed. This revised version was sold until 1990. Cornell Yes: No: Remarks:

164 Medical Index is a medical subject Heading and this linked Pub Med/ Medline search will bring up a bibliography of the Index's use.

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Also in 1986, the issue of the future of the CMI was raised. Sales were declining and the college wanted to investigate the options available for marketing the CMI. Since it bore Cornell's name, there was concern with the product. A committee to study the CMI

Was formed

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with members appointed by the Chairs of Medicine, Neurology, and Psychiatry. The committee examined the issues concerning The CMI, did a survey of post customers, investigated other instruments available for similar uses, and looked at the content of the CMI. These investigations found that there were many uses of the CMI.

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These investigations found there were many uses of the CMI but the predominant use was by private practice physicians. Many of the comments the committee received indicated a need for revision although there were users who

are

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satisfied with it as is. The committee also found the CMI was no longer being used in the New York Hospital because it was not felt to be particularly useful. There also did not appear to be any enthusiasm by the individuals on the committee for revising and revalidating the questionnaire, something that would

need to

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be done if it were to continue to be actively marketed. As a result of this review, the committee concluded that the CMI was no longer a viable product and should be phased out. They believed that the CMI was a product that no longer served a useful purpose and that its continuance had been related more to its historical position than to its contribution to health screening. As a result of this review, the CMI was phased out over period, July 1990 - June 1991. Since that time, requesters were told that the CMI was out-of- print. The college still retains the copyright, however, so it could reinitiate the CMI in the future if there were clinicians interested in doing a revision and revalidation. Since 1991, requesters

have been informed that they could receive a sample copy and could

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reproduce it for their own non - commercial use that they must take Cornell's name

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the forms. This approach has allowed the College to respond to requests but at the same time inform the requester of the problems associated with using the CMI.

As of July 2001, this practice has ceased and now the CMI is available only for historical purposes and for research not involving human subjects. Individuals interested in receiving a copy of the CMI for these purposes should contract the Medical Centre Archives of New York- Presbyterian/ weill Cornell at (212) 746- 6072 or at email- archives@med.comell.edu.

165 4.7 Report Writing We will examine some of the broad issues involved in the communication of test results with particular reference to ethical and social implications. For the clinician, such communication usually includes the preparation of a written test report or case report that is often followed by discussion or consultation with the client parents, teachers, or other professionals. Even in those situations that do not require a written report, it is a good idea to prepare one as a record for future reference. The preparation of a report also helps to organize and clarify the clinician's own thinking about the case and to sharpen her or his interpretations. Report writing represents the final stage in the clinician's synthesizing function. In its content, the report should draw upon all the data sources (test and non test) available to the clinician. Several books provide guidelines for report writing. Without duplicating the many lists of suggestions that can be found in such sources. We shall focus on some of the major points. First, there is no one standard form or outline for all reports. Both content and style should and do vary with the purpose of the assessment, the context in which it is conducted, the persons to whom the report is addressed, and the theoretical orientation and professional background of the clinician. It is especially important to adapt the report to the needs, interest, and background of those who will receive it. For example, a report addressed to a lawyer needs to be quite different from one address to a psychotherapist. Nevertheless for both of them, the clinician should select what is relevant to answering the questions raised at the outset from the mass of data he or she has gathered. The report also should concentrate on each individual's differentiating characteristic – the high and low points- rather than on traits in which the individual's standing is close to the average. A test of the effectiveness of a report is to see whether it is unique to the individual or whether it applies equally well to other persons. It is a relatively easy task to prepare a pseudo-report from general, stereotyped statements that apply to most people. A considerable body of research has demonstrated that such reports are readily accepted as "remarkably accurate" self descriptions by a large majority of persons (Goodyear, 1990; Klopfer, 1983; Snyder & Larson, 1972; Tallent, 1992, pp. 236- 238). This pseudo validation has been called the " Barnum effect", after phineas T. Barnum, the famous showman who is credited with the remark that there's a sucker born every minute. Reliance on such generally applicable personality descriptions is a favourite device of fortune tellers and other charlatans. The primary focus of the report should be on interpretations and conclusions, although

166 test records and other detailed data may be separately appended in some cases. Specific data, such as individual responses and subject scores, should ordinarily be cited only to illustrate or clarify a point. Reports should be carefully organized and integrated. Books on the preparation of assessment reports usually contain helpful hints for good writing as well as references to standard manuals of style. One particularly entertaining little book that should make writing less painful for both writer and reader is the Elements of Style by Strunk and White (1979) 4.8 Check your progress 1) Write down the importance of early identification and intervention programme for children with low vision.

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..... 2) Briefly explain the clinical evaluation of low vision using the equipment in Clinic.
.....
..... 3) Explain the procedure for screening of impaired vision with the commonly adapted test.
.....
..... 4) What is functional vision? How do you assess the visual skills?
.....
.....
167 5) Describe the method of selecting items/materials for the functional assessment and enumerate the points to be borne in mind while administering the test.
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..... 6) What is vision stimulation?
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..... 7) Common areas of difficulty in functional vision assessment is an area to be identified by the teachers- comment.
.....
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..... 8) What is visual tracking? Explain with an example.
.....
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..... 9) Write down the use of aspheric lens for vision training.
.....
..... 10) Describe the concept development of the Visually Impaired Child.
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168 4.9 Let us sum up

- Ø Early intervention services have significant impact on the visually impaired infants and toddlers. Early intervention plays a significant role in preventing and reducing the extent of developmental delays. It is important to identify children who have impaired vision. The children with visual problem can be identified within some eye conditions. Vision may be improved with spectacles, treatment or operation.
- Ø A clinical low vision evaluation assesses whether or not a child will benefit from optical devices such as monocular telescopes and or magnifiers. An optometrist or ophthalmologist who specializes in low vision and the prescription of optical devices performs the clinical low vision evaluation.
- Ø Simple but effective tests have been developed for vision screening.
- Ø Functional vision is the used of vision for particular activities. Functional visual skills are required to carry out every day activities.
- Ø This assessment provides information regarding a student’s ability to use his vision within the learning environment. It includes acuity, colour, fields, and environmental accommodations.
- Ø A child with low vision may be able to progress through sequential training of visual skills.
- Ø Children who have very little vision or have not used vision need to know that they can use their vision. They may also need encouragement to do so.
- Ø Visual efficiency is the processing ability of the brain. It is unique to each child.
- Ø At this efficiency level those with low vision learn to distinguish patterns of visual stimuli, differentiate outlines, inner detail of objects and transfer this learning into two dimensional pictures and symbols.
- Ø The visual efficiency can be developed by training but cannot be measured clinically.
- Ø The visual skills to be trained are visual attention and awareness, control of eye movements, scanning. Tracking visual discriminations, visual figure-ground discrimination, visual closure, visual memory, recognition of action, form constancy, eye hand and eye foot coordination. Normally students with low vision may have additional visual fluctuations,

169 such floaters in the visual field, light sensitive, eye fatigue, degenerative condition etc. Parents and teachers must continue to provide creative and meaningful visual stimulation in order to foster the presentence. It is essential that the student understanding his or her functional vision and the best techniques for sight utilization. Assessment of the student’s functional vision in the initial step in teaching or rehabilitating student how, when and under what conditions vision can be used efficiently. Assessment will provide all physical data on the eye report obtained from the eye care specialist. Secondly the information collected should be presented to each student in a vocabulary appropriated for him or her level of understanding. From this data information in the area of low vision is formulated for the student. Teachers and parents can never know what children see, only how they function. Collecting functional data over a period of years serves two important purpose. It helps students reach maturity with objective knowledge about their visual abilities and disabilities. in addition it provides a continuous record of change in their visual status.

4.10 References : 1. Mittal S.R. : Education of Children with Low Vision 2. K.K. Paknikar : Performance Tests for the Blind 3. Singh A. K. : Tests, Measurement and Research Methods in Behavioural Sciences 4. Anastasi Anne & Urbina Susana : Psychological Testing 5. Lowenfeld Berthold : The Visually Handicapped Child in School. 6. Gur Lulla Dr. Sunita : Guidance for Comprehensive Management of Low Vision in India (A Vision 2020 : The right to sight) 7. Burgara, N.C : Visually Handicapped & Learning 8. Randall T. Jose (1983) : Understanding the Low Vision. New York : American Foundation for the Blind 9.

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Mani M.N. G. : Reading Preference Test (REPT) for Children with Low Vision. 170

Unit 5 □

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Assessment of Learning Needs of Children with VIMD Structure : 5.1 Introduction 5.2 Objectives 5.3 Concept and definition of VIMD 5.4 Etiology of VIMD 5.5 Impact of VIMD on learning and Development 5.6 Screening, Identification and Assessment of Visually Impaired Children with Associated Disabilities 5.7 Multi-disciplinary assessment of visually impaired children with Associated Disabilities 5.8 Check Your Progress 5.9 Let Us Sum Up 5.10

References 5.1 Introduction When a child has several different disabilities, he/ she has multiple disabilities. The group of multiply disabled visually impaired children is a heterogeneous group. The effect of multiple disabilities can be more than the combination of two individual disabilities. The problem is that these children do not seem to suit the schools where they are placed. Because children with multiple disabilities have problems with all muscle movement, with understanding and often with seeing and hearing as well, communication is very difficult for them. The status of education of visually impaired with multiple disabilities is in the low priority. Intervention at earliest possible stages will definitely improve their developmental skills, optimize abilities and build a foundation for future learning.

171 5.2 Objectives After going through this unit the learners will be able to : ❖ Define the concept of multiple disability . ❖ State the current status of education of children with multiple disability . ❖ Describe the challenges in teaching the multiply disabled ❖ Highlight the importance of early intervention for visually impaired children with multiple Concept and Definition of VIMD 5.3 Concept and Definition of VIMD 5.3.1 Concept When a child has several different disabilities we say, that he/she has multiple disabilities. For example, a child may have difficulties in learning, along with controlling her movements and / or with hearing and vision. The effect of multiple disabilities can be more than the combination of two individual disabilities. Provision of educational services are needed for those children with multiple disabilities whose cognitive functions are intact whereas only rehabilitation services can be planned for those whose cognitive functions are poor. Individual assessment is imperative for planning the educational programmes for these children. These children and youngsters are excluded from formal education due to their multiple disabilities. Sometime "exclusion" is as hard and cruel as it sounds: the school simply closes its doors for these children. However, more times the school does not know about the child before the school could get involved, others consider the situation too complicated or can not expect that the child might profit from formal education. 5.3.2 Definition A visually impaired child who has two or more disabilities concurrently that together constitute the so-called multiply disabled. There are many visually impaired children with one or more additional! associated disabilities. Characteristics The main characteristics of multiply disabled visually impaired children are:

172 a) They are different from others and need special programmes. b) They face more problems than others and need some help and can be included in regular school programmes with assistance and supportive devices. 5.3.3 Types of Additional Disabilities In order to develop programmes for the multi- disabled visually impaired children we classify them into four categories on the basis of their disabling conditions: 1. Deaf blind (Visual impairment+ hearing impairment) 2. Visual impairment + hearing impairment + mental retardation 3. Visual impairment + mental retardation. 4. Visual impairment + cerebral palsy + mental retardation/ hearing/ speech problems. 5.3.4 Current status of Education of Visually Impaired Children with Multiple Disabilities. The concept of specialized services to- children with multiple disabilities is relatively new in our country. The few services, which we can count on our fingertips, are located mostly in urban areas and can accommodate at the most a few hundred children. Services to young babies (0-6 years) are hardly available at present. Apart from non- availability of services, there are a number of areas of concern of such children, namely: ❖ A large population lives in remote rural areas where even the available basic health and education services are negligible. ❖ While the services for such children with multiple disabilities are almost non- existent, number of such children is consistently increasing due to the advancement of medical science. ❖ Moreover, most of such children do not reach these centres in time as parents are pursuing curative options in the crucial six years of the child's life. So a lot of learning that could have taken place gets delayed. ❖ Our policy makers, administrators and planners, adopted a pragmatic approach for the meaningful education of disabled persons. Nevertheless, as compared to the western countries, we are still lagging behind in the field of education

173 of multiply disabled children owing to a number of problems and limited resources. Some of the reasons for lack of tangible services to these children are cited below: ❖ Since the visually impaired child with additional disabilities requires a specialized training which is highly individualized and need based, this necessitates a right approach and availability of highly trained, skilled and dedicated professionals in different disciplines. The availability of such manpower in India at present is inadequate due to lack of proper training facilities for educators and other supportive staff. ❖ The teacher preparation in the area of disability at present is mostly focusing on the single disability area. As a result there are large number of single special teachers who can teach single disability but very few of them can teach children with additional disabilities. Because of the absence of trained teachers for teaching visually impaired children with additional disabilities, this area remained low priority area for many years in our country. ❖ The scattered population of visually impaired children with additional disabilities is another reason for not getting services timely. The residential facilities are inevitable for these children. But such facilities are hardly available to serve these children under education. ❖ Another problem is that these children do not seem to suit the schools where they are placed. Often parents of visually impaired child with additional disabilities are not able to identify which disability among the disabilities present in the child is more dominant. For example, the parents are perplexed whether the visually impaired mentally retarded child can be placed in a class with sighted mentally retarded or in a school for visually impaired. Because of the confusion the parents of these children do not bring them to the educational programmes. The principle that should be followed in case of such children is that a child with a dominant condition of visual impairment should be placed in a setting suitable for visually impaired children, while where the dominant disability is Mental Retardation; he/ she should be placed in the schools for mentally retarded children.

5.4 Etiology of VIMD

Multiple disabilities are quite multiple and diverse in nature and are found to possess more dissimilarities than the similarities or commonness observed among 174 them. Each of them has a different story of its causation, symptoms and challenges provided to the sufferer. It is therefore, quite difficult to name certain type of causes or causative factors responsible for the germination and perpetuation of all types of visually impaired with multiple disabilities among the children. However we can try to have the search for all the possible situations or factors that may be held responsible for bringing some or other types of impairments or disabilities in the mind and body of the children right from the time of their conception in the womb of the mothers in the following manner.

5.4.1 Factors Operating at the time of Conception (Genetic Factors)

There may go many things at the time of conception of the child in the womb of the mother through the transfer of genes and chromosomes to the offspring by the immediate parents that may work as a cause for providing disabilities among the children. A few of them are narrated.

- Chromosomal abnormalities may bring many disabilities and disorders among the children. The most frequent chromosomal abnormality is non-disjunction (unequal division) of chromosomes, and the most common clinical consequence is down syndrome. Children with this condition have 47 chromosomes instead of the normal 46. This extra chromosome may be provided by one of the parents, mother or father. Down syndrome may also be caused by abnormal translocation of chromosome. Hence the child has 46 chromosomes, but a pair of one is broken and the broken part is fused to another chromosome.
- Non -disjunction or unequal division of sex chromosomes may also provide a cause for a number of disabilities or disorders. The most common example is Klinefelter Syndrome. The males with this syndrome are born with an extra X chromosome derived usually from the mother. Many physical and mental abnormalities may be the product of this syndrome.
- Turner's Syndrome which affects girls is caused through the chromosomal loss. Girls with Turner syndrome have only single X chromosome and no second X or Y chromosome making a total of 45 rather than 46 chromosomes. As a consequence of the syndrome, they may have visual-perceptual impairments and sterility.
- Many abnormalities occur during chromosomal deletions. The examples are Cat Cry Syndrome (causing the individual to have a high pitched cry and

175 mental retardation) William Syndrome (causing mental impairments and physical deficits) and VCFS (causing mental impairments) Physical defects and language disabilities.) •••• In addition to the chromosomal abnormalities (extra or deleted chromosomal material) genetic disorders may also result from an abnormality in a single gene. Human genome (the set of all genes) approximately contains 1,00,000 genes. Out of this vast stock a single gene defect is quite capable of playing a primary role in about 7,000 disorders or disabilities (mckusic, 1986). These abnormalities may be passed down from one generation to the next. Examples of such single gene disorders are the formation of multiple neurofibroma tumors on the body and in the brain, Huntington disease or Fragile X-Syndrome neurological disorder), each capable of generating one or the other types of motor sensory cognitive and learning disabilities.

5.4.2 Factors Operating in the Womb of the Mother (Prenatal factors)

What goes wrong with the child during the embryologic and foetal development in the womb of his mother certainly prove a potent factor for the causation of one or the other disabilities in the child. A few of such major factors working in this direction may be outlined as follows:

- Maternal Chronic illness:** It has been found that a number of maternal chronic illnesses (during pregnancy) like thyroid disease, diabetes, hypertension and autoimmune disorders may adversely affect the growth and development of the child in the womb of his mother resulting into one or the other disabilities.
- Maternal infection:** A number of maternal infections like below are known to have devastating impact on the embryologic and foetal development. •••• Rubella also called as German measles is a highly contagious virus. If contracted by a mother during the first six weeks of her pregnancy, it may become a cause of havi ng risk to their foetus developing congenital rubella syndrome. The consequences of which may be the outcomes in the form of microcephally, mental retardation, cataract deafness and congenital heart defects. •••• Varicella (Chicken pox) caused by a DNA hyper virus is also a fatal maternal disease that adversely affects the developing foetus. Varicella infection, if contracted by a mother during the first 12 weeks of the pregnancy may cause 176 congenital defects in the developing foetus characterized by limb defects, scars, microcephaly, chorioretinitis and cataracts. •••• Sexually Transmitted Diseases (STDs) can cause severe complications for the developing foetus. The term STD stands for more than twenty five infectious organisms that are transmitted through sexual activity.
- Maternal substance abuse:** The intake of many substances by the mothers during pregnancy may cause a number of health hazards to the developing foetus like the following. •••• Many of the medications and drugs whether prescribed or non-prescribed may prove fatal to the developing foetus. As example we can name antiepileptic drugs (Used for seizure disorders). Methotrexate (used for treating cancer) and captoprial (used for treating chronic hypertension). More often, they are associated with congenital malformation such as heart defect, hearing, vision and mental retardation. •••• The intake of the substances like cocaine, heroin, marijuana and other illicit drugs by the pregnant mothers may cause high risk for the developing foetus causing foetal death, growth restriction, language disorders and emotional behavioural and attentional difficulties. •••• Maternal alcohol intake during pregnancy can have serious effect on the developing foetus. Most seriously it can result in Fotel Alcohol syndrome (FAS). The child with FAS has altered facial features, such as small head, widely spelled eyes, upturned nose, large ears and small chin, he or she will also have developmental problem such as oppositional and defiant behaviour, poor judgment and social withdrawal. Alcohol related birth defects make also one of the leading causes of mental retardation among many children. •••• Exposure to tobacco in the womb of the mother may prove quite fatal by bringing many respiratory problems, and sensory impairments to the developing foetus.
- Prenatal anoxia (oxygen deprivation):** This is resulted through a number of causes like maternal anemia, cord anomalies and the premature separation of the cord. It may be associated with a number of disability conditions like cerebral palsy, mental retardation, seizures, hearing and visual impairments and behavioural problems.

177 v) Prenatal cerebral haemorrhages: Resulted through a number of reasons like direct trauma, blood conditions of the mother and other causes, haemorrhage may produce a number of birth defects including cerebral palsy and mental retardation. vi) Prenatal exposure to radiation: Exposure to higher doses of radiation especially from the X-rays and radioactive substances involves a higher risk of congenital malformations, miscarriage, growth restriction and sensory impairments. 5.4.3 Factors operating at the Time of Birth (perinatal factors): There may be a number of things that may go wrong at the time of delivery causing a number of deficits and problems to the child like the following: i) Anoxia (Oxygen deprivation): The newborn baby may suffer from oxygen deprivation during prolonged labour or delivery for a variety of reasons like placenta separation from the uterus breech delivery (delivering feet first) etc. it can cause cells in the brain to die resulting in serious neurological impairments and as a consequence, the child may be affected by a number of disability. ii) Trauma and haemorrhage: Trauma and haemorrhage caused to newborn children during prolonged labour, sudden pressure changes, complicated delivery, caesarean delivery and mal positions may result into brain damage and neurological impairments. It may further result in various types of disability conditions. iii) Premature birth: Premature birth can be source of many problems and impairments to the newborn children. Their immature systems may make them quite vulnerable to infection and other chronic diseases. Moreover the underdevelopment of the brain may prove a potent factor for the causation of cerebral palsy, mental retardation and other accompanying sensory impairments. iv) Prenatal infection: The new born infants at the time of their birth may be subjected to a number of infections on account of the unhygienic conditions prevailed during delivery. It may lead to the development of many physical and mental impairments to the child. The most common infection affecting newborn at the stage may be named as varicella (Chicken pox), and cytomegalovirus (CMV). The newborn affected with CMV are found to manifest the symptoms of mental retardation, vision and hearing impairments and learning disabilities at the later stage of their life. 5.4.4 Factors operating after the Birth (Post-natal factors): There are many factors prevalent in one's environment that may prove a potent

178 source of causing one or the other impairments of disabilities among the children after their birth. These may be briefly named as follows: i) Chronic diseases and infection: Chronic diseases like serious respiratory problems, heart diseases brain tumors, cysts, juvenile arthritis etc. may cause serious obstacles in the path of the developing children particularly related to their adjustment and education and thus may lead them to many physical emotional, social and learning disabilities. Similarly, there are a number of infections that can cause severe impairments to their physical, mental or learning functioning. The most common are meningitis and encephalitis that may cause damage to the brain resulting into a number of disability conditions like hearing and visual impairments cerebral palsy, mental retardation, epilepsy and learning disabilities. ii) Accidents: Accidents are always uninvited. These can happen to anybody at any time giving serious blows to brain, skull fractures, spinal cord injuries and loss of limbs, hearing and vision. Thus, accidental injuries may prove a quite big source for the generation of many multiple disabilities to the children at the post-natal stage. iii) Radiation and Toxic agents: Exposure to radiation and radioactive elements as well as toxic chemicals like arsenic, lead, coal tar derivatives and carbon monoxide and carbon dioxide gas may be associated with a number of disabilities like cerebral palsy, mental retardation, eye and ear problems and learning disabilities etc. iv) Malnutrition: Mothers suffering from inadequate nutrition and starvation, may bring serious difficulties to their breast fed infants and children below the critical age leading to one or the other impairments at the later stage. v) Child abuse: In many cases, child abuse may be found a causative factor for generating one or the other types of disability among the children. Child abuse can result in broken bones, head trauma, spinal cord injuries, oxygen deprivation due to strangulation, severe eye and ear injuries, etc. all leading to one or the other type of physical mental and sensory impairments. Besides this, it can provide a germinating and perpetuating base for the ignition of social, emotional and behavioural problem among the abused children. vi) lower socio-economic status or poverty: Poverty may be associated with a number of disabled conditions in terms of their generation as well as perpetuation. The story may well begin with the malnutrition and almost starving conditions of the pregnant mothers, the most unhygienic and uncared delivery of the children and

179 inadequate supply of the essentials needed for the children's early development. Lack of medical care and treatment may further aggravate the problems and the child may develop serious limitations and deficiencies in terms of his adequate physical, mental, emotional and social development ultimately making the child retarded and disabled in so many aspects.

5.5 Impact of VIMD on learning and development

5.5.1 Where should children with VIMD be taught?

While emphasizing the need and importance of education to the children with VIMD Sailor (1991) writes "There is a single process called 'education' and it is delivered through the vehicle of the local school". In this way, in the opinion of many educators, neighbourhood school may prove a better placement alternative for the education of the multiple disabled children. It is least restrictive in all sense besides being quite accessible to all children irrespective of their socio-economic status and geographical location. Such access to least restrictive environment in terms of integrated settings of the neighbourhood school may prove to the welfare and progress of the children with VIMD. Most of the developed countries have come up with legislative provision to have the education of the multiple disabled in the integrated setting of the normal schools along with their non-disabled peers. It further states that special classes separate schooling or other removal of children with disabilities from the regular educational environment occurs only if the nature or severity of the disability is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily. The same also holds quite practicable in the case of the children with all types of disabilities in our country. We cannot achieve the target 'the education of all (Sarv Shiksha) without adopting integration or inclusion as the main philosophy of our placement option for a huge scattered population of our disabled children. It is neither possible nor practicable to have segregated setting or special schools for each category of multiple disabled children. At present, we have some schools for a few special disabled categories like deaf and dumb, mentally retarded, cerebral palsy, and blind in our country. But we have a large number of diverse categories of multiple disabled (e.g. mentally retarded with Visually Impaired, learning, emotional or physical impairments deaf or blind with physical, mental and emotional problems, etc). The

180 special schools meant for a particular category of disability cannot serve the purpose of the education of the children with multiple disabilities. Moreover, the number of such special schools meant for a few special categories of disabilities are quite meagre and inaccessible to the vast majority of the disabled children population of our country. In such circumstances the integrated set-up of the regular class rooms of the neighbourhood schools is the only proper first alternative available for the educational placement of the disabled children (including multiple disabled) in our country. A few of such things concerning the adaptation and support are mentioned.

- Adaptations in the classrooms, work situations, drinking and toilet facilities and other learning, playing and recreational places for the needed mobility and positioning of the multiple disabled students.
- Educating and equipping the class teachers with essential knowledge, skills and attitudes (through pre-service or in service education) for teaching and dealing with the multiple disabled children.
- Arranging the aids and devices that are helpful in the teaching of multiple disabled children.
- Making use of the related services like counselling, physiotherapy, medical services, orientation and mobility services, etc.
- Seeking the service of the special education expert and professionals for providing needed assistance and guidance to the class teachers.

5.5.2 Curriculum considerations for Visually Impaired children with Multiple Disabilities VIMD:

After making decisions about the placement alternative for the children with multiple disabilities, it becomes essential to make a decision about the type of experiences to be given to these children in an inclusive set-up of the normal classrooms and regular schools. Since VIMD students represent a quite wide spectrum of disabled conditions, therefore, it is quite a challenging task to seek inclusion of the students with disabilities in the general education curriculum. Depending upon the nature and severity of their impairments particularly related to the areas of physical and mental development, now it should be decided how a particular multiple disabled student will have access to the general education curriculum. Wehmeyer, has pointed out some or all of the following options for this purpose.

181 Curriculum adaptation: The students can participate in the general education curriculum, but may need modifications in the presentation of instruction, expected performance, response modes, changes in materials, and the like. Curriculum augmentation: The students need additional instruction or strategies to participated in the curriculum. Curriculum alternations: The students need additional content that is not found in the general education curriculum. Students with severe or multiple disabilities may need instruction in basic social communication, daily living, and motor skills that are not found in the general education curriculum. In view of the above observation, while paying a little more individual attention and use of assistive technology, many of the multiple disabled students may be well adapted to participate in the general education curriculum without further accommodation. There will remain some students who may need special considerations within or beyond the inclusive setting. The curriculum needs of the children with VMMD, then may be extended to the following beyond the general education curriculum or experiences meant for all the children; non-disabled or disabled. •••• Developing communication skills. •••• Developing behaviour skills for the improvement of challenging behaviour (like stereotype, self-injurious, aggressive and socially inappropriate behaviour) •••• Care skills (like feeding oneself, toilet habits, dressing, making motor movements and postures with or without assistance, grooming and personal hygiene). •••• Acquisition of leisure and recreational skills for participating and enjoying such activities. •••• Development of essential basic functional academic skills pertaining to reading, writing and arithmetic. •••• Development of the skills for using assistive devices, and technology for improving their functioning.

5.5.3 Methods and Techniques for meeting the curriculum needs of the children with VMMD To teach the children with multiple disabilities in a fully inclusive set-up or

182 partial and more special set-up is really a quite challenging task. All of them have their unique strengths and limitations and therefore, essentially needs individualized ways to provide instructions to them in an effort to respond to their unique learning characteristics resulting from their multiple disabilities. In general, we can have the following things into our consideration while providing useful learning experiences to them. 1. The beginning in this direction needs to be made by taking care of their seating arrangement in the classroom and other work situation both in the inclusive and partial inclusive settings. The necessary adaptation in this regard should always be made for the multiple disabled children in view of their disabled conditions. As far as possible, they should be seated close to the teaching and supervising places of their teachers and instructors. 2. The next task is related to the communication skills. Any process of instruction and interaction in the classroom requires a process of communication between the teachers and the students. To have such communication link is a bigger problem for the children with multiple disabilities and the biggest for the teacher/ instructors. Deaf-blindness: A method of total communication approach is now mostly used with the instruction of deaf-blind children. It involves the use of multimedia to teach and learn as per needs of the individual's disability conditions. For example, if a student has some residual vision, he may advised to use a powerful magnifier. Similarly the student with some residual hearing may be advised to make use of a powerful hearing aid besides communicating with finger spelling. In such cases, the use of other senses like touch, taste, smell and kinaesthetic awareness should also be made for supplementing information of his environment and fulfilling his curricular and extracurricular needs. However most of the instruction and communication with the deaf-blind children (especially when no significant residual vision or hearing capacity is available) is usually carried out with the use of tactile techniques involving the sense of touch. That is why, Braille proves a quite stable reading medium for the deaf-blind and the use of a dual communication board can help them properly indiscriminating the reception or expressive functions of responses from a communication partner. Mental retardation-deafness: On account of their cognitive impairment these children may experience a lot of difficulty in the learning of oral language. The main

183 focus in their instruction should therefore be on the teaching of sign language. However they should also be taught a bit of functional oral language with the help of total communication approach. Mental retardation-blindness: Learning Braille (a major source of communication and learning for, the blind) may pose a serious difficulty for these children on account of limited mental capacities. The use of the senses other than visual can be employed for the teaching of these children. It may involve the use of recorded metal activity based teaching, oral instructions, etc, as the way of teaching and guiding method for them. Blindness-cerebral palsy: Cerebral palsy may make the affected children unable to make use of their gross or finer movement of hands and other limbs for various instructional purposes. In some cases, it may also create problems in their speaking. Depending on their impairment thus the blind cerebral palsy affected children may not be able to make use of Braille. In such cases, they should be helped with the aural modes of learning, e.g. use of tape recorder, radio, speaking machine, etc. Deafness-cerebral palsy: On account of their problems with motor movements, speech and comprehension, etc., it will not be difficult to make use of gestures of sign language with the group of multiple disabled children. In these cases we have to rely on making use of sight as a mode of their instruction. The help of visual communication board assisted with mechanically operated movement techniques they can prove useful in their instruction. Thus in many cases of the children with multiple disabilities who are not going in use natural speech or who need an additional mode of communication to communicate effectively. We have to plan necessary for the use of augmentative system of communication (use of aids supplementing the existing vocal communication skills) and alternative system of communication (methods of communication used by a person without vocal ability.) therefore, adequate care should always be taken for teaching the use of these modes of communication to the multiple disabled children. 3. The next serious task is to help the children with multiple disabilities to learn and make use of the necessary other functional skills like daily living skills, social skills, recreational and leisure skills, vocational skills, academic skills, behaviour management skills, etc. Like their non-disabled peers, the children with multiple disabilities may not be capable of learning the above mentioned functional skills through a mere imitation, observation or verbal instruction. 4. Whenever needed, the students with multiple disabilities should be allowed to 184 have a facilitator who can provide physical support to assist the students who cannot speak or whose speech is limited to typing on a key board or pointing at pictures, words or other systems on a communication board. 5. Students with multiple disabilities should be provided such learning experiences or made to participate in such activities that are provided to the same-age peers without disabilities. The methods and techniques used for providing them necessary learning experiences should be as appropriated as possible. 6. There may be proper provision for incorporating choice making activities into the classroom programmes for providing needed learning experiences to the students with VIMD. 5.6

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Screening, identification and assessment of Visually Impaired Children with associated disabilities 5.6.1:

Screening Prenatal Screening: A number of prenatal testing procedures such as testing of maternal serum AFP, Multiple Marker Screening, chorionic villous sampling, Amniocentesis, Ultrasound, and Fetoscopy are available to detect the disorders of the foetus. On the basis of the results of screening appropriate corrective steps to prevent intellectual disability should be taken on the advice of a qualified physician. The following screening should be done: (i) Blood Tests in the Mothers Haemoglobin levels (Hb %) to detect anaemia. •••• Blood glucose levels to detect diabetes •••• Blood VDRL to detect syphilis •••• Blood group and Rh typing for blood group incompatibilities •••• Blood antibody titers to detect specific infections •••• Alpha foetus-proteins to detect neural tube defects in the foetus (ii) Ultrasonography (During Pregnancy) Many types of foetal pathology including those associated with VIMD later one can be indentified during the" trimester of pregnancy by means of ultrasound technique. Some of them are neural tube defects, such as hydrocephaly, microcephaly, and some cerebellar lesions.

185 (iii) Maternal Serum AFP (Alpha-fetoprotein) Maternal serum AFP (Alpha-fetoprotein) screening test is used to detect spina- bifida, anencephaly, Down's syndrome and other disorders. It is specifically targeted to women under age 35. The testing, which measures the amount of alpha-fetoprotein from foetal urine, takes place at 16-18 weeks of pregnancy. (iv) Multiple Marker Screening Multiple Marker Screening measures alpha-fetoprotein (AFP) and human chorionic gonadotropin (UE3). It enhances the effectiveness of screening for neural tube defects (NTD), Trisomy-21 or Down Syndrome, and Trisomy-18. It is done by a blood test that is offered to women between the 15th and 20th week of pregnancy. (v) Chorionic Villous Sampling Chorionic Villous Sampling or CVS can be used as early as the seventh to ninth weeks of pregnancy. It identifies Down syndrome and other birth defects. In CVS, a tiny piece of the chorionic villous tissue is removed. This tissue grows from an enveloping membrane that eventually gives rise to the placenta. It will show chromosomal abnormalities carried by the foetus. (vi) Amniocentesis: Amniocentesis is used to detect certain birth defects during the 15th week of pregnancy. Amniocentesis is a test performed on high -risk women. It involves the withdrawal of a sample of fluid surrounding the foetus. This fluid is then tested for possible abnormalities. The test is usually advised to women who have reached 35 years of age. Amniocentesis will detect Down syndrome, Tay-sachs, Sickle cell anaemia, and many other genetic disorders. The test increases slightly the risk of miscarriage. (vii) Ultrasound: Ultrasound is another pre-natal technique. It uses high frequency sound waves to locate the position and measure the size and structure of the foetus and placenta in the womb. Ultrasound is also used during amniocentesis to help guide the needle insertion. This technique can rule out foetal abnormalities such as faulty structure of the heart. (viii) Fetoscopy: Fetoscopy is an experimental technique used to observe the foetus. A viewing instrument is inserted into the womb. Neonatal and Post-natal Screening and Diagnostic Procedures

- APGAR score
- Urine screening for metabolic errors- example, PKU (Pheny)

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- Blood biochemistry tests for Cretinism, Rickets, Jaundice etc.
- Blood antibody titers to detect infections
- Chromosomal analysis for Down Syndrome, Deletion syndromes etc.
- Neonatal neuro - behavioural assessments
- EEG (electro-encephalogram) for seizure disorder
- Visual screening for Visual Impairment (Visual acuity, fundus examination, retinoscopy etc)
- Auditory screening - hearing impairments (Tympanogram, BERA etc.)
- Ultra Sonogram
- Ct Scan(Computerised tomography)
- MRI (Magnetic Resource Imaging) for intracranial pathology and structural abnormalities.

5.6.2: Identification and Assessment of Multiple Disabilities The early identification and diagnosis of multiple disabilities among the children always serves the best purpose in the interest of the disabled children. By following the rule, "earlier the better", therefore, beginning should be made for their identification at the prenatal stage. At the "prenatal stage" the developing foetus may be screened for the possible disabilities by making use of the tests like the following: i. Alpha-fetoprotein test: In this test, a blood sample of the mother is taken after sixteen weeks of pregnancy for diagnosing some disabilities in the developing foetus (with an assumption that the foetus will pass sub-stances carrying symptoms of disabilities in the blood stream of the mother). With such a test, we can detect mother who are at risk of having a foetus, with neural tube defect (a defect involving the spinal column or brain), Down Syndrome, or some other birth defects (Batshaw and Perret, 1992). ii. Magnetic Resonance Imaging (MRI): MRI through its ultra fast imaging sequence can prove a valuable asset in the proper diagnosis of defects and impairments. For example, MRI of a central nervous system helps to identify the malformation of the brain seen in spinabifida and the cause of enlarged ventricles (hydrocephalus).

187 At the "post-natal stage" the newborn infants may be subjected to some specific tests like the following for the identification for the possible disabilities. 1. APGAR Scoring System: Known as APGAR test, it is the first screening that can be done to the newborn after their birth between one and five minutes. It takes into account the infant's heart rate, respiratory effort muscle tone, reflex irritability and skin color. Each of these five components of the Apgar test is scored between 0 and 2, with a maximum total score of 10. The below average score (less than 5) may provide an alert for something wrong with the child. The perception of the colour of the skin may also provide a vital clue such as Jaundice may be detected by a yellow caste to the skin and eyes. 2. Other Medical Examination and Observations: The other useful medical test and observations can be properly administered to the newborns and infants for the detection and diagnosis of a number of disabled conditions like the following. •••• Phenylketonuria (PKU) causing toxic accumulations of phenylalanine in the brain (a major cause of multiple disabilities) can be detected by a simple blood test of an infant preferably of one or two weeks old. •••• Blood and urine test can be carried out for the detection of hypothyroidism (the failure of the thyroid gland to function) which is known to cause cretinism an irreversible condition of severe mental retardation. •••• The blood test of the mother and the newborn can help in detecting Rh incompatibility known to cause a number of disabilities including cerebral palsy and mental retardation. •••• Help of EEGs combined with either videotape or direct observation may be taken for the identification of seizures in the infants at their neonatal and post-natal stages. •••• Similar to the Apgar score another scoring system exists for the detection of hypoxic ischemic encephalopathy. It is known as the Sarnat scoring system which can be followed by a (T or MRI scan (neuro imaging procedures) for accurate diagnosis. Hypoxicischemic encephalopathy if undetected and untreated earlier may give birth to a number of disabilities and health hazards like strokes, generalized atrophy in the brain, dyskinetic cerebral palsy, mental retardation and learning disabilities. •••• The direct clinical observation of the infants may prove helpful in the 188 identification of a number of disabled conditions. Most of the hearing and visual defects, motor deficits, mobility and physical impairments can be diagnosed early by observing the infant's lack of normal reflex and body movement. The other major defects and deformities like spinabifida (known for causing a number of multiple disabilities) can also be detected with the help of a close clinical examination). 3. Use of additional testing and collection of Data: After suspecting one or the other disabilities in the growing child, efforts are made to have surety of the suspected screening along with its full assessment by adopting the measures like the following: •••• Use of intelligence tests. •••• Use of adaptive behaviour scales •••• Use of interesting inventories, attitude scales, aptitude tests and personality interviews •••• Use of case history and medical report of the mother and the child •••• Use of the techniques and measures for the assessment of motor, communication, language, self-help, social and emotional abilities of the children. •••• Use of observation, rating scale and situational tests •••• Seeking interviews with the parents and teacher about their experiences with the child's inabilities and strengths. 5.7 Multidisciplinary assessment of visually Impaired Children with Associated Disabilities 5.7.1 What is Multidisciplinary Assessment? The individuals with Disabilities Education Act (IDEA) requires that children with developmental delay or disabilities receive a timely, comprehensive, multidisciplinary evaluation and assessment. The purpose of the assessment is to find out : The nature of your child's strengths delays, or difficulties, and Whether or not the child is eligible for early intervention services.

189 Multidisciplinary means that the evaluation group is made up of qualified people who have different areas of training and experience. Together, they know about children's speech and language skills, physical abilities, hearing and vision, and other important areas of development. They know how to work with children, even very young ones, to discover if a child has a problem or is developing within normal ranges. Group members may evaluate the child together or individually. Assessment refers to the procedures used by these professionals to find out if the child is eligible for early intervention services. As part of the Assessment, the team will observe the child, ask the child to things, talk to the parents and the child, and use other methods to gather information. These procedures will help the team find out how the child functions in five areas of development: cognitive development, physical development, communication, social-emotional development, and adaptive development. Following the child's assessment, the parents and a team of professionals will meet and review all of the data, results, and reports. The people on the team will talk with the parents about whether their child meets the criteria under IDEA and state policy for having development delay, a diagnosed physical or mental condition, or being at risk for having a substantial delay. The purpose of these on going procedure are to identify the child's unique strengths and needs, and determine what services are necessary to meet needs. Hence, assessment in general is a process of collection of information about an individual or a group and taking a decision for that particular individual or group for future course of action.

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Assessment refers to the process of gathering and analysing information in order to make instructional, administrative and/or guidance decision about or for an individual (Wallace, Larsen and Elksnin, 1992)

Definition of assessment focuses on three aspects: 1. Collection of information 2. Analysis of information 3. Making decision for instructional, administrative steps and guidance

Collection of information: Collection of information regarding the students includes information regarding his personal history, the past achievement, the environment he is living, the resources available within his reach and current performance in different skills. These information could be collected by: (a) taking personal history, (b) administering test, (c) observation of the students and (d) interview with the student, parents and caretakers etc.

Analysis of information: Information collected has to be analysed by the special educator or the professionals related to the student from different angles. A student's performance in specific areas may be due to deprivation of exposure or cultural factors. This factor has to be carefully understood by the special educator for decision-making for educational intervention.

Making Decision for Instructional, Administrative Intervention and Guidance: Assessment is being used for making a decision for placement in a particular class and for availing Government facilities and programming educational intervention for the student. Special Educators help in guiding the parents for future course of action to be taken for the student. Special Educational Assessment is the systematic process of gathering educationally relevant information about children with special needs to make legal and instructional decisions about the provision of special services. The special educator pursues information that relates to everyday concerns of the classroom. However, educational intervention is also part of an interdisciplinary effort to understand the handicapped student's learning problems. It is performed in conjunction with the work of the professionals, such as physicians, speech-language, and physical therapists. Educational assessment focus mainly on many areas of learning school, as well as any other factor affecting school achievement, Academic, language, and social skills are examined. Environmental factors may also be considered, along with analyzing the student's observable and measurable learning behaviour and learning strategies. Training the mentally retarded children needs detailed psychological and educational assessment. There have been efforts in developing many psychological test and educational test for conducting assessment for development of systematic intervention programme for the children with mental retardation.

5.7.2: Purpose of Assessment: Assessment is carried out for a specific purpose. Generally, assessment helps in either decision-making for administrative purpose or for remedial purpose. Especially, in special education services, there are a few purposes to be met through assessment. The purpose of assessment determines the types of assessment tools to be used, the method of assessment to be selected and the process of collection of information to

191 be conducted. Some of the purpose of assessment are listed below: 1. Initial screening and identification. 2. Determining eligibility. 3. Determination of current performance level and educational need. 4. Decision about classification and programme placement. 5. Determination and evaluation of teaching programmes and strategies. 6. Development of educational programme (Individual or group). 7. Monitoring student progress. 8. Evaluating the effectiveness of educational intervention programme.

5.7.3: Types of Assessment: Special Education Assessment involves collection of information relevant to educational need of the children. This includes personal data, educational performance, the resources, the family involvement in training and voluntary supports that could be gained for training mentally retarded student. For all these information, it is essential to collect information through different methods. These methods may be: (a) Formal (b) Informal

Formal: In this method, the information is collected by administering test/ behavioural scales/ checklist, interview or administering questionnaire. The information is collected through very structured situation. It needs lots of preparation for the tester or observer.

Informal: In this method, the information is collected through natural interaction between the subject and observer. As because the information is being collected in a natural situation, there is a chance of getting appropriate response from the subject. Different tests are constructed for assessment. Constructed tests also vary as per the process of construction. There are two types of tests. These are Norm Referenced Test and Criterion Reference Test. Norm Reference assessment and Criterion reference assessment are named on the basis of the test used in the assessment process. The details of these-assessment processes are given below:

Norm Referenced Assessment: Norm referenced assessment is the more traditional approach to assessment. These tests and measurement procedures involve test materials that are standardized on a sample population and are used to identify the test takers ability relative to other. It is also known as formal assessment.

192 Norm referenced assessment is defined as a procedure for collecting data using a device that has been standardized on a large sample population for a specific purpose. Every standardized assessment instrument will, have certain directions that must be followed. These direction specify the procedure for administering the test and ways to analyse and interpret the results and reporting them.

Criterion Referenced Assessment: Criterion referenced assessment is concerned with whether a student is able to perform a skill as per the criteria set, or not. In contrast to norm -referenced assessment, which compares one person's performance to other's, criterion referenced assessment compares the performance of an individual to the pre-established criteria. In criterion referenced test, the skills within a subject are hierarchically arranged so that those that must be learned first are tested first.

Continuous Assessment: Assessment is an ongoing process. In the process of special Education to the children with VIMD, their abilities are assessed periodically to plan the future training programme. Flow diagram of which is given below:

Assessment Programme Planning
Implementation
Evaluation
Suggested Modification

In the above diagram, evaluation is carried out after implementation of the programme to see the level of achievement compared to set criteria. Evaluation is restricted to the programme planned for the child. Assessment covers the other non-

193 planned area for training. Assessment after each year or after a particular period of training is inevitable for decision-making about the child.

- 5.8 Check your Progress
- 1) What do you mean by Screening?
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 - 2) What is Identification?
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 - 3) List out the general characteristics of VIMD
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 - 4) Enumerate the types of VIMD?
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 - 5) What are the roles of caregiver in early intervention programme?
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194 6) Write different screening stools used to Identify VIMD?

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..... 7) Discuss the causes of VIMD

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..... 8) Explain the purpose of assessment?

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..... 9) Why is continuous assessment necessary?

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..... 10) Enlist the pre-natal causes of VIMD?

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195 11) Describe the current educational status of Visually Impaired Children with additional disabilities?

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..... 12) Brief the teaching strategies for VIMD.

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..... 13) compare the current Educational status of Visually Impaired Children with Multi Disabled Children?

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..... 14) What are the purposes of assessment you find in your case of assessment for IP?

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..... 15) How do you classify the etiological factors of VIMD.

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196 5.9 Let us Sum up The effect of multiple disabilities can be more than the combination of two individual disabilities. Such kind of children face problem with all types of muscle movement as well as seeing and hearing. There may go many things during conception in the womb through gene and chromosome transfer by the parents to the offspring, that may cause such disabilities among the children. With this back drop, it is seen that the status of education of these children is in the least priority. Hence provisions of intervention will do some extent improve their developmental skills, direct abilities and create a firm ground for future learning. The concept of specialized services to children with multiple disabilities is more or less new in India. This service are localised to urban areas only. Nevertheless, as compared to the western countries parts, we are still lagging behind in the field of education of these children. Apart of this one of the most pertinent issue hovering is often parents of such children are not able to identify.Which disability among the multiple disabilities present in the child is dominant? These confusion cause hindrances in path of their educational programmes. 5.10 References : 1. Mittal S.R. : Education of Children with Low Vision 2. RCI Manual, Causes prevention, Identification and assessment of Mental Retardation 3. RCI Manual, Education of Visually Impaired Children with Additional Disabilities 4. Anastasi Anne & Urbina Susana: Psychological Testing 5. Lowenfeld Berthold: The Visually Handicapped Child in School. 6. Gur Lulla Dr. Sunita : Guidance for Comprehensive Management of Low Vision in India (A Vision 2020 : The right to sight) 7. Burgara, N.C : Visually Handicapped & Learning 8. Randall T. Jose (1983) : Understanding the Low Vision. New York: American Foundation for the Blind 9. S.K. Mangal: Educating Exceptional Children, an Introduction to Special Education

197 Notes

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Matching text As the text appears in the source.

1/112	SUBMITTED TEXT	15 WORDS	71% MATCHING TEXT	15 WORDS
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W	https://docshare.tips/the-encyclopedia-of-blindness-and-vision-impairment_584ba1b6b6d87fabad8b4cd ...			
2/112	SUBMITTED TEXT	112 WORDS	47% MATCHING TEXT	112 WORDS
	of Children with Visual Impairment and Assessment of Needs UNIT - 1 : ANATOMY AND PHYSIOLOGY OF HUMAN EYE 9-34 UNIT - 2 : TYPES OF VISUAL IMPAIRMENT AND COMMON EYE DISORDERS 35-62 UNIT - 3 : IMPLICATIONS OF VISUAL IMPAIRMENT AND NEEDS OF VISUALLY IMPAIRED 63-113 UNIT - 4 : IDENTIFICATION AND ASSESSMENT OF VISUAL IMPAIRMENT 114-169 UNIT - 5 : ASSESSMENT OF LEARNING NEEDS OF CHILDREN 170-198 WITH VIMD 8 9 Unit -1 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Anatomy and Physiology of Human Eye Structure 1.1 Introduction 1.2 Objectives 1.3 Structure and Functions of Human Eye 1.3.1 Structure of Human Eye 1.3.2 Functions of Human Eye 1.4 Vision Development and Process of Seeing 1.4.1 Normal Vision Development 1.4.2 Process of Seeing 1.5 Principles of Refraction and Refractive Errors 1.5.1			
SA	SEVI-31 with glossary for alignment.docx (D127037367)			
3/112	SUBMITTED TEXT	27 WORDS	72% MATCHING TEXT	27 WORDS
	Refractive Errors 1.6 Concept of Blindness and Low Vision 1.6.1 Blindness 1.6.2 Low Vision 1.7 Concept of Visual Acuity, Visual Field, Depth Perception, and Contrast Sensitivity 1.7.1			
SA	SEVI-31 with glossary for alignment.docx (D127037367)			

4/112	SUBMITTED TEXT	22 WORDS	78% MATCHING TEXT	22 WORDS
<p>the structure and functions of human eye, vision development and process of seeing, principles of refraction and refractive errors, blindness and low vision</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
5/112	SUBMITTED TEXT	14 WORDS	84% MATCHING TEXT	14 WORDS
<p>eye is one of the most complex organs in our body. It is</p> <p>eye is one of the most complex, specialized organs in the body. It is</p> <p>W https://docshare.tips/the-encyclopedia-of-blindness-and-vision-impairment_584ba1b6b6d87fabad8b4cd ...</p>				
6/112	SUBMITTED TEXT	27 WORDS	44% MATCHING TEXT	27 WORDS
<p>the middle of the eye). The iris—the 11 circular, coloured area of the eye that surrounds the pupil—controls the amount of light that enters into the eyeball. The</p> <p>the back of the eye. The iris is colored portion the eye. It controls the size of the PUPIL, which regulates the amount of light that enters the eye. The</p> <p>W https://docshare.tips/the-encyclopedia-of-blindness-and-vision-impairment_584ba1b6b6d87fabad8b4cd ...</p>				
7/112	SUBMITTED TEXT	43 WORDS	57% MATCHING TEXT	43 WORDS
<p>structure and functions of human eye; • Understand normal vision development and process of seeing; • Understand the principles of refraction and refractive error; • Understand the blindness, impairment and low vision; • Understand the Concepts of Visual Acuity, Visual Field, Depth Perception, and Contrast Sensitivity. 1.3</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
8/112	SUBMITTED TEXT	17 WORDS	70% MATCHING TEXT	17 WORDS
<p>the front surface of the lens. It is filled with a fluid called the aqueous humor, which</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

9/112	SUBMITTED TEXT	53 WORDS	45% MATCHING TEXT	53 WORDS
	<p>Sclera - Sclera is the white part of the eye which forms the larger portion of the eye ball. Function: a. It helps to maintain the shape of the eye. b. It supports delicate structures within the eye. 2.</p> <p>W https://specialeducationnotes.co.in/B7unit3.htm</p>		<p>Sclera: Sclera is the white of the eye which joins the cornea at the limbos. It is tough and helps to maintain the shape of the eye and supports the delicate structures within the eye.</p>	
10/112	SUBMITTED TEXT	125 WORDS	94% MATCHING TEXT	125 WORDS
	<p>visual system include the eye, the visual centre in the brain, and the optic nerve which connects the eye to the visual centre. The light rays passing from the environment to the eye through the cornea. The cornea is the external covering of the eye and in the presence of light it reflects visual stimuli. These reflect light rays passed through the pupil which is an opening in the iris. The pupil regulates the amount of light entering the eye. The lens focuses the light rays by changing their direction so that they strike the retina directly. As in a camera lens, the lens of the eye reverses the image. The retina consists of light sensitive ceils namely rods and cones that transmit the image to the brain through optic nerves. Images</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>			
11/112	SUBMITTED TEXT	22 WORDS	43% MATCHING TEXT	22 WORDS
	<p>the retina. The retina translates the light into electrical impulses which are then carried to the brain by the optic nerve. 7. Finally, the</p> <p>W https://docshare.tips/the-encyclopedia-of-blindness-and-vision-impairment_584ba1b6b6d87fabad8b4cd ...</p>		<p>the eye. The retina transforms the light into electrical impulses or information about the light rehabilitation 195 received. The impulses are sent to the brain by the OPTIC NERVE. The</p>	
12/112	SUBMITTED TEXT	19 WORDS	92% MATCHING TEXT	19 WORDS
	<p>the retina upside down until they are flipped over the visual centre of the brain as the brain interprets the images.</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>			

13/112	SUBMITTED TEXT	32 WORDS	100% MATCHING TEXT	32 WORDS
<p>Refraction is the bending of light as it passes between materials of different optical density. If there is irregular bending of light due to error in medium of reflection, this becomes refractive error. 19</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
14/112	SUBMITTED TEXT	97 WORDS	93% MATCHING TEXT	97 WORDS
<p>Refraction of Eye Refraction refers to the state of focus of the eye. It is the ability of the eye to bend light so that an image is focused on the retina. So, refraction is the deflection of light from a straight path through the eye by various ocular tissues, including the cornea, lens, aqueous humour, and vitreous body. 1.5.2 Concept of Refractive Error Error in refractive media, the eye gets unclear or blurring image. When there is a deviation in light rays from a distant object brought to a focus on the retina, the image that is formed on the retina appears blurred.</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
15/112	SUBMITTED TEXT	17 WORDS	64% MATCHING TEXT	17 WORDS
<p>interferes with the performance of daily activities, such as reading or driving. A person with low vision</p> <p>interferes with the performance of daily activities at home or work. A person with low vision</p> <p>W https://docshare.tips/the-encyclopedia-of-blindness-and-vision-impairment_584ba1b6b6d87fabad8b4cd ...</p>				
16/112	SUBMITTED TEXT	46 WORDS	96% MATCHING TEXT	46 WORDS
<p>is known as ametropia in which parallel rays are not accurately focused on the retina. Ametropia includes hypermetropia, myopia and astigmatism. Therefore, refractive error is defined as "a defect in the eye that prevents light rays from being brought to a single focus exactly on the retina" (Bourgeault, 1969).</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

17/112	SUBMITTED TEXT	19 WORDS	58% MATCHING TEXT	19 WORDS
<p>in the better eye, or the side vision is narrowed to 20 degrees or less in the better eye.</p> <p>W https://quizlet.com/133754984/blindness-visual-impairment-flash-cards/</p>		<p>in the better eye, or the widest diameter of peripheral vision measuring 20 degrees or less in the better eye</p>		
18/112	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>Concept of Visual Acuity, Visual Field, Depth Perception and Contrast Sensitivity 1.7.1 Visual Acuity</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
19/112	SUBMITTED TEXT	50 WORDS	92% MATCHING TEXT	50 WORDS
<p>Visual acuity (VA) commonly refers to the clarity of vision. Visual Acuity is dependent on some optical and neural factors, i.e., (i) the sharpness of the retinal focus within the eye, (ii) the health and functioning of the retina, and (iii) the sensitivity of the interpretative faculty of the brain. Visual acuity is</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
20/112	SUBMITTED TEXT	53 WORDS	84% MATCHING TEXT	53 WORDS
<p>Visual acuity is typically measured while fixating, i.e. as a measure of central (orfoveal) vision, for the reason that it is highest there. However, acuity in peripheral vision can be of equal (or sometimes higher) importance in everyday life. Acuity declines towards the periphery in an inverse-linear (i.e. hyperbolic) fashion. Visual acuity is a measure of</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
21/112	SUBMITTED TEXT	30 WORDS	93% MATCHING TEXT	30 WORDS
<p>Visual Field The visual field refers to the total area in which objects can be seen in the side (peripheral) vision while you focus your eyes on a central point. The</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

22/112	SUBMITTED TEXT	24 WORDS	98% MATCHING TEXT	24 WORDS
<p>is used to determine whether the visual field is affected by diseases that cause local scotoma a more extensive loss of vision or a reduction</p> <p>SA TFG AMARA NAHEED (0-JL).docx (D124054780)</p>				
23/112	SUBMITTED TEXT	19 WORDS	77% MATCHING TEXT	19 WORDS
<p>Visual Field Loss: Visual field loss may occur due to disease or disorders of the eye, optic nerve, or brain.</p> <p>SA TFG AMARA NAHEED (0-JL).docx (D124054780)</p>				
24/112	SUBMITTED TEXT	15 WORDS	100% MATCHING TEXT	15 WORDS
<p>Depth Perception Depth perception is the visual ability to perceive the world in three dimensions (3</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
25/112	SUBMITTED TEXT	28 WORDS	98% MATCHING TEXT	28 WORDS
<p>Contrast Sensitivity Contrast sensitivity is a very important measure of visual function, especially in situations of low light, fog or glare, when the contrast between objects and their background is</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
26/112	SUBMITTED TEXT	17 WORDS	97% MATCHING TEXT	17 WORDS
<p>often reduced. Driving at night is an example of an activity that requires good contrast sensitivity for safety.</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
27/112	SUBMITTED TEXT	16 WORDS	90% MATCHING TEXT	16 WORDS
<p>Jangira, N.K. (1988). Source Book for Training Teachers of Visually Impaired. New Delhi: NCERT. Niemann, S., &</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

28/112	SUBMITTED TEXT	20 WORDS	85% MATCHING TEXT	20 WORDS
<p>Scholl, G.T. (1986). Foundations of the education for blind and visually handicapped children and youth: Theory and Practice. AFB Press,</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
29/112	SUBMITTED TEXT	15 WORDS	87% MATCHING TEXT	15 WORDS
<p>Types of Visual Impairment and Common Eye Disorders Structure 2.1 Introduction 2.2 Objectives 2.3 Visual acuity 2.3.1 Loss of visual</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
30/112	SUBMITTED TEXT	14 WORDS	76% MATCHING TEXT	14 WORDS
<p>loss 2.4 Visual field 2.4.1 Loss Visual field 2.5 Colour vision defect 2.5.1 Loss of contrast sensitivity 2.5.2</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
31/112	SUBMITTED TEXT	25 WORDS	65% MATCHING TEXT	25 WORDS
<p>United States, the terms "partially sighted", "low vision", "legally blind" and "totally blind" are used by schools, colleges, and other educational institutions to describe students with</p> <p>SA TFG AMARA NAHEED (0-JL).docx (D124054780)</p>				
32/112	SUBMITTED TEXT	42 WORDS	100% MATCHING TEXT	42 WORDS
<p>visual impairments can include retinal degeneration, albinism, cataracts, glaucoma, muscular problems that result in visual disturbances, corneal disorders, diabetic retinopathy, congenital disorders, and infection." Visual impairment can also be caused by brain and nerve disorders, in which case it is usually termed cortical visual impairment (</p> <p>SA submission.pdf (D130940981)</p>				

33/112	SUBMITTED TEXT	16 WORDS	81% MATCHING TEXT	16 WORDS
<p>Ability to discriminate high contrast, fine detail at a distance. Ø Ability of the eye to</p> <p>SA Rajesh E- TEXTBOOK ON BASICS OF VISUAL IMPAIRMENT.pdf (D143341256)</p>				
34/112	SUBMITTED TEXT	29 WORDS	100% MATCHING TEXT	29 WORDS
<p>The visual acuity for distance is measured as the maximum distance at which person can see a certain object, divided by the maximum distance at which a person with normal</p> <p>The visual acuity for distance is measured as the maximum distance at which person can see a certain object, divided by the maximum distance at which a person with normal</p> <p>W https://specialeducationnotes.co.in/B7unit3.htm</p>				
35/112	SUBMITTED TEXT	15 WORDS	90% MATCHING TEXT	15 WORDS
<p>The power of the eye to distinguish form. Ø The sharpness and clarity of vision. 37</p> <p>SA Rajesh E- TEXTBOOK ON BASICS OF VISUAL IMPAIRMENT.pdf (D143341256)</p>				
36/112	SUBMITTED TEXT	26 WORDS	94% MATCHING TEXT	26 WORDS
<p>Refractive Error is defined as a defect in the eye that prevents light rays from being brought to a single focus exactly on the retina" (Bourgeault.</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
37/112	SUBMITTED TEXT	17 WORDS	64% MATCHING TEXT	17 WORDS
<p>in which the eye is too long and the light is focused in front of the retina.</p> <p>SA DEPP 326 1st.docx (D90532091)</p>				
38/112	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>Trachoma is a chronic contagious disease of the conjunctiva and cornea.</p> <p>SA DEPP 326 1st.docx (D90532091)</p>				

39/112	SUBMITTED TEXT	23 WORDS	89% MATCHING TEXT	23 WORDS
<p>Refractive error is a defect in the eye that prevents light rays from being brought to a single focus exactly on the retina</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
40/112	SUBMITTED TEXT	17 WORDS	82% MATCHING TEXT	17 WORDS
<p>of Visual Impairment and Needs of Visually Impaired Structure : 3.1 Introduction 3.2 Objectives: 3.3 Psycho Social Implications of Visual impairment: 3.3.1</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
41/112	SUBMITTED TEXT	21 WORDS	100% MATCHING TEXT	21 WORDS
<p>implications of Visual impairment: Age of onset, degree of vision, type of vision loss, prognosis, and socio economic status of the family 3.4.1</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
42/112	SUBMITTED TEXT	32 WORDS	97% MATCHING TEXT	32 WORDS
<p>Age of Onset 3.4.2 Degree of vision 3.4.3 Type of Vision Loss 3.4.4 Prognosis 3.4.5 Socio economic status of the family 3.5 Effect of visual impairment on growth and development: Physical, Motor, Language, Socio-emotional, and cognitive development. 3.5.1</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
43/112	SUBMITTED TEXT	21 WORDS	65% MATCHING TEXT	21 WORDS
<p>Development 3.5.2 Motor Development 3.5.3 Language Development 3.5.4 Socio-emotional development 3.5.5 Cognitive Development 3.6 Educational needs of the visually impaired and need for Expanded Core Curriculum</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

44/112	SUBMITTED TEXT	29 WORDS	66% MATCHING TEXT	29 WORDS
<p>Educational needs for the Visually Impaired Children 3.6.2 Need for Expanded Core Curriculum For Visually Impaired Children 64 3.7 Implications of Low vision and needs of Children with low vision 3.7.1</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

45/112	SUBMITTED TEXT	87 WORDS	96% MATCHING TEXT	87 WORDS
<p>The visually impaired person and his/her family face serious social challenges. Directly and indirectly visual impairment interferes with many daily activities. In the case of adults the possibilities for gainful employment are severely limited as is their participation in many activities. To this is often added a loss of social status and self-esteem. The physical limitation and psychological implications of visual impairment 66 cannot be measured in exact monetary terms. Nevertheless, it is clear that they diminish the quality of life not only for blind persons but for their families as well.</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

46/112	SUBMITTED TEXT	17 WORDS	90% MATCHING TEXT	17 WORDS
<p>factors affecting implications of visual impairment. ●●●●● Enumerate the effect of visual impairment on growth and development. ●●●●●</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

47/112	SUBMITTED TEXT	18 WORDS	58% MATCHING TEXT	18 WORDS
<p>the educational needs of children with low-vision. 3.3 Psycho Social Implications of Visual impairment : 3.3.1 Basic Effects of</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

48/112	SUBMITTED TEXT	22 WORDS	100% MATCHING TEXT	22 WORDS
<p>affecting implications of Visual impairment: Age of onset, degree of vision, type of vision loss, prognosis, and socio economic status of the family. 3.4.1.</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
49/112	SUBMITTED TEXT	41 WORDS	83% MATCHING TEXT	41 WORDS
<p>vision: Visual impairment refers to a significant loss of vision in both eyes which may vary significantly, which means that each student with low vision or blindness needs individual adjustments to learn most effectively. There are two main categories of visual impairment: Low vision</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
50/112	SUBMITTED TEXT	59 WORDS	76% MATCHING TEXT	59 WORDS
<p>visual impairment varies worldwide. The "WHO" classifies levels of visual impairment based on visual acuity and visual field limitation, and 74 defines blindness as profound impairment. The "WHO" definition of blindness specifies visual acuity less than 20/400 and or remaining visual field less than 10 degrees in the better Seeing Eye. Visual acuity of 20/70 to 20/400 (inclusive) is considered moderate visual impairment</p> <p>SA Rajesh E- TEXTBOOK ON BASICS OF VISUAL IMPAIRMENT.pdf (D143341256)</p>				
51/112	SUBMITTED TEXT	13 WORDS	100% MATCHING TEXT	13 WORDS
<p>Age related Macular Degeneration (AMD) : Age related Macular Degeneration (AMD) is the</p> <p>SA TFG AMARA NAHEED (0-JL).docx (D124054780)</p>				
52/112	SUBMITTED TEXT	25 WORDS	100% MATCHING TEXT	25 WORDS
<p>In general vision loss does not improve over time. There are exceptions of course such as when you are correcting a problem such as amblyopia or</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

53/112	SUBMITTED TEXT	62 WORDS	100% MATCHING TEXT	62 WORDS
<p>In addition, as a visually impaired infant grows and develops, they may be better able to use their vision and demonstrate what they see, so that it appears as though improvement has been made. But vision loss that is present from birth or early childhood, particularly when it occurs with other disabilities will usually not get better. However with the right training, technology and other assistance,</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
54/112	SUBMITTED TEXT	42 WORDS	81% MATCHING TEXT	42 WORDS
<p>child can live a full life even with vision loss. Children with vision impairment may have some delay in development related specifically to not being able to interact with their environment visually since much of what a child learns comes from visual clues. As</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
55/112	SUBMITTED TEXT	12 WORDS	100% MATCHING TEXT	12 WORDS
<p>child receives vision supports and early intervention services, these gaps will close. If</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
56/112	SUBMITTED TEXT	36 WORDS	80% MATCHING TEXT	36 WORDS
<p>child has other disabilities, along with vision loss, one can still give one's baby a high quality of life through early intervention services, adaptive devices and other methods of treatment. 3.4.5 Socio economic status of the family : The</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

57/112**SUBMITTED TEXT**

59 WORDS

95% MATCHING TEXT

59 WORDS

of the world. The lack of economic development is a factor that aggravates the prevalence of visual impairment. For this reason, blindness prevention programmes must concern themselves not only with the elimination of avoidable blindness but also with concurrent economic development. The cost of rehabilitation and care provided to the visually impaired are the most obvious. Less apparent but just as significant however

SA SEVI-31 with glossary for alignment.docx (D127037367)**58/112****SUBMITTED TEXT**

15 WORDS

97% MATCHING TEXT

15 WORDS

family. 3.5 Effect of visual impairment on growth and development: Physical, Motor, Language, Socio-emotional, and cognitive development. 3.5.1.

SA SEVI-31 with glossary for alignment.docx (D127037367)**59/112****SUBMITTED TEXT**

77 WORDS

97% MATCHING TEXT

77 WORDS

Although the hands are a major perceptual organ, a blind infant has significant developmental delays in his ability to employ his hands functionally. Even at 5 months a blind infant's hands will be fisted and held at shoulder height. There will be no mutual fingering, no engaging at the midline. At this age, a sighted child practise coordinated reaching and transference of objects from one hand to another. This delay in hand utilization will result in delayed fine motor and gross motor development.

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60/112

SUBMITTED TEXT

99 WORDS

100% MATCHING TEXT

99 WORDS

Body A blind infant usually achieves control of his posture at approximately the same age as sighted Infants through the following normal progression: ●●●● sits alone momentarily ●●●● rolls from back to stomach ●●●● sits alone steadily ●●●● takes stepping movements when hands are held ●●●● stands alone ●●●● bridges on hands and knees 82 However, the achievements that require self- initiated mobility are significantly delayed: ●●●● elevated on arms in prone ●●●● raising to a sitting position ●●●● pulling to a stand ●●●● walking alone Until a blind child will reach out to grasp a sound cue (12 months), he will not move out in space either on hands and knees or feet.

SA SEVI-31 with glossary for alignment.docx (D127037367)

61/112

SUBMITTED TEXT

193 WORDS

99% MATCHING TEXT

193 WORDS

Construct of World The blind child has limited ability to coordinate and organize elements into higher levels of abstraction, and to verify the information. Therefore, he constructs a reality that is different from the sighted child's. The process of establishing concept- defining attributes and relationships is more problematic for the blind child and less accessible to guidance. The blind child is continually involved in problem solving, but this process, which is essential to future development, is more difficult and less rewarding for him. Object Permanence A stable visual field is the basis of object permanence and other conceptual tasks. Object permanence cannot be obtained by a blind child until he has the ability to reach for objects based on sound cue alone. It is acquired nearly a year later than in sighted children. Causal Relationship Since the results of actions cannot be seen, the blind child may not be motivated to action. He may not understand his ability to cause things to happen or to retain pleasurable stimuli. 87 Constancy Understanding how to align blocks or orient his hands on a page in order to duplicate a pattern will be difficult ifhe hasn't observed objects in various orientations to know that an object is the same regardless of its position in space. 3.6

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62/112	SUBMITTED TEXT	12 WORDS	100%	MATCHING TEXT	12 WORDS
<p>Educational needs of the Visually Impaired and Need for Expanded Core Curriculum</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>					
63/112	SUBMITTED TEXT	11 WORDS	100%	MATCHING TEXT	11 WORDS
<p>Provide the student with a definite place to put things,</p> <p>SA submission.pdf (D130940981)</p>					
64/112	SUBMITTED TEXT	165 WORDS	99%	MATCHING TEXT	165 WORDS
<p>Independent Living Skills This area of the expanded core curriculum is often referred to as "daily living skills." It consists of all the tasks and functions persons perform, in accordance with their abilities, in order to lead lives as independently as possible. These curricular needs are varied, as they include skills in personal hygiene, food preparation, money management, time monitoring, organization, etc. Some independent living skills are addressed in the existing core curriculum, but they often are introduced as splinter skills, appearing in learning material, disappearing, and then re-appearing. This approach will not adequately prepare blind and visually impaired students for adult life. Traditional classes in home economics and family life are not enough to meet the learning needs of most visually impaired students, since they assume a basic level of knowledge, acquired incidentally through vision. The skills and knowledge that sighted students acquire by casually and incidentally observing and interacting with their environment are often difficult, if not impossible, for blind and visually impaired students to learn without direct, sequential instruction by knowledgeable persons. Recreation and Leisure Recreation and leisure</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>					

65/112**SUBMITTED TEXT**

21 WORDS

97% MATCHING TEXT

21 WORDS

Knowledge of the Eye Condition A student needs to understand and be able to tell others comfortably about the cause of his/her

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66/112**SUBMITTED TEXT**

129 WORDS

98% MATCHING TEXT

129 WORDS

As a part of the expanded core curriculum, orientation and mobility is a vital area of learning. Teachers who have been specifically prepared to teach orientation and mobility to blind and visually impaired learners are necessary in the delivery of this curriculum. Students will need to learn about themselves and the environment in which they move - from basic body image to independent travel in rural areas and busy cities. The existing core curriculum does not include provision for this instruction. It has been said that the two primary effects of blindness on the individual are communication and locomotion. The expanded core curriculum must include emphasis on the fundamental need and basic right of visually impaired persons to travel as independently as possible, enjoying and learning from the environment through which they are passing to the greatest extent possible. 96

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67/112

SUBMITTED TEXT

138 WORDS

100% MATCHING TEXT

138 WORDS

Technology Technology is a tool to unlock learning and expand the horizons of students. It is not, in reality, a curriculum area. However, it is added to the expanded core curriculum because technology occupies a special place in the education of blind and visually impaired students. Technology can be a great equalizer. For the braille user, it allows the student to provide feedback to teachers by first producing material in braille for personal use, and then in print for the teacher, classmates, and parents. It gives blind persons the capability of storing and retrieving information. It brings the gift of a library under the fingertips of the visually impaired person. Technology enhances communication and learning, as well as expands the world of blind and visually impaired persons in many significant ways. Thus, technology is a tool to master, and is essential as a part of the expanded core curriculum.

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68/112

SUBMITTED TEXT

23 WORDS

77% MATCHING TEXT

23 WORDS

Technology for Students with Blindness A computer system for a student with blindness will include a computer or laptop with the following components.
✓✓✓✓✓ Screen

SA CHAPTER II review with aiignment.doc (D15199607)

69/112	SUBMITTED TEXT	183 WORDS	98% MATCHING TEXT	183 WORDS
<p>Career Education There is a need for general vocational education, as offered in the traditional core curriculum, as well as the need for career education offered specifically for visually impaired students. Many of the skills and knowledge offered to all students through vocational education can be of value to visually impaired students. They will not be sufficient, however, to prepare students for adult life, since such instruction assumes a basic knowledge of the world of work based on prior visual experiences. Career education in an expanded core curriculum will provide the visually impaired learner of all ages with the opportunity to learn first-hand the work done by the bank teller, the gardener, the social worker, the artist, etc. It will provide the student opportunities to explore strengths and interests in a systematic, well-planned manner. Once more, the disadvantage facing the visually impaired learner is the lack of information about work and jobs that the sighted student acquires by observation. Because unemployment and underemployment have been the leading problem facing adult visually impaired persons, this portion of the expanded core curriculum is vital to students, and should be part of the expanded curriculum for even the youngest of these individuals.</p>				
<p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
70/112	SUBMITTED TEXT	10 WORDS	100% MATCHING TEXT	10 WORDS
<p>Implications of Low vision and needs of Children with low</p>				
<p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
71/112	SUBMITTED TEXT	33 WORDS	100% MATCHING TEXT	33 WORDS
<p>with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device. 99 The</p>		<p>with impairment of visual functioning even after treatment or standard refractive correction but who uses or is potentially capable of using vision for the planning or execution of a task with appropriate assistive device. The</p>		
<p>W https://specialeducationnotes.co.in/B7unit3.htm</p>				

72/112	SUBMITTED TEXT	16 WORDS	91% MATCHING TEXT	16 WORDS
<p>Low Vision Students with low vision exhibit a wide range of visual impairment. Teachers should be aware</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
73/112	SUBMITTED TEXT	58 WORDS	97% MATCHING TEXT	58 WORDS
<p>that no two students with low vision have the same functional vision. Even if they are diagnosed as having the same eye condition and similar acuity. Vision may fluctuate and be influenced by such factors as fatigue, light glare, lighting conditions and time of day. Therefore special attention must be given in assessing the needs of the students with low vision</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
74/112	SUBMITTED TEXT	15 WORDS	78% MATCHING TEXT	15 WORDS
<p>low vision means visual acuity of less than 6/18 but equals to or better than 3/60.</p> <p>SA Rajesh E- TEXTBOOK ON BASICS OF VISUAL IMPAIRMENT.pdf (D143341256)</p>				
75/112	SUBMITTED TEXT	13 WORDS	85% MATCHING TEXT	13 WORDS
<p>Calculator: Calculators with voice output allow studentsto do a wide variety of mathematical calculation. 105</p> <p>SA CHAPTER II review with aiignment.doc (D15199607)</p>				
76/112	SUBMITTED TEXT	38 WORDS	96% MATCHING TEXT	38 WORDS
<p>Enlarger Screen enlarger software programmes display information on a computer screen in a variety of magnification levels. The entire screen, a portion of the screen or just one line may be enlarged. Students with low vision may benefit from these</p> <p>SA CHAPTER II review with aiignment.doc (D15199607)</p>				

77/112**SUBMITTED TEXT**

175 WORDS

93% MATCHING TEXT

175 WORDS

Screen Reader/Speech Synthesizer Screen readers provide auditory feedback when using the keyboard as well as auditory access to information displayed on the monitor. These systems consist of a software programmes and speech synthesizer. The software programmes sends information from the computer to the synthesizer, where phonemes are combined into words and the words are spoken. Most systems allow choices in volume, voice quality and speed of output. Students with limited vision will find these devices useful, especially when connected to a regular printer for output (JAWS, Intellitalk, IBM ScreenReader/DOS). Voice Access Voice access systems allow the user to interact with the computer screen by using voice commands instead of the keyboard. They are particularly useful for students who have difficulties with fine motor control as well as visual impairments. These systems include special software and sound cards to allow for voice output of information on the screen. As with screen readers, they can be connected to braille and regular printers for output (DragonDictate, Naturally Speaking). Scanner The scanner will scan print text of good quality. It must be used in conjunction with optical character recognition software. Then the scanned text can be

SA CHAPTER II review with aignment.doc (D15199607)**78/112****SUBMITTED TEXT**

18 WORDS

100% MATCHING TEXT

18 WORDS

Cassette Recorder Cassette recorders can be used as writing tools as well as reading tools. Students with no vision,

SA CHAPTER II review with aignment.doc (D15199607)**79/112****SUBMITTED TEXT**

15 WORDS

73% MATCHING TEXT

15 WORDS

as well as those with limited vision can benefit from the use of cassette recorders. 3.7.3

SA CHAPTER II review with aignment.doc (D15199607)

80/112	SUBMITTED TEXT	23 WORDS	79% MATCHING TEXT	23 WORDS
<p>Teaching Implication : ★★★★★ A programme plan is usually develop on an annual basis by the student's support team and is reviewed regularly. 106 ★★★★★</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
81/112	SUBMITTED TEXT	13 WORDS	87% MATCHING TEXT	13 WORDS
<p>Talk while you teach. The student may miss visual clue and written. ★★★★★</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
82/112	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
<p>Teach in close proximity to the student when doing demonstration or using visual aids. ★★★★★</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
83/112	SUBMITTED TEXT	33 WORDS	100% MATCHING TEXT	33 WORDS
<p>Allow the student to go up to the board or move the desk closer in order to view or copy the material. ★★★★★ Check regularly to ensure that the student is making accurate notes. ★★★★★</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
84/112	SUBMITTED TEXT	22 WORDS	100% MATCHING TEXT	22 WORDS
<p>Provide extra time to the student he/she will take longer to complete most tasks. The quantity of work required may be decreased. ★★★★★</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
85/112	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>with low vision may need extra explanation of some materials. ★★★★★</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

86/112	SUBMITTED TEXT	28 WORDS	90% MATCHING TEXT	28 WORDS
<p>The student's ability to participate in certain activities such as physical, 107 Educational, Science, labs and visual arts may be affected by his/her functional vision. Modification may be required. ★★★★★</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
87/112	SUBMITTED TEXT	16 WORDS	78% MATCHING TEXT	16 WORDS
<p>concrete and tactile materials as much as possible. This provides opportunities for kinesthetic and tactile learning. ★★★★★</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
88/112	SUBMITTED TEXT	14 WORDS	96% MATCHING TEXT	14 WORDS
<p>Identification and Assessment of Visual Impairment Structure 4.1 Introduction 4.2 Objectives 4.3 Interpretation of clinical assessment of vision 4.3.1</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
89/112	SUBMITTED TEXT	20 WORDS	55% MATCHING TEXT	20 WORDS
<p>Functional Assessment of vision : concept, need and methods 4.4.1 Concept 4.4.2 Need for Assessment of functional vision 4.4.3 Areas and skills</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
90/112	SUBMITTED TEXT	21 WORDS	77% MATCHING TEXT	21 WORDS
<p>functional vision 4.5 Tools for functional assessment 4.5.1 Functional Skills Inventory for the Blind (FSIB) 4.5.2 Low vision Assessment by Jill Keeffe 4.5.3 LEA</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

91/112	SUBMITTED TEXT	45 WORDS	82% MATCHING TEXT	45 WORDS
	<p>Portfolio Assessment 4.6 Tools for Psychological assessment of the visually Impaired 4.6.1 Vithoba Pakinikar Performance Test 4.6.2 A short scale I.Q. measure for the Visually Impaired based on WISC-R 4.6.3 Adapted EPQ (Eysenck Personality Questionire) 4.6.4 Adapted Blind Learning Aptitude Test 4.6.5 Concept Development for blind children 4.6.6 Reading Preference Test</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>			
92/112	SUBMITTED TEXT	66 WORDS	89% MATCHING TEXT	66 WORDS
	<p>Low Vision in children is: A person with low vision is one who has impairment of visual functioning even after treatment or standard refractive correction and has a visual acuity of less than 6/18 to light perception, or a visual field of less than 10° from the point of fixation, but who uses, or is potentially able to use vision for planning and / or execution of a task."</p> <p>SA komathi thesis.new.docx (D123569702)</p>			
93/112	SUBMITTED TEXT	24 WORDS	47% MATCHING TEXT	24 WORDS
	<p>Visual skills used for Testing Functional Vision 1. The Visual skills used for testing Whether the child has functional vision are listed here in</p> <p>W https://specialeducationnotes.co.in/B7unit3.htm</p>	<p>Visual Skills used for Functional Vision The visual skills used for functional vision are listed below in</p>		
94/112	SUBMITTED TEXT	46 WORDS	50% MATCHING TEXT	46 WORDS
	<p>functional vision may be improved with training. Many children can learn to make better use of their residual vision and can function effectively with only small amount of visual information. Objects and print can be recognized even when they are blurry or even if only parts of them</p> <p>SA Rajesh E- TEXTBOOK ON BASICS OF VISUAL IMPAIRMENT.pdf (D143341256)</p>			

95/112	SUBMITTED TEXT	25 WORDS	94% MATCHING TEXT	25 WORDS
<p>Tools for functional assessment of vision and skills: Functional Skills Inventory for the Blind (FSIB), Low Vision Assessment by Jill Keeffe, Lea Tests, and Portfolio Assessment. 4.5.1</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
96/112	SUBMITTED TEXT	13 WORDS	88% MATCHING TEXT	13 WORDS
<p>A short scale I.Q. measure for the Visually Impaired based on WISC-R</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
97/112	SUBMITTED TEXT	50 WORDS	100% MATCHING TEXT	50 WORDS
<p>to meet the need for an instrument suitable for collecting a large body of pertinent medical and psychiatric data at a minimal expenditure of the physician's time. It serves as a standardized medical history and as a guide to subsequent interview: The original CMI was validated through several studies on populations of varying sizes.(</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
98/112	SUBMITTED TEXT	14 WORDS	86% MATCHING TEXT	14 WORDS
<p>Its inception through the 1970s, the CMI was widely used both at new York Hospital(</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
99/112	SUBMITTED TEXT	29 WORDS	85% MATCHING TEXT	29 WORDS
<p>Hospital) and throughout the country. It was considered valid, reliable, and reputable particularly since it bore the name of Cornell. The CMI had been copyrighted by Cornell University Medical College (now</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

100/112	SUBMITTED TEXT	23 WORDS	93% MATCHING TEXT	23 WORDS
<p>purchased the questionnaire forms and the manual from the medical college. By 1980 the situation had changed. The questionnaire was becoming out of date, particularly</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
101/112	SUBMITTED TEXT	54 WORDS	100% MATCHING TEXT	54 WORDS
<p>used. The supply of questionnaires was depleted and a reprinting was required. There was a concern about reprinting the CMI without some revision so the questionnaire was revised but only at the level of the wording. No substantive revision was made in the nature of the data collected by the questionnaire. The revised questionnaire was completed and</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
102/112	SUBMITTED TEXT	44 WORDS	94% MATCHING TEXT	44 WORDS
<p>Also in 1986, the issue of the future of the CMI was raised. Sales were declining and the college wanted to investigate the options available for marketing the CMI. Since it bore Cornell's name, there was concern with the product. A committee to study the CMI</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
103/112	SUBMITTED TEXT	48 WORDS	97% MATCHING TEXT	48 WORDS
<p>with members appointed by the Chairs of Medicine, Neurology, and Psychiatry. The committee examined the issues concerning The CMI, did a survey of post customers, investigated other instruments available for similar uses, and looked at the content of the CMI. These investigations found that there were many uses of the CMI.</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

104/112**SUBMITTED TEXT**

34 WORDS

98% MATCHING TEXT

34 WORDS

These investigations found there were many uses of the CMI but the predominant use was by private practice physicians. Many of the comments the committee received indicated a need for revision although there were users who

SA SEVI-31 with glossary for alignment.docx (D127037367)**105/112****SUBMITTED TEXT**

51 WORDS

95% MATCHING TEXT

51 WORDS

satisfied with it as is. The committee also found the CMI was no longer being used in the New York Hospital because it was not felt to be particularly useful. There also did not appear to be any enthusiasm by the individuals on the committee for revising and revalidating the questionnaire, something that would

SA SEVI-31 with glossary for alignment.docx (D127037367)**106/112****SUBMITTED TEXT**

120 WORDS

92% MATCHING TEXT

120 WORDS

be done if it were to continue to be actively marketed. As a result of this review, the committee concluded that the CMI was no longer a viable product and should be phased out. They believed that the CMI was a product that no longer served a useful purpose and that its continuance had been related more to its historical position than to its contribution to health screening. As a result of this review, the CMI was phased out over period, July 1990 - June 1991. Since that time, requesters were told that the CMI was out-of- print. The college still retains the copyright, however, so it could reinstate the CMI in the future if there were clinicians interested in doing a revision and revalidation. Since 1991, requesters

SA SEVI-31 with glossary for alignment.docx (D127037367)**107/112****SUBMITTED TEXT**

15 WORDS

86% MATCHING TEXT

15 WORDS

reproduce it for their own non - commercial use that they must take Cornell's name

SA SEVI-31 with glossary for alignment.docx (D127037367)

108/112	SUBMITTED TEXT	26 WORDS	78% MATCHING TEXT	26 WORDS
<p>the forms. This approach has allowed the College to respond to requests but at the same time inform the requester of the problems associated with using the CMI.</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
109/112	SUBMITTED TEXT	14 WORDS	100% MATCHING TEXT	14 WORDS
<p>Mani M.N. G. : Reading Preference Test (REPT) for Children with Low Vision. 170</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
110/112	SUBMITTED TEXT	51 WORDS	82% MATCHING TEXT	51 WORDS
<p>Assessment of Learning Needs of Children with VIMD Structure : 5.1 Introduction 5.2 Objectives 5.3 Concept and definition of VIMD 5.4 Etiology of VIMD 5.5 Impact of VIMD on learning and Development 5.6 Screening, Identification and Assessment of Visually Impaired Children with Associated Disabilities 5.7 Multi-disciplinary assessment of visually impaired children with Associated Disabilities 5.8 Check Your Progress 5.9 Let Us Sum Up 5.10</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
111/112	SUBMITTED TEXT	11 WORDS	100% MATCHING TEXT	11 WORDS
<p>Screening, identification and assessment of Visually Impaired Children with associated disabilities 5.6.1:</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				
112/112	SUBMITTED TEXT	27 WORDS	89% MATCHING TEXT	27 WORDS
<p>Assessment refers to the process of gathering and analysing information in order to make instructional, administrative and/or guidance decision about or for an individual (Wallace, Larsen and Elksnin, 1992)</p> <p>SA SEVI-31 with glossary for alignment.docx (D127037367)</p>				

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3
Netaji Subhas Open University

From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA -

C C-13 (H.I.) : CURRICULUM DESIGNING, ADAPTATION AND EVALUATION

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7 Netaji Subhas Open University AREA -

C C-13 (

H.

I) : CURRICULUM, DESIGNING, ADAPTATION AND EVALUATION C-13 (H.I)

CURRICULUM, DESIGNING, ADAPTATION AND EVALUATION UNIT - 1 : CURRICULUM

AND IT'S DESIGNING 9-77 UNIT - 2 : DEVELOPING LITERACY SKILLS : READING 78-100

UNIT - 3 : DEVELOPING LITERACY SKILLS : WRITING 101-117 UNIT - 4 : CURRICULAR ADAPTATION 118-148 UNIT - 5 :

CURRICULAR EVALUATION 149-168

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9

Unit - 1 Curricular and It's Designing Structure 1.1 Introduction 1.2 Objectives 1.3

Curriculum-Concept, Types and Models 1.4 Approaches and Steps for Curriculum Designing 1.5 Curricular Needs of children with hearing impairment in Scholastic Areas. 1.6 Curricular Needs of children with hearing impairment in Non-Scholastic Areas. 1.7 Curricular Framework for 21 st Century 1.8

Let us sum up 1.9 Check your progress 1.10 References 1.1 Introduction Education for All is a universal dream. All the modern nations are trying their best to actualize this dream. Special attention is being provided to conventional known weaker links in the chain of education, self reliance, prosperity and development. These 'marginalized' groups which were untouched by education until very recently are now entering the mainstream education. We need to make our system more accommodative, flexible and warm, so that these groups not only enter the conventional classrooms but also make these classrooms more colorful and rich. Changes are being made towards this purpose. New ideas, modern technology and broad minded philosophy are being passed down from international to national level from national to state level and from state level to schools. Among the disabilities, hearing disability has a unique situation which may make the inclusion process slower and difficult. With other disabilities, in general, language and communication are not the primary concerns. With individuals with hearing impairment, this is not the case.

10 Inadequate language and communication have the potential to negatively impact almost all developmental aspects of a child. Moreover, if not dealt with carefully, hearing impairment may delink the child not only from the society but also from the family. You yourself can think of the serious concerns created by such a situation. This unit is named as Curricular and It's Designing and delineates five sub-units. These are Curriculum-Concept, Types and Models, Approaches and Steps for Curriculum Designing, Curricular Needs of children with hearing impairment in Scholastic Areas. Curricular Needs of children with hearing impairment in Non-Scholastic Areas and lastly Curricular Framework for 21 st Century. 1.2.

Objective: Upon completion of the unit, the learner will be able to- ? to know about the curriculum concept, type and different model. ? to Understand different

approaches and steps for curriculum designing. ? to explain the curricular needs of children with hearing impairment in scholastic areas. ? to delineate the curricular

needs of children with hearing impairment in non-scholastic areas. ?

To know about the curriculum framework for 21 st century 1.3 Curriculum-Concept, Types and Models Definitions of Curriculum In Education

curriculum is broadly defined as the totality of student experiments that occur in the educational process.

The term often refers specifically to a planned sequence of instruction or its view of the student's experiences in terms of the educator's or schools instructional goals. Curriculum is to incorporate with

the planned interaction of pupils with instructional content, materials, resources and processes for evaluating of educational objectives.

The word "curriculum" began as a Latin word which means "a race" or "the course of a race" which in turn derives from the verb currere meaning "to run/to proceed".

In history of education, the term 'curriculum' was originally related to the concept of a course

11 of studies followed by a pupil in a teaching institution.

The concept of "curriculum" was used in the English-speaking tradition as equivalent to the French concept programme. In fact, the term curriculum is mostly used to refer to the existing contract between societies with regard to the educational experiences that learners should undergo during a certain phase of their lives.

For the majority of authors and experts, the curriculum defines: (i) why; (ii) what; (iii) when; (iv) where; (v) how; and (vi) with whom to learn. Using educational concepts, we can say that the curriculum defines the educational foundations and contents, their sequencing in relation to the amount of time available for the learning experiences, the characteristics of the teaching institutions, the characteristics of the learning experiences, in particular from the point of view of methods to be used, the resources for learning and teaching (e.g. textbooks and new technologies), evaluation and teachers' profiles. Originally, the curriculum was considered as the product of a technical process. In other words, as a document prepared by experts, depending on the state of the art of disciplinary and pedagogical knowledge. There is no generally agreed upon definition of curriculum. Some influential definitions combine various elements to describe curriculum as follows: ? Jhon

Kerr, 1966 defines curriculum as, "

All the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside of school.” ?

Braslavsky, 2003 states that curriculum is an agreement amongst communities, educational professionals, and the State on what learners should take on during specific periods of their lives. Furthermore, the curriculum defines “why, what, when, where, how, and with whom to learn Some cumulative definition are as follows: ? Outlines the skills, performances, attitudes, and values pupils are expected to learn from schooling. It includes statements of desired pupil outcomes, descriptions of materials, and the planned sequence that will be used to help pupils attain the outcomes. ? The total learning experience provided by a school. It includes the content of courses (the syllabus), the methods employed (strategies), and other aspects, like norms and values, which relate to the way the school is organized.

12 ? The aggregate of courses of study given in a learning environment. The courses are arranged in a sequence to make learning a subject easier. In schools, a curriculum spans several grades. ? Curriculum can refer to the entire program provided by a classroom, school, district, state, or country. A classroom is assigned sections of the curriculum as defined by the school. ? Curriculum is such “permanent” subjects as grammar, reading, logic, rhetoric, mathematics, and the greatest books of the Western world that best embody essential knowledge. ? Curriculum is those subjects that are most useful for living in contemporary society. ? Curriculum is all planned learning for which the school is responsible. ? Curriculum is all the experiences learners have under the guidance of the school. ? Curriculum is the totality of learning experiences provided to students so that they can attain general skills and knowledge at a variety of learning sites. ? Curriculum is what the student constructs from working with the computer and its various networks, such as the Internet. ? Curriculum is the questioning of authority and the searching for complex views of human situations. ? Curriculum is all the experiences that learners have in the course of living. 1.3.1-Procedure of Curriculum ? Step 1: Diagnosis of needs Example: Diagnosis of the hearing impaired child about the language potential skill. ? Step 2: Formulation of objectives Example:Set goals for the development of language potential skill. ? Step 3: Selection of content

13 Example: After acquiring the language, he/she will be able to writes psychomotor /hand skills and express the idea about the language with the help of Cognitive / head-knowledge. ? Step 4: Organization of content Example:Language should be represented as per Chronological order, Maintain content sequence, Causes and effect and Structural logic. ? Step 5: Selection of learning experiences Example:The language learnt in the class rooms and it has to be carried forward, transferred and enhanced outside the classroom situation too. ? Step 6: Organization of learning experiences Example:Teacher can plan activities which are of the child’s interest and should match with the current trends like taking about the picture, different activities, etc. ?

Step 7: Determination of what to evaluate and of the ways and means of doing it.

Example:Teacher should maintain teaching language with the hearing impaired children to use the strategies like modeling, correction and speech teaching. 1.3.2-Types of curriculum

Anything and everything that teaches a lesson, planned or otherwise.

Humans are born learning thus the learned curriculum actually encompasses a combination

of all of the following the hidden, null, written, political and societal etc. Since students learn all the time through exposure and modeled behaviors this means that they learn important social and emotional lessons from everyone who inhabits a school from the staff, the secretary, peers as well as from the department, conduct and attitudes expressed and modeled by their teachers.

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The following represent the many different types of curricula used in schools today: Type of Curriculum Definition It is simply that which is written as part of formal instruction of schooling experience. It may refer to a curriculum document, texts, films, and supportive teaching materials that are overtly chosen to support the intentional instructional agenda of a school.

Thus, the written curriculum is usually confined to those written understandings and directions formally designated and reviewed by administrators, curriculum directors and teachers, often collectively. As defined by Cortes (1981). Cortes defines this curriculum

is a

massive, ongoing, informal curriculum of family, peer groups, neighbourhoods, churches organizations, occupations, mass media and other socializing forces that “educate” all of us throughout our lives.

This type of curricula can now be expanded to include the powerful effects of social media.

That which is implied by the very structure and nature of schools, much of what revolves around daily or established routines. Longstreet and Shane (1993) offer a commonly accepted definition for this term the "hidden curriculum," which refers to the kinds of learning children derive from the very nature and organizational design of the public school, as well as from the behaviours and attitudes of teachers and administrators. Examples of the hidden curriculum might include the messages and lessons derived from the mere organization of schools the emphasis on: sequential room arrangements, timed segments of formal instruction,

disciplined messages where concentration equates to student behaviours were they are sitting up straight and are continually quiet, students getting in and standing in line silently, students quietly raising their hands to be called on the endless competition for grades and so on. The hidden curriculum 1.

Written Curriculum 2. Social Curriculum 3.

The hidden or covert curriculum

15 may include both positive and negative messages depending on the models provided and the perspectives of the learner or the observer. That which we do not teach, thus giving students

the

message that these elements are not important in their educational experiences or in our society. Eisner offers some major points as he concludes his discussion of the null curriculum.

Eisner (1985, 1994) first described and defined aspects of this curriculum. He states that something of a paradox involved in writing about a curriculum that does not exist.

From Eisner's perspective the null curriculum is simply that which is not taught in schools. Somehow, somewhere, some people are empowered to make conscious decisions as to what is to be included and what is to be excluded from the written curriculum. Since it is physically impossible to teach everything in schools, many topics and subject areas must be intentionally excluded from the written curriculum.

But Eisner's position on

the "null curriculum" is that when certain subjects or topics are left out of the overt curriculum school personnel are sending messages to students that certain content and processes are not important enough to study. Unfortunately, without some level of awareness that there is also a well-defined implicit agenda in schools, school personnel send this same type of message via the hidden curriculum.

These are important to consider when making choices. We teach about wars but not peace, we teach about certain select cultures and histories but not about others. Both our choices and our omissions send messages to students. The messages prevalent in and through

exposure to any type of media. These components and messages play a major part in the enculturation of students into the predominant meta-culture or in acculturating student

into narrower or generational sub-cultures. What is taught, or emphasized at home, or those experiences that are part of a family's experiences, or related experiences sanctioned by the family. This type of curriculum may be received in the different

context of religious expression, lessons on values, ethics or morals, 4.

The null curriculum 5. Phantom curriculum 6. Concomitant curriculum

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moulded behaviours or social experiences based on the family's preferences. Elements from the rhetorical curriculum are comprised from ideas offered by policymakers, school

officials, administrators, or politicians. This curriculum may also come from those professionals involved in concept formation and content changes or from those educational

initiatives resulting from decisions based on national and state reports, public speeches

or from texts critiquing outdated educational practices. The rhetorical curriculum may also come from the publicized works offering updates in pedagogical knowledge. The formal curriculum (written or overt) comprises those things in textbooks, and content and concepts in the district curriculum guides. However, those "formal" elements are frequently not taught. The curriculum-in-use is the actual curriculum that is delivered and presented by each teacher. Those things that

students actually take out of classrooms those concepts and content that are truly learned and remembered.

Processes, content and

knowledge combined with the experiences and realities of the learner to create new knowledge. While educators should be aware of this curriculum, they have little control over the internal curriculum since it is unique to each student.

Educators can explore this curricula by using instructional assessments like "exit slips," reflective exercises, or debriefing discussions to see what students really remember from a lesson. It is often very enlightening and surprising to find out what has meaning for learners and what does not.

Those lessons learned through searching the Internet for information, or through using e-forms of communication. This type of curriculum may be either formal or informal, and inherent lessons may be overt or covert, good or bad, correct or incorrect depending on

one's' 7. Rhetorical curriculum 8. Curriculum- in-use 9. Received curriculum 10. The internal curriculum 11. The electronic curriculum

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views. Students who use the Internet on a regular basis, both for recreational purposes (as in blogs, wikis,

chatrooms, list serves, through instant messenger, on-line conversations, or through personal e-mails and sites like Twitter, Facebook, or Youtube) and for personal online research and information gathering

are bombarded with all types of media and messages. Much of this information may be factually correct, informative, or even entertaining or inspirational. But

there is also a great deal of other e-information that

may be very incorrect, dated, passé, biased, perverse, or even manipulative. The implications

of the electronic curriculum

for educational practices are that part of the overt curriculum needs to include lessons on how to be wise consumers of information, how to critically appraise the accuracy and correctness of e-information, as well as

how to determine

the reliability of electronic sources. Also, students need to learn how to be artfully discerning about the usefulness and appropriateness of certain types of information. Like other forms of social interaction, students need to know that there are inherent lessons to be learned about appropriate and acceptable "netiquette" and online behaviors, to include the differences between "fair and

legal usage," vs. plagiarism and information piracy. In learner centered curriculum there is a link between courses and children psychology. It is according to the interest and tendency of children. It facilitates the mind of children because it fulfills their psychological and mental requirements. In 18th century "Rolso" highlight the importance of individual needs and interest of students. After "Rolso", it was "Pestalozzi" and "John Davi" who further enhanced the excellence of the concept. To know about this concept meaning that interest of student and to fulfill their needs was developed as the central part of the course by John Davi. More and more practical activities included so that children become able to take part with their own choice. Active Learning is in short, anything that students do in a classroom other than merely passively listening to an instructor's lecture. This 12. Learner Centered Curriculum 13. Activity Based Curriculum

18 includes everything from listening practices which help the students to absorb what they hear, to short writing exercises in which students react to lecture material, to complex group exercises in which students apply course material to "real life" situations and/or to new problems. According to Tanner and Tanner, "Activity curriculum is an attempt to treat learning as an active process. Activity curriculum discards the boundaries and the curriculum was centered largely on areas of child interest. The objective of curriculum was child growth through experience. According to Beans, "The major premise of activity movements was that learner ought to be active rather than passive participants in learning". ? Components of good active learning: ? A definite beginning and ending ? A clear purpose or objective ? Contain complete and understandable directions ? A feedback mechanism ? Include a description of the technology or tool being used in the exercise. Integrated curriculum is a learning theory describing a movement toward integrated lessons helping students makes connections across curriculum. The approach should be viewed as a tool that can help educate students and engage them in the learning process. Integrated curriculum is basically adding another element to existing materials or activities. What usually ends up happening is the child adds that element to their play or exploration and that stimulates more curiosity and possibilities, which exercises their thinking skills. According to Beane, 1995, "Educators seem especially interested in the development and use of curriculum integration as a means of increasing student interest and student knowledge". Whenever possible, teacher work to integrate many subject areas under a common theme when teaching. For example, the second grade unit about insects in science may include reading "Going to be a butterfly" for reading, and graphing students' favorite insects for math. Instead of seeing learning as separate subjects unrelated to each other, children gain a deeper 14. Integrated Curriculum

19 understanding of overall knowledge and how it all relates. Teachers of different subjects within an existing curriculum can determine collectively the extent to which other domains are addressed already in their teaching and learning programs. For example: Thinking, Interpersonal Learning, English, History etc. 'Core' refers to the 'heart' of experiences every learner must go through. Fundamental knowledge that all students are required to learn in school. A core curriculum is a curriculum or course of study which is deemed central and usually made mandatory for all students of a school or school system. This is not an independent type of curriculum. It refers to the area of study, courses or subjects that students must understand in order to be recognized as educated in the area. The learner has no option but to study the prescribed course or subjects. Educators defines of Core Curriculum "A core curriculum is a pre-determined body of skills, knowledge, and abilities are taught to all students". As in mathematics (in Arithmetic), all pupils need to acquire proficiency in addition, subtraction, multiplication, and division. It contains core or exact precise subject matter usable in society. The messages of hidden curriculum may support or contradict each other as well as the written curriculum. For example, while school social studies curriculum typically emphasizes and even celebrates democratic political systems and principles, such as one person- one vote, majority rule and minority rights, equality before the law and due process, these principles are not always practiced in public school classrooms and corridors. The collateral curriculum is designed intentionally to afford students the opportunity to learn empowering concepts, principles, and ideas peripheral or outside the subject being taught. Though the teacher intends learning outcomes for the collateral curriculum, the knowledge is not specified in the instructional objectives nor is it assessed. In this sense, the collateral curriculum is a planned hidden curriculum. 15. Core Curriculum 16. Hidden Curriculum 17. Collateral Curriculum

20 1.3.3-Models of curriculum To understand curriculum models we need to take a step back and talk about curriculum itself. Curriculum can be defined as a plan used in education that directs teacher instruction. Many schools use a tool designed to help teachers pace their lessons called a curriculum guide. But curriculum and a curriculum guide don't just come out of thin air. Time and energy goes into the creation of these documents. This process is known as curriculum development. It is clear that curriculum is the stuff teachers teach and they use a curriculum guide to help them decide what, when and how to teach it so both the guide and the stuff come from people who have developed or made up the material. All of these things are based on a curriculum model. A model is really the first step in curriculum development. A curriculum model determines what type of curriculum used and itemphasis educational philosophy, approach to teaching and methodology. That's why curriculum model is a format for curriculum design developed to meet unique needs, contexts and purposes. In order to address these goals, curriculum developers design, reconfigure or rearrange one or more key curriculum components and educators to be familiar with the models used in their schools. Key concept of curriculum components models The focus on concept of curriculum components and models to looks at a subject or a student and centres instruction on them.

The approach component is

a traditional or modern method and looks at the type of instruction that will be used.

The process structure looks at assessment formative or accumulative. Finally structure components focus on the system of review, determining how the curriculum will come up for revision. Product and Process Models: Curriculum models can be broken down into two very broad models. These are product model and the process model. ? Product Model - This model is focused on results, like grades or reaching an objective. The majority of the weight is focused on the finished product than what is happening in the learning process. ? Process Model - Conversely, this process model focuses on how things happen in the learning and is more open-ended. Curriculum focusing on the process model 21 emphasizes how students are learning, what their thinking is and how it will impact future learning. 1.3.4-Popular Curriculum Models 1.3.4.1-The Tyler Model- One of the best known curriculum models is The Tyler Model introduced in 1949 by Ralph Tyler in his classic book Basic Principles of Curriculum and Instruction in which he asked 4 questions: These are: ?

What educational purposes should the school seek to attain? ? What educational experiences can be provided that is likely to attain these purposes? ? How can these educational experiences be effectively organised? ? How can we determine whether these purposes are being attained? 1.3.4.2-

The Taba Model- Another approach to curriculum development was proposed by Hilda Taba in her book Curriculum Development. Theory and Practice published in 1962. She argued that there was a definite order in creating a curriculum. She believed that teachers,

who teach the curriculum, should participate in developing it which led to the model being called the grass-roots approach. She noted 7 major steps to her grass-roots model in which teachers would have major input. So seven major steps are: a. Diagnosis of need:

The teacher who is also the curriculum designer starts the process by identifying the needs of students for whom the curriculum is planned. For example, the majority of students are unable to think critically.

b. Formulation of objectives:

After

the teacher has identified needs that require attention he or she specifies

objectives to be accomplished.

c. Selection of content: The objectives selected or created suggest the subject matter or content of the curriculum.

Not only should objectives and content match, but also the validity and significance of the content chosen needs to be determined. i.e. the relevancy and significance of content. d. Organisation of content:

A teacher cannot just select content but must organise it in some type of sequence taking into consideration the maturity of learners their academic achievement and their interests.

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e. Selection of learning experiences:

Content must be presented to students and students must be engaged with the content. At this point, the teacher selects instructional methods that will involve the students with the content. f. Organisation of learning activities: Just as content must be sequenced and organised, so must the learning activities. Often, the sequence of the learning activities is determined by the content. But the teacher needs to keep in mind the particular students whom he or she will be teaching.

g. Evaluation and means of

evaluation: The curriculum planner must determine just what objectives have been accomplished.

Evaluation procedures

need to be designed to evaluate learning outcomes. 1.3.4.3-The

Saylor and Alexander Model Galen Saylor and William Alexander (1974) viewed curriculum development as consisting of four steps. According to them,

curriculum is "a plan for providing sets of learning opportunities to achieve broad educational goals and related

specific objectives for an identifiable population served by a single school centre".

Four steps are I. Goals, Objectives and Domains: The model indicates that

curriculum planners begin by specifying the major educational goals and specific objectives they wish to accomplish. Each major goal represents a curriculum domain and they advocate 4 major goals or domains: personal development, human relations, continued learningskills and specialisation. The goals, objectives and domains are selected after careful consideration of several external variables such as findings from educational research, accreditation standards, views of community groups and others. II. Curriculum Designing: Once the goals, objectives and domains have been established, planners move into the process of designing the curriculum. Here decision is made on the appropriate learning opportunities for each domain and how and when these opportunities will be provided.

III. Curriculum Implementation: After the designs have been created the next step is implementation of the designs by teachers.

Based on the design of the curriculum plan teachers would specify instructional objectives and then select

relevant teaching methods and strategies to achieve the desired learning outcomes among students

23 in the classroom. IV. Evaluation: Finally, curriculum planner and teachers engage in evaluation. The model proposed that evaluation should be comprehensive using a variety of evaluation techniques. Evaluation should involve the total educational programme of the school and the curriculum plan, the effectiveness of instruction and the achievement of students. Through the evaluation process, curriculum planner and developers can determine whether or not the goals of the school and the objectives of instruction have been met. 1.3.5-Curriculum Models Frameworks There many curriculum model frame work are there. These are 1. Specific model 2. The Developmental Model 3. The Functional Model 4. The Ecological Approach Model 5. Subject/Teacher Centered Design 1. Specific model: Five broad categories can be used to define the focus of these models. These are: ? Subject or Discipline-Centered - In this framework, the curriculum is organized around subjects, like math or science. ? Integrated - Just like it sounds, this framework pulls many subjects together. We see this model used in problem based learning and experiential learning. ? Spiral - In this framework, the content is presented several times across the span of the school year. Seen mostly in math, using this design allows students to be introduced, and then revisit material, often. ? Inquiry or Problem Based - Not to be confused with integrated models, this curriculum focuses on a central problem or question. In this frame all curriculum is problem based, while in integrated it may or may not be. ? Experiential - Using this framework allows students to participate in real-life ways with their work, experimenting with hypothesis, working through problems and finding solutions.

24 2. The Developmental Model:

This model proposes that development of typical and atypical children progresses in a predictable sequence and that this sequence should be taught to students with disabilities. ? Weaknesses: ? First, time can be wasted working on skills which may never be mastered. ? Second, not all behaviors in the sequence are necessary for independent functioning nor are they age appropriate as the child grows well beyond the age that development skills are typically mastered. ? Finally, the child is viewed as "developmentally young". Consequently, the activities and materials used for intervention continue to be less than age appropriate which leads to negative perceptions and low expectations for children with severe disabilities. 3.

The

Functional Model:

The philosophy of this approach is that students with severe disabilities need to acquire age appropriate and functional skills (

i.e., skills necessary for functioning independently). ? Advantage & weakness: ?

It reflects higher expectations for students with severe disabilities and promotes opportunities to acquire age-appropriate skills. ? That there are not established criteria for determining what is functional and relevant for an individual student. 4.

The

Ecological Approach Model: The ecological approach reflects characteristics of both the individual student and the environments in which his or her participation is desired. The planning team using the ecological approach to curriculum development devises an individual curriculum which addresses the skills, activities, and environments most relevant to the student. The curriculum content is ever changing as the needs of the student change. ? Advantages ? It promotes teaching skills that are age-appropriate and relevant to the student's daily life, while it respects the need to teach skills in order of progressive refinement and complexity. ? It encourages the use of adaptations that accommodate the disability or simplify task demands.

25 The ecological approach also tends to unify team member efforts because the environments and activities that are identified as priorities for each student provide a natural context for integrating related services.

5. Subject/Teacher Centered Design: The subject centered curriculum is based on subject. All knowledge is transferred to student through the subjects. Subject matter taught should reflect basic areas that are essentials and agreed upon content for learner attainment. 1 Cognitive 2 Emotional 3 Environmental influences and 4 Experiences for acquiring, enhancing, or making changes in learner's a knowledge b skills c values d world views Objective- ? To transfer cultural heritage ? To represent knowledge ? To impart information

26 Limitation of subject centered curriculum- ? Ignores interest of students ? No process of insight or thinking ? Rote memory ? Neglects social problems and demands ? Passive learning

1.4 Approaches and Steps for Curriculum Designing Curriculum is a comprehensive plan for an educational training program course to offer new improved manpower to fulfill the rising needs of a dynamic society. The process of continuous course improvement, common to all education and training institutions, provides the framework for the approach to curriculum and course development proposed here.

1.4.1. Orientations to Curriculum Curriculum orientation is a personal belief about the purpose of education such as curriculum intent, content, organization, teaching methods, learning activities and instructional assessment of a curriculum (Cheung, 2000). Eisner and Vallance (1974) have proposed classification scheme consisting of five curriculum orientations these are academic rationalism, cognitive processes, social reconstruction-relevance, self-actualization and curriculum as technology and these five curriculum orientation relation to about the Child-centered, Society-centered, Knowledge-centered, Eclectic.

27 1.4.2-Steps to Curriculum Development There are six steps approaches are there. These are: 1. Problem Identification ? Identify and characterize the healthcare problem „ ? Know what we are talking about 2 Needs to Assessment of Learners ? Know who our target audience is and what our target audience needs 3 Goals and Objectives „ ? Identify the end toward which an effort is directed ? Goals ? Objectives – specific and measurable ask. ? Direct the choice of curricular content „ ? Clearly communicate the purpose „ ? Suggest what learning methods will be most effective 4 Educational Strategies ? Identify the educational strategies by which the curricular objectives will be achieved. Involve both content and method. „ ? Provide the means by which curricular objectives are achieved 5 Implementation ? Identify sufficient resources, support and others to successfully implement the curriculum. 6 Evaluation and Feedback ? Describe the plan to evaluate the effectiveness of the curriculum „ ? Provides information about continuous quality improvement

28 1.4.3.-Approaches to Curriculum Issue Who determines curriculum? What does iknowledge look like? What are the underlying assumptions? What might this look like in action? How is learning assessed? Traditional Approach ? Curriculum developer (Publisher, state, institution) sets goals and chooses learning experiences, evaluates, plans and proceses curriculum ? Appears neutral and equitable in its availability ? Exists 'out there,' can be organized and transmitted ? Is observable and measurable ? Pre-determined goals ? Learning happens in a linear, step-by- step fashion ? Expert knowledge is important ? A classroom with lesson plans, homework, grades possibly Skills-based/ ? sequenced text- books or workbook with pre-determined learning goals ? Objective, observable 'scientific' means ? Can provide comparative scores Learner-Driven Approach ? Students articulate learning goals that spring from their real-world roles. ? Students help plan curriculum ? Created through the interaction of student and text ? Builds on what learners already know ? Relevant to students real-life context ? Learning happens in social contexts ? Instruction is transparent and based on purposes students determine ? Learners actively build on knowledge and experience ? A political on the surface ? Drawn from adults' lives in their everyday contexts ? Performance of the student's contextualized goal ? Continuing, involving metacognitive strategies Critical Approach ? Teacher leads the class white following the lead of learners ? Students, rather than 'outsiders', become experts ? Not fixed-dependent upon interaction among students, text, and teacher ? Autobiographic-depends on the politics of identity brought to learning ? Complex interaction between text, the teacher, and what is taught ? knowledge is created, rather than taken in ? Education is political ? Language and power are connected ? Abandons technician mentality ? Addresses social and community issues of importance ? Curriculum not set in advance : emerges from action and interaction of the participants (Doll, 1993) ? Portfolios, self-assessment instruments Measures of social and personal change ? Levels of critical consciousness reached ? External performance levels do not apply

29 1.4.4- Curriculum adaptation in for the Children with Hearing Impaired

Curricular adaptations are mostly suggested for hearing impaired children who need non audio experience in adaptation of learning materials for the use of children with hearing disabilities.

The teacher of the hearing impaired had to make special and planned efforts to provide opportunities in following the criteria repeatedly. 1. Listening with understanding especially in auditory training. 2.

Interpreting the written symbol with picture (Stage by stage it has to be developing based standard). 3. Try to develop their reasoning capacity through experience. 4. To provide realistic experience for concept building. 5. Give opportunities for their expressive language (communicating by speaking or by writing). 6. Try to teach the concept in an enjoyable and interesting manner. 7. Need sustained efforts for a long period of time to get response, because the results will not be seen immediately. 8. Simply the actual lesson into small, small task and directed activity based. 9. Find out the meaning for the complex word in the particular lesson. 10. Try to avoid the complex sentence while speaking and writing. 11. Try to avoid the different meaning for same word. 12. Teach the task with appropriate aid. 13. To use visual aids as much as possible. 14. To avoid more speaking during taking class. 15. Speak clearly with correct pronunciation with appropriate sound level. 16. Don't insist in completing the task without comprehension.

30 1.4.5-

Curriculum design for Children with Hearing Impaired Children The main issue of Curriculum design for Children with Hearing Impaired Children is academic issues Academic issues Most of the hearing impaired students will suffer from low self-esteem or a greater than normal worry about their ability to cope with higher education. So you can monitor how well you are meeting their needs. Not all hearing impaired students have the same degree of hearing impairment or loss, nor have they the same technical and personal coping strategies. Some were born hearing impaired while others became hearing impaired after they had learned to speak. This will affect how they communicate with the hearing world. Avoid stereotyping hearing impaired students; explore the needs of each individual, undergraduate or postgraduate, full time or part time. For hearing impaired students who rely on signing, British Sign Language is their first language and English is their second. To them, English is a foreign language with a very different structure and grammar as well as vocabulary. The sign languages used in other countries are not mutually comprehensible with BSL; they are different languages in their own right. Sign Supported English is a half way house – English supported by some signs from BSL. A few hearing impaired students will find the use of English, written or spoken, very difficult. Some people, profoundly deaf from birth, may speak in a way that is difficult for hearing people to understand, though you can quickly 'tune in'. Some hearing impaired students may need an interpreter to translate their signing into spoken English, though there is a shortage of these highly skilled people. The interpreter translates what the tutor says into BSL; and the student's questions, expressed in BSL, are translated into English for the tutor to respond to. The possibilities opened up by speech recognition software could be very helpful for hearing impaired students since it has the potential to produce an accurate, real-time, accurately digital record on a laptop of all that was said in class. However, the reliability of such software is not yet as high as one would wish, especially when there are several speakers with different accents and articulation recorded in far from ideal conditions. Digital

31 hearing aids can out-perform analogue ones by boosting the signal-to-noise ratio. The lecturer wears a radio microphone which transmits a signal to the radio receiver worn by the student. This can work well in a lecture where most of the talking is done by the lecturer. In a seminar a radio microphone could be passed around among the speakers, which helpfully limits who is speaking to one at a time. So there are many issues in related to academic issue. These are: a. Information and informed choices b. Course induction c. Room requirements d. Techniques e. Seminars and tutorials f. Practical g. Web-based learning h. Virtual learning environments a. Information and informed choices The most successful students are arguably the ones who start by making wise and well-informed choices amongst potential courses. Like all other students, those who are hearing impaired need full information on the content and assessment of modules so they can check courses' suitability and how they will fit with their career path. It is even more important for students with additional needs, such as d/Deafness, to make the best choice so that difficulties at a later stage are minimized. Of course, hearing impaired students' choices will also be affected by all the usual criteria students use, not just by issues of hearing. In order to make these choices students will need: ? Chances to meet admissions staff at open days.

32 ? Opportunities to discuss their individual needs with a tutor to sort out issues in advance. ? Details of the desired learning outcomes and the teaching and assessment methods they are likely to encounter on a course and details of the fieldwork in particularly in terms of communication. ? Information in advance, so it can be studied carefully. ? To know something about the learning environment and support facilities. ? Different routes to this information – textual in handbooks and on websites, visual, diagrammatic and photographic. ? Clarity of language is paramount since d/Deaf users of BSL may have English as their second language. ? Tried and tested methods of information presentation (test that your use of language is accessible to, say, a non-native speaker of English). ? Access to advice (in person with staff; to Frequently Asked Questions sections of web pages; to students who have done the course before; to reports of fieldwork activities and to photographic records). ? Information that is consistent between departmental and institutional material and between various support units. ? Assurance that a degree of flexibility is built into the design of the curriculum. b. Course induction Institutions and individual academics make many assumptions about student knowledge and experience. Yet many students may not be familiar or at ease with the conventions of higher education and spend considerable time learning about university norms. This will be particularly true of students from backgrounds where going to university is not the norm.

33 What exactly is a lecture? What do you do in a seminar? What does fieldwork at university entail? For d/Deaf and hearing impaired students it is much more difficult to get these cues since much is picked up through overheard remarks and chance comments – precisely what hearing impaired students have difficulty with. It therefore becomes the responsibility of the lecturer to find ways of helping hearing impaired students to access this information. A handbook and website will help – with some basic rules and principles of university education, and descriptions of the range of courses. It could also provide some informal reports of previous students' experiences. Do remember here the part-time students (undergraduate and postgraduate) who need the same levels of course information, induction and one-to-one discussion of needs and coping adjustments, but may not be as readily available for these to take place as the full-time students. Their needs must also be met. c. Room requirements Check the room where you will be lecturing to hearing impaired students. ? Has it got an induction loop for students with hearing aids? If not, could the lecture venue be altered to a room which does? ? Check the microphone is working correctly; remember to switch on the microphone and ensure the student is getting a clear signal. Try not to touch the microphone when in use. ? The room got power points for students with tape recorders or laptops (though from a health and safety viewpoint, batteries are preferable to avoid trailing wires). These power points near the centre of the room which is the optimal location for a student who wishes to lip-read the lecturer.

34 ? Is the room going to be overcrowded and is there background noise? Uses more microphone and several loudspeakers that will help the whole classes. ? Ensure lighting is adequate and correctly positioned for lip-readers and interpreters. d. Techniques: ? Be clear, well directed and follow a logical pattern so that the lecture is easy to follow, which will help all your students but particularly hearing impaired ones who will not be able to lip-read everything. ? It is impossible to lip-read (or watch an interpreter) and take notes at the same time. So it helps if you can provide information about the lecture and copies of the handouts and overheads in advance, before the lecture or on a website. ? Do not speak too quickly, shout or over-articulate (which distorts sound and lip patterns). ? Ensure your lips are visible and not covered with hands. ? Re-iterate key points, re-phrase information; a repeat question asked from the body of the class to make sure everybody hears the question. ? Don't move about the room; lecture to the students, so lip-readers can see your face. ? Resist the articulation to keep speaking when you turn away to write on the blackboard/whiteboard or read material from an OHP, slide or PowerPoint display. ? Turn off the OHP when not in use because the noise of the fan can affect hearing aids. ? If the lecture uses audio material (e.g. video or DVD or an audio recording), ensure you provide a transcript or that material is captioned or sub-titled. Tools for captioning computer-based video and multi-media material can be downloaded from.

35 ? If the lecture is long, remember that d/Deaf students find following a lecture very tire even with lip-reading. Their interpreter may also need breaks. ? Ensure that lecture notes and copies of OHPs or PowerPoint slides are available (as a handout or on a website) in advance of the lecture if possible, so the student can become aware of the material and its vocabulary. ? If students wish to tape-record lectures for later transcription, ensure they sit at the front and that there is a plug for their machine. Battery-powered machines are preferred to avoid the need for compact wires which can be a health and safety. e. Seminars and tutorials For the hearing impaired student, the main difference between a lecture and a seminar/ tutorial is the larger number of speakers, the more multidirectional nature of the teaching situation and the more varied the range of activities which can take place. Here are some practical things which can allow full participation in a seminar or tutorial. ? If possible, choose a room in a quiet location; reduce background noise and reducing echo. ? Think about the seating arrangements, e.g. put chairs into a semicircle so students who lip-read can see everyone's face. This is very difficult if the seminar is in a lecture theatre where the seating cannot be re-arranged. ? Allow only one individual to talk at a time. Only one person at a time can be lip-read and people to speak in sequence. Students could be asked to raise their hand before speaking, so the d/Deaf student knows where to look. ? Repeat or paraphrase the discussion. Tutors can often make student contributions clearer by summarizing comments on a flipchart or board. . ? Provide a briefing paper before the tutorial. This lets students prepare for the discussion and potentially increases their confidence. Prior notice of the topic and

36 main ideas provides the context for successful lip-reading and students who use an interpreter will need notice of any new terms. ? Have breaks if the tutorial is particularly long so students remain active participants. Lip-reading is tiring and if a BSL interpreter is used, s/he should have a break every hour. If an interpreter is needed for more than half a day, two should be employed in turns. ? For students with hearing aids, the use of a radio microphone will assist them in participating fully in the tutorial, particularly if there is external noise. However, if talking individually to other students, remember to switch off the microphone, otherwise your voice will be sent needlessly to the d/Deaf ones. ? Give hearing students time to relax and feel confident enough to speak in a group situation. ? Ensure guest speakers are informed about the needs of hearing impaired students in a tutorial or seminar. ? In some seminars or tutorials, students may have to give an oral presentation, and this can be a source of considerable anxiety. Hearing impaired students may be anxious about group participation or carrying out a presentation. They may be sensitive about how their voice sounds. Be sensitive and encourage the student to be honest about any issues, so that there is room for discussion and resolution of the problem. Discuss the use of an interpreter to translate the hearing impaired student's BSL. f. Practical Here are some useful ideas for effective practical classes with hearing impaired students. ? Use written information for any instructions and captions or a transcript if video material is used.

37 ? Distribute in advance a printed outline of the laboratory tasks so the student is prepared and can discuss with you any problems they think they may face. ? Provide an individual orientation to the laboratory including equipment and health and safety procedures. ? Always discuss procedures and any special safety issues before the experiment begins. ? Arrange and discuss evacuation plans for fire and other emergencies and ensure visual fire alarms. ? Alarm systems should be visual with flashing lights. In practice, expensive changes to equipment are seldom needed for deaf students. For example, they can feel a timer ringing if they hold it. ? Ensure that the hearing impaired students working partner is happy to be the ears for both of them but does not take over all the work. ? Text messages by mobile phone can be used for prompts or brief safety reminders. g. Web-based learning In general the web provides a very effective learning medium for the hearing impaired student because it is so visual. However, one area to watch is training in the use of the web. This will need to focus on instructions and support which can be read. It is impossible to lip-read a web trainer, operate a keyboard and mouse, and look at a PC screen all at the same time. Occasionally a website will have an audio clip or even audio streaming of say a speech, interview or radio station. This purely aural material will need interpreting for the hearing impaired student using a BSL signer or a note-taker or through a summary prepared by the tutor if possible provided in advance.

38 h. Virtual learning environments A Virtual Learning Environment (VLE) can be configured in various features. These are websites, email, video-conferencing and telephone support to tutors along with paper-based learning materials. The elements of a VLE create no particular problems for hearing impaired students specially the paper-based materials, emails and websites. So, hearing impaired student before they start within a VLE and talk through how they can use this style of delivery most effectively. 1.5-

Curricular Needs of children with hearing impairment in Scholastic Areas 1.5.1-Curricular Needs of Scholastic Areas

Education completes man. Students need quality education suitable for life. Perceiving the needs of the learners, appropriate changes are made in the curriculum, syllabus and textbook on a need basis. Currently changes have taken place in the evaluation system. The long-practised marking scheme has been done away with and grading system has been brought in its place. The students are assessed not only during examinations but all through the term. Evaluation is conducted through activities,

observation and group discussion. The evaluation is done under two parts namely scholastic and co-scholastic activities. Scholastic activities have been further classified into two parts viz. Formative and Summative Assessments. Students get knowledge of the subjects through scholastic activities. They get knowledge of the society. The scholastic area and achievement of students with hearing loss is one of the most important determinants of recipient's quality of life in schooling system. The scholastic achievement of students with hearing loss attending the mainstream schools and to compare their scholastic performance to their normal hearing peers. So scholastic performance in mainstream schools is a most important factor because it is all round development of the children with hearing impairment is the dynamic trend in the new educational system. The school has now emerged as a place where students acquire

39 various skills. Effective schools follow a holistic approach to education i.e. an integrated development stressing on physical, mental, moral and social aspects. A lot of innovations are going on in the field of education. It has become child "centred". A teacher inspires a child to know things himself through constructive activities. The main function of the teacher is to help children develop their talents, abilities and capabilities. This education system encourages a child to acquire more knowledge. A holistic approach to education at the elementary level is a must as it is the most important subsection of the whole education system. Such an approach will facilitate the total development of a child by providing the right atmosphere for learners to develop and enrich their talent. Building self- concept, self image, sense of enterprise and sportsmanship and so on should be part of the educational process. Therefore the curriculum is designed giving due emphasis on both scholastic and co-scholastic area.

1.5.2- Aims of Scholastic Activities ? Producing a generation of students who interact with their environment effectively. ? Developing the collective spirit and overcoming egoism. ? Developing desired behaviours, e.g., self-reliance, initiative, innovation, creativity, observation. ? Developing the ability to make informed decisions and the sense of responsibility. ? Training the students on political affairs, e.g., applying for student boards, participating in election and self-judgment. ? Getting used to planning for and implementing group work. ? Enjoying oneself through the gratification and the development of skills, interests and inclinations. ? Professional guidance and respect for manual work.

40 ? Participating in some aspects of school administration and solving some student and administrative. ? Positive citizenship.

1.5.3-The Importance of Scholastic Activities There are many important scholastic activities for children with hearing impairment. These are: ? Providing the students with the experience and skills that are necessary ? Enhancing the students' talents and abilities. ? Inculcating the collective spirit in the students and training them on collaborative work. ? Training the students on overcoming the problems by own self. ? Education the students with the ability to cope and respond to others.

1.5.4-Functions of Scholastic Activities: There are many functions of Scholastic Activities in children with hearing impairment. These are Psychological, Social, Educational, Achievement, Recreational, Remedial and Economical. Psychological: ? Activities develop to talents and the ability to adapt. ? Constitute a motive for learning self-confidence. Social: ? Activities help the students to establish intimate relationships with others and inculcate in them responsibility, cooperation respect for others opinions.

41 ? Activities involve work, which develops in them social skills and values. These skills and values are developed in the involve in the group work where they collaboratively and enthusiastically plan, set of goals. Educational: ? Provide concrete and direct experiences and entail interaction with the components which helps with the learning of knowledge and skills and the gratification of the motive to do new idea. ? Strengthen the motive to learn and enhance the students' scholastic achievement and encourage active role in learning, allow for personal experience and help the students to learn many skills. ? Help the students to discover and promote their abilities and to make possible self- learning, life-long learning and problem solving idea. Achievement: Scholastic activities concern with the educational experiences included education in order to help the students to develop the different dimensions of personality. Recreational: This function is represented in art programs, school trips, games, celebration and competitions and other co-curricular activities.

Remedial Scholastic activities help with the remedy of many psychological disorders such as introversion, disorders, etc.

42 Economical This function is represented in the students' making use of time in doing something useful, encouraging work and raising the level of performance.

1.5.5-Guidelines for addressing children with hearing impairment concerns while developing curriculum: When every child in the classroom including children with special needs are provided with an opportunity to learn maximum according to their learning potential, to make required adaptation in regular curriculum (learning content, learning approach, learning aids and evaluation), to apply all possible approaches, it is known as Curriculum adaptation. Curriculum adaptation is not a separate method for children with disabilities. It is a process of making necessary changes in learning content such as modification, substitution/ replacement, omission as a last resort and compensation etc. without changing the learning purpose. Keeping the children with disabilities in mind while adapting the curriculum, small changes in learning content, learning friendly environment, appropriate learning approach, adaptation in learning aid and

evaluation should be done. If the curriculum is planned in this way and applied like this for all children in the classrooms, then learning can be maximized for all children, including children with disabilities. While planning curriculum, attention must be given to the needs of any child with disability. Here learning purpose may be the same for all students, but the learning experiences may vary from child to child. The following guidelines must be kept in mind while developing an inclusive curriculum for all children.

The curriculum must:

- Include child centred pedagogy keeping in mind the child's psychological development, interests and specific learning needs
- Ensure equal access in every possible manner (physical, attitudinal, academic and social) to maximize learning

43 •

Facilitate learning in an inclusive learning environment with accessible material, positive attitude and relevant/adaptive teaching strategies •

Incorporate required adaptation in curriculum (learning content, learning approach, learning aids and evaluation) to address and accommodate individualised learning styles, •

Prescribe for use of all available educational / assistive technologies to ensure equal participation of and effective learning in all children specifically for children with special needs • Include all children with and without special needs by providing differential opportunities to demonstrate learnt skills according to their learning abilities, •

Include components of life skills through transitional stages working towards independent living • Include locally available conditions/ opportunities/ situations to develop pre-vocational and vocational competencies • Integrate work pedagogy in education and include broad-based work experiences taking care of the needs of children with special needs • Ensure participation of children with special needs

in play, games, social and cultural activities to improve the physical and mental health by developing appropriate adaptations • Provide flexibility in school and class time tables to address individual needs of children • Create opportunities for facilitated social interaction • Construct knowledge by connecting new ideas to existing ideas on the basis of materials/ activities.

44 1.5.7-

Curricular Inputs children with hearing impairment in Scholastic Areas Education Evaluation is the of characterizing and appraising some aspect/s of an educational process. There are two common purposes in evaluation which are, at times, in conflict with one another. Educational institutions usually require evaluation data to demonstrate effectiveness to funders and other stakeholders and to provide a measure of performance for marketing purposes. Educational evaluation is also a professional activity that individual educators need to undertake if they intend to continuously review and enhance the learning they are SL NO 1 2 3 4 5 6 7 Key learning areas within the curriculum guidelines for special educational needs Communication and language Mathematics (including mathematical activities) Social, environmental and scientific geography, science (understanding and relating to the environment) Social, personal and health education Physical education (including functional movement) Arts education (visual arts, music, drama) Religious and moral education Curricular areas in Schools Language Mathematics Social, environmental, scientific education, history, geography science Social, personal and health education. Physical education Arts education (visual arts, music, drama) Religious and moral education Curricular areas in Subjects. Language and literature Mathematical studies Science and technology, Social, political and environmental education Guidance, counselling and oral care Physical education Arts education Religious and moral education 1.5.6. Scholastic key issues of learning areas

45 endeavouring to facilitate. The evolution are Formative Evaluation and Summative Evaluation ? Formative Evaluation: This evaluation accumulates information to enhance methods and optimize education while the education is in progress. ? Summative Evaluation: This final, total evaluation, which takes place after fixing and repairing by Formative Evaluation, gives a diversified decision about a completed education process or the total result or effectiveness of programme. Assessment in education is the process of gathering, interpreting, recording, and using information about pupils' responses to an educational task. (Harlen, Gipps, Broadfoot, Nuttal, 1992). In Curricular Inputs children with hearing impairment in Scholastic Areas assessment is two types. These are: ? Areas of assessment ? Dimensions Areas of assessment The assessment is based on Revised Bloom's Taxonomy's on educational objective. The figure below depicts the tradition Bloom's Taxonomy's and Revised Bloom's Taxonomy's.

46 Dimensions There are five steps of dimensions of Scholastic activities. These are: ? The cultural dimension ? The social dimension ? The artistic dimension ? The Scientific Dimension ? The Sporting Dimension ? The Cultural Dimension: This dimension includes the programs of the groups whose activities development of knowledge, experience, awareness, and literary production in an organized framework. These groups are the group of the school Change in Terms

The names of six major categories were changed from noun to verb forms. As the taxonomy reflects different forms of thinking and thinking is an active process verbs were used rather than nouns. The subcategories of the six major categories were also replaced by verbs and some subcategories were reorganised. The knowledge category was renamed. Knowledge is an outcome or product of thinking not a form of thinking per se. Consequently, the word knowledge was inappropriate to describe a category of thinking and was replaced with the word remembering instead. Comprehension and synthesis were retitled to understanding and creating respectively, in order to better reflect the nature of the thinking defined in each category.

<http://rite.ed.qut.edu.au/oz-teachernet/training/bloom.html>

47 press, the group of the library, the group of the activities language (handwriting, verse writing, story writing, reading poetry, acting and school broadcasting and religious activities. ? The Social Dimension: This dimension includes the programs of the groups whose activities development of social skills, values and attitudes. Examples of these groups are the group of the people, the group of school trips, the group of cooperation, the group of school exhibitions etc. ? The Artistic Dimension: This dimension includes the programs of the groups whose activities to practice activities like playing music, singing and drawing. It includes the groups of music, drawing, products and theatrical work. ? The Scientific Dimension: It includes the programs of the groups whose activities address research. An example of these groups are the science club (this includes various groups) the agriculture scientific projects group, the research group, and audio-visual presentations group. ? The Sporting Dimension: This encompasses the groups whose activities address physical skills. Like are ball teams (football, basketball and handball), swimming teams and scouts. All types of activities serve the same purposes. Besides, the same fulfilled through more than one activity type. A theatrical performance, for instance, can involve acting group, the electricity group, etc. That the group and the practice of the various groups are meaning that the aim is different. All the activities interact whether in aims and/or practices. Categorization only for the purposes of planning, implementation, follow-up and organization. An activity achieves the desired aim if given positive elements are secured. These elements or components the group, the activity supervisor and the organization of the group work: 1.5.8- Basic criteria of scholastic areas in children with hearing impairment: 1.

Cognitive validity requires that the content, process, language and pedagogical practices of the curriculum are age appropriate, and within the cognitive reach of the child.

48 2. Content validity requires that the curriculum must convey significant and correct scientific information.

Simplification of content, which

is necessary for adapting

the curriculum to the cognitive level of the learner, must not be so trivialised as to convey something basically flawed and/or meaningless. 3. Process validity requires that the curriculum should engage the learner in acquiring the methods and processes that lead to

the

generation and validation of scientific knowledge and nurture the natural curiosity and creativity of the child. Process validity is an important criterion since it helps the student in 'learning to learn' science. 4. Historical validity requires that the

science curriculum be informed by a historical perspective, enabling the learner to appreciate how the concepts of science evolve over time. It also helps the learner to view science as a social enterprise and to understand how social factors influence the development of science. 5. Environmental validity requires that science be placed in the wider context of the learner's environment, local and global, enabling him/her to appreciate the issues at the interface of science, technology and society, and equipping him/her with the requisite knowledge and skills to enter the world of work. 6. Ethical validity requires that the curriculum promote the values of honesty, objectivity,

cooperation, and freedom from fear and prejudice, and inculcate

in the learner a concern for life and preservation of

the environment. 1.5.9- Scholastic achievement of students with Hearing Loss. ? Language and speech- The ability to learn language and speech is the highest development of children with hearing impaired. ? Intellectual ability- Process of thinking of deaf children and normal peers are found to be similar also cognitive abilities and develop verbal intelligence.

49 ?

Academic Performance- Hearing impaired children are frequently handicapped in various degree of hearing loss and it affects

educational

performance and particularly reading which relies heavily upon language skill. So

after scholastic achievement hearing loss student can develop the academic performance. ? Adjustment of social- Our social inter action depends upon communications. So deaf children have communication problems. That's why it should have problem of social inter action. Such children live in a world of isolation and form a group of their own, an association of the deaf for their common interest and interaction. So

after scholastic achievement student with hearing loss can develop on adjustment in

social inter-action. ? Behavioral problem- Deaf learners feel invariably inferior and helpless in adapting to circumstances that require verbal communication. So regard non-verbal communication absence of verbal they have poor self poor concept which damages the development of personality but with the help of mainstream education which is scholastic achievement they develop the personality and reduced

the problem behaviour is reduce regard various social academic aspect. ? Socially handicapped – Learners with hearing loss cannot adjust with society because they suffer from communication difficulty and fail to understand what normal people say. But after scholastic achievement with the help of mainstream they develop communication skill and mixing the oral social

which is social of communication and reduced of socially

handicapped. ? Problem in personal and social development- Language becomes a barrier for deaf learner for purpose of communication with others. So this affects the socialization process and plays a vital role in the personal and social development of hearing loss learner. So with the help of scholastic achievement in mainstream in regular class room it develops the normal peer acceptance and reduces the problem in personal.

50 ? Personality problem- Hearing difficulty may create personality problem. A deaf learner becomes more frustrated as he/she tries to reach the level of the normal. Hence a totally deaf child seems reconciled to his fate, but given well provided adequate facility of language and communication regard literacy development in regular school they develop personal adjustment and well developed scholastic achievement in hearing impaired students. ?

Provided in natural and social environment- For a child with hearing loss to scholastic achieve developmental synchrony even development across the developmental domains programs need to provide a richer, more natural social environment and consistent exposure

to hearing peers who can model age- appropriate language and social development. ?

Mainstream Placement-

Another choice commonly made for children with hearing loss is mainstream placement. The term mainstreaming is used to refer to the placement of regular education classes based on their skill level. Mainstream education does seek to educate the "whole child" and provide exposure to many preschool programmes. However, many schools turn to more directive teaching models by kindergarten wherein children sit at desks, teachers instruct, and children acquire facts, skills, and concepts through drill and practice. 1.6

Curricular Needs of children with hearing impairment in Non- Scholastic Areas

A Child's holistic development is not measured only by his/her

academic achievements. Sports & Games, Arts & Fine Arts and social skills combined together with intellectual excellence makes a student what he or she will be when he blossoms into an adult. In view of this, opens an avenue of Non-Scholastic activities to prepare children with hearing

51 impairment for his greater journey of life. Non-scholastic abilities are not just 'nice to have' or 'desirable to have', but 'must have' qualities.

Non-scholastic activities

like Yoga, Music, Dance, Sports and other activities moulds the wholesome personality in students and implemented for character development in students. 1.6.1-

Meaning- The non-scholastic abilities are concerned with the learner's attitudes, interests, values, feelings, habits, social interaction which cannot be accessed directly. It is assessed indirectly by merely observing the behaviour of the learner and his experiences and also through biographies, self-reports and checklists etc. The

non-scholastic aspects of children with hearing impairment techniques have been Subjective Methods, Objective Methods and Projective Techniques 1.6.2- Relevant Areas of Non-Scholastic Assessment Some of the relevant areas of non-scholastic assessment are: 1.6.2.1- Health and Physical education – ? It is widely acknowledged that health is influenced by biological, social, economic, cultural and political forces. Access to basic needs like food, safe drinking water supply, housing, sanitation and health services influences the health status of a population, and these are reflected through mortality and nutritional indicators.

52 ? Health is a critical input for the overall development of the child and it influences enrolment, retention and school completion rates significantly. This curriculum area adopts a holistic definition of health within which physical education and yoga contribute to the physical, social, emotional and mental development of a child. Therefore, the need to address this aspect at all levels of schooling, with special attention to vulnerable social groups. ? The more recent addition to the curriculum is yoga. The entire group must be taken together as a comprehensive health and physical education curriculum, replacing the fragmentary approach current in schools today. As a core part of the curriculum, time allocated for games and for yoga must not be reduced or taken away under any circumstances. ? There is growing realisation that the health needs of adolescents, particularly their reproductive and sexual health needs, require to be addressed. Since these needs predominantly relate to sex and sexuality, which is culturally a very sensitive area, they are deprived of opportunities to get the appropriate information. As such, their understanding of reproductive and sexual health and their behaviour in this regard are guided predominantly by myths and misconceptions, making them vulnerable to risky situations, such as drug/ substance abuse and HIV/ AIDS transmission. Age- appropriate context- specific interventions focused on adolescent reproductive and sexual health concerns, including HIV/AIDS and drug/ substance abuse, therefore, are needed to provide children opportunities to construct knowledge and acquire life skills, so that they cope with concerns related to the process of growing up. 1.6.2.2- Attitude & Values: ? Respects school property ? A ware of / sensitive to the threats posed to nature by mankind, shows responsibility towards the environment, is environmentally sensitive

53 ? Participates in school driven activities relating to care for the environment ? Participates in community driven activities relating to care for the environment ? Takes the initiative and plans activities directed towards the betterment of the environment ? Cares for others, respect life, respect Mother Earth, love for one's own country. ? Understands the need for rules and follows them. ? Has Self – respect ? Exhibits leadership ? Respects diversity (culture, opinions, beliefs, abilities), respects the opposite sex ? Shows a kind, helpful and responsible behaviour/attitude. ? Displays commitment and an open mind works efficiently, respects time, his/ her own and others' ? Displays a positive attitude towards peers, adults and community; seeks and provides solutions. ? Peace loving; Strives for conflict management in all stressful situations. ? Ability to find happiness within oneself 1.6.2.3-Psychological Issue: ?

Desirable interests, personality traits including motivation, concentration, independence, initiative, self-discipline, self-esteem, responsibility, drive, leadership. ?

Analytical thinking, critical-thinking, lateral thinking and problem solving are required in most occupations on the needs based. 1.6.2.4-Emotional Issue: ? Development of emotional maturity with balance and integration. ? Identify one's own strengths and weaknesses.

54 ? Be comfortable with one's own self and overcome weaknesses for positive self-concept. ? Identify causes and effects of stress on oneself. ? Develop and use multi-faceted strategies to deal with stress ? Ability to express and respond to emotions with an awareness of the consequences. 1.6.2.5-Life skills Life Skills are

abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life. They

are abilities that facilitate the physical, mental and emotional well-being of individuals (WHO) ? Thinking Skills These include decision-making, problem-solving skills and information gathering skills. The individual must also be skilled at evaluating the future consequences of their present actions on others. They need to be able to determine alternative solutions and to analyze the influence of their own values and the values of those around them. ? Social Skills These include verbal and non-verbal communication, active listening, and the ability to express feelings and give feedback. Also in this category are negotiation/refusal skills and assertiveness skills that directly affect one's ability to manage conflict. Empathy,

55 which is the ability to listen and understand other's needs, is also a key interpersonal skill. Team work and the ability to cooperate include expressing respect for those around us. Ø Emotional Skills These refer to skills which help one to increase the internal locus of control, so that the individual believes that she/he can affect change and make a difference in the world. 1.6.2.6. -Literacy/Reading Skills Issue. The development of literacy and reading skills hearing impairment children is not a multifaceted issue. It is possible to find a good number of parallels to literacy development in their hearing peers. Current millennium still reports that children with hearing loss are often severely delayed when compared to hearing children, especially in earlier development. Adolescents with hearing loss are still seen to have multifaceted problems involving literacy (reading and writing) and language that can influence their attitude to their ability to access and use academic information. This also has implications for how they regard academic information and whether they are willing to apply it. If adolescents with hearing loss are able to access and use academic information sufficiently, they will be able to fulfil a more significant role in society, as well as to study and work well. The acquisition of academic information will enable adolescents with hearing loss to function in such a way that they will be able to maintain their independence and improve their knowledge base throughout their education years. According to Briggie (2005) some class activities that are beneficial to hearing impaired or deaf children includes: 1)

Time to explore writing, drawing, books and environmental print 2) Story time translated in to sign 3) Journal writing using invented spelling.

56 Like hearing peers hearing impaired or deaf children should have the opportunity to participate in literacy events. They should also use written language in many ways that are typical to their hearing peers. According to Briggie (2005) and Williams (1994) the teacher should provide them with the opportunity of demonstrating the following uses of languages in

signed or spoken from: 1) To interact socially with peers and adults while writing. 2) To provide information about written text. 3) To label written creations. 4) To monitor the construction of text. 5) To request assistance with writing tasks from adults and peers, 6) To challenge others' knowledge of literacy, and 7) To evaluate literary works. 1.6.3-

Curricular guidelines of children with hearing impairment in Non-Scholastic Areas The Curricular guidelines develop for students with mild, moderate and severe and profound hearing disabilities will be flexible enough to be accessed by a broad variety of school and class types. They will allow for choice and have a practical life-skills orientation that addresses both the present and the future needs of the student. They will also address assessment issues with a view to providing an accurate record of the student's cognitive and attitudinal strengths and to identifying clearly opportunities for future learning. The curriculum guidelines will incorporate the development of key skills within broad content areas and it is a continuum of curricular provision that recognises and addresses students' appropriate levels of achievement and takes due account of needs, ability and age- appropriateness. The guidelines will be adaptable for use in different circumstances and be capable of extension and refinement.

57 Steps in assess in

non-scholastic areas ? Identification of qualities to be assessed. ? Specification of the behavioural indicators ? Collection of the evidence to support behaviour through observation and other methods ? Recording of the behaviour ? Analysis of the behaviour ? Reporting or Grading ?

Broad principles and aims of education for students with general learning disabilities ? The identification of realistic, time-referenced targets ? The use of individualised education programmes ? The use of a variety of assessment tools ? Lines of development in the skills areas, with short exemplars illustrating how they can be developed ? New content and linkage points to national curricula at both primary and post- primary levels where appropriate ? Whole-school and classroom planning approaches that will facilitate schools and teachers in developing and implementing an appropriate education policy for students with special educational needs ? A range of multi-disciplinary approaches in the education of students with special educational needs.

58 Fig: Block diagram in Curricular Guidelines

Needs of children with hearing impairment in Non-Scholastic Areas 1.6.4-

Types of Non-Scholastic

Areas. These are nine types curricular adaptation in children with hearing impairment in Non- Scholastic Areas. These are: ?

Quantity ? Time

59 ? Level of Support ? Input ? Difficulty ? Output ? Participation ? Alternate Goals ? Substitute Curriculum

Sl. No. Types Non-Scholastic Areas 1.

Quantity

Adapt

the number of items that the learner is expected to learn or complete. For example: Reduce the number of social studies terms a learner must learn at any one time. 2.

Time Adapt the time allotted and allowed for learning, task completion, or testing. For example: Individualize a timeline for completing a task;

pace learning differently (increase or decrease) for some learners. 3.

Level of Support Increase the amount of personal assistance

with

a

specific learner.

For example: Assign peer buddies, teaching assistants, peer tutors, or cross age tutors. 4.

Input Adapt

the

way instruction is delivered to the learner. For example:

Use different visual aids,

enlarge text, plan

more concrete examples, provide hands-on activities, place students in cooperative groups.

60 5.

Difficulty Adapt the

skill level, problem type, or the rules on how the learner may approach the work. For example: Allow the use of a calculator to figure math problems; simplify task directions; change rules to accommodate

learner needs. 6. Output Adapt how the student can respond to instruction. For example: Instead of answering questions in writing, allow a verbal response, use a communication book for some students, allow students to show knowledge with hands on materials. 7.

Participation Adapt

the extent to which a learner is actively involved in the task. For example: In geography, have a student hold the globe, while others point out locations. 8.

Alternate

Goals

Adapt

the goals or outcome expectations while using the same materials.

For example: In social studies, expect

a

student to be able to locate just the states while others learn to locate capitals as well. 9. Substitute Curriculum Provide different instruction and materials to meet a learner's individual goals.

For example: During a

language test one student is learning computer skills in the computer lab. 1.6.5-Assesment Issue There are many issues of Non-Scholastic Assessment in hearing impairment. These are: ? Assessment of Communication and Interpersonal skills ? Cultural Competence Training and Assessment ? Assessing written communication skills

61 ? Assessment of oral communication skills 1.6.5.1-Assessment of Communication and Interpersonal skills Assessments of Communication and Interpersonal skills are ? Auditory Abilities and Skills ? Communication Evaluation ? Areas of Psycho-educational Evaluation ? Auditory Abilities and Skills: Auditory Abilities and Skills information will help guide appropriate planning for educational and classroom accommodations to promote auditory access to the curriculum. An assessment should provide necessary information regarding the nature and degree of hearing, the child's auditory perception skills and abilities, use and benefit from amplification and assistive technology, and specifics related to their auditory and listening performance in the typical classroom. To ensure appropriate expectations, consider the overall needs of the student with respect to chronological age, age of full-time device use, and language and academic skills expected of their same aged peers. Testing should be completed under ideal listening conditions as well as under simulated classroom conditions, and may include traditional sound booth testing, classroom observation, and input from the student's instructors. ? Communication Evaluation A communication evaluation includes signed, spoken, and/or written language, as deemed appropriate for the individual. This evaluation includes the testing and gathering of information in the following areas: a. Phonological educational evaluation: voice, manner, placement, syllabication and reception of speech sounds b. Prosodic features: intonation, pitch, rhythm, and stress c. Voice quality, including nasality 62 d. Intelligibility of connected speech e. Semantic and grammatical accuracy f. Pragmatics/discourse g. Self-advocacy and independence with communication h. Cognitive academic language proficiency (CALP) i. Thinking and reasoning skills ? Areas of Psycho-educational Evaluation A psychological evaluation includes the testing and interpretation of human development and learning domains (i.e., cognitive, achievement, adaptive behaviour, emotional, social, behaviour, language, and perceptual-motor) within a collaborative, databased frame, respecting diversity of student strengths, needs, learning styles and cultures. Standardized evaluations may provide information regarding the student's skills and abilities in comparison with that of hearing peers. It is important to consider the evaluation results in conjunction with other evaluation information (e.g., criterion-referenced educational evaluation, portfolio educational evaluation, etc.) when developing the individualized education program. In addition to taking part in academic achievement testing for initial and additional evaluations, deaf and hard of hearing students should participate in the age-appropriate state wide and local educational evaluation programs unless they qualify for alternative forms of testing as determined by established criteria. The criteria are: a. Early identification: Early identification is important areas evaluated in visual discrimination, visual memory, visual-motor integration, visual figure- ground, visual closure, and spatial relations in related in auditory behaviour. b. Pre-Academic Skills: Pre-Academic Skills, or a developmental evaluation of readiness skills (e.g., visual discrimination skills, identification of letters and numbers, identification of body parts, matching, predicting, sorting, and basic concepts) is important for developing IEP goals and objectives and for determining when the child is able to acquire age-appropriate standards leading to academic instruction.

63 c. Achievement: Achievement or an evaluation of academic skills should provide information regarding the student's present level of functioning. This may include formal, standardized evaluations of student's skills as well as a review of academic progress in their current program and documentation of previous assessment data as pertinent to the current referral. d. Adaptive behaviour: Adaptive behaviour may be used for deaf or hard of hearing children for initial eligibility referrals as well as for those who are very young or who have multiple disabilities. Areas evaluated may include self-help skills, daily living skills, independent functioning, and communication and social skills. e. Social-emotional maturity: Social-emotional maturity should be a major component of the educational evaluation process for a deaf or hard of hearing student. Communication problems that result from lack of access to meaningful language contribute toward the development of personality and social/emotional adjustment. Emotional factors have a direct influence on the learning behavior. Social-emotional evaluations examine self-image, social/interpersonal skills, emotional adjustment, and life-style expectations. 1.6.5.2-Cultural Competence Training and Assessment Culture is a set of shared values, practices, conventions and attitudes. Culture is learned through interaction and strengthened as individuals with shared experiences connect and further refine their values, practices, conventions, and attitudes. Traditionally, culture is learned from parents. However, deaf persons are typically born to hearing parents unknowledgeable of deaf culture. Most parents do not know Sign Language or learn to communicate with their children and a language delay develops. The deaf child may not be able to socialize and develop friendships. A lack of communication is a common shared experience for deaf individuals. This communication void and inability to communicate with the world is the first of many cultural experiences demonstrating that the individual is different and belongs to the deaf culture. As deaf individuals become exposed to sign language and other deaf persons, the enculturation process becomes complete, and deaf persons identify themselves as ethnically deaf. Ethnicity is a product of situational and strategic adaptive processes, which develop identity boundaries and cultural content and context.

64 Belonging to an ethnic group is a rational decision. It is not a matter of shared genetics or ancestry. Instead, ethnic groups share commonality. The ethnically deaf have similar physical abilities, customs, and shared experiences. Discrimination for inability and resistance to assimilate fully into the greater hearing culture creates a "sense of Peoplehood" among the deaf and defines their shared ethnicity. 1.6.5.3-Assessing written communication skills (1) To provide ample opportunity to the child to write his/her own thought. (2) Link development of writing with reading, listening – speaking (or signing), context and experiences. Teachers always want to make tasks simpler for students

and

simplest way to make tasks simpler is to link it with meaning and context. Teaching writing for that matter, teaching anything without context or pragmatic background cannot

be good results in the long run. (3) In order to facilitate learning use of feedback is an essential factor. This in turn needs to be responded with feedback comprising: ? Clear ? In detail ? Indicative of higher expectation ? Appropriate ? Immediate ? In writing ? Consistent ? Objective ? Pro-active (4)

Writing should be

enjoyable and communication oriented rather than task-oriented. (5) Develop the habit of self-editing. Many times, looking at the writings of the children one can hardly know his / her current level of language competency. The teacher is

65 confused about whether an error committed by the student is an error of accident or is an outcome of incorrect knowledge of language. If the children are made to edit their own writing, correcting their inner language structures becomes possible. Initially teachers can mark the sentences, parts where modification is required. This can work as a clue to help him/her edit the overall write up. (6)

Carry out assessment of writing. Separate writing assessment needs to be carried out by the teachers on regular basis. Assessment of language or assessment of language text book cannot be considered as writing assessment. There is a difference between assessment of language through writing and assessment of writing. Like any other ideal assessment, writing assessment too has to be carried out systematically, consistently and objectively. (7) Involve parents in the process of writing development. As said earlier, writing needs to be developed in connection with context and real life situations. Home environment is rich from this point of view. Providing training to parents on follow up activities on development of writing is highly recommended. 1.6.5.4-

Assessment of oral communication skills According to Joughin and Collom (2003) there are six particular assessments of oral communication skills based on of educational practices. These are: I. Primary Content Type This refers to the particular skill or ability that is under scrutiny. Examples of such include the ability to demonstrate knowledge, communicate coherently and apply interview techniques. II. Interaction Whereas in some cases the student must compile and deliver a presentation and follow a rigid set of instructions with little or no interaction with the audience, in other instances the student is required to maintain a dialogue with his/her assessor/ s. In the latter, assessors may probe into and challenge the knowledge attained by their students, thus testing the scope of their knowledge.

66 III. Authenticity The authenticity of oral assessment is dependent on the context in which the assessment or presentation is taking place. Joughin (1998) describes the way in which in certain instances presentations are required to be carried out in the field of work that the students are aiming to find themselves in once qualified. On the other hand, Joughin (1998) describes reflects the lack of authenticity of the assessment, in that it is carried out "remote from the situation of professional practice," (Joughin, 1998:372), often in the classroom. IV. Structure The structure of the oral assessment refers to the way in which the presentation isorganised. While the 'closed structure' approach is defined by a present list of questions which are applicable to all students, the 'open structure' illustrates a loose flow of dialogue, questions and answers. In the latter, the assessor shapes their questions in accordance to the student's findings and the issues they raise or cover. V. Examiners Joughin (1998) compares the assessment of written work to that of oral presentations, stating that in the latter there is greater opportunity for alternative methods of assessment and evaluation. While in written assessment generally one or two assessors scrutinise the work of students and agree the overall grade, orally assessed presentations may more easily be viewed and critiqued by peers, by the students themselves, as well as by "teachers or others in a position of authority" (Joughin 1998: 374). For example, Churchand Bull (1995) evaluate the involvement of employers in assessing students 'presentations. VI. Orality Orality refers to the extent to which the assessment is exclusively oral. Whilst in some cases the assessment criteria centres solely on a spoken presentation, at other times the assessment must be carried out alongside, or be centred on, a written or physical piece

67 of work. Recognition of these dimensions might lead to clearer understanding of the intended purpose of this form of assessment and better implementation. They offer a framework for designing oral assessments according to our intended learning outcomes, and enable university teaching staff to evaluate how relevant to their practice published accounts of approaches to assessing oral communication might be.

1.7 Curriculum Framework for 21 st Century India has made considerable progress in school education since independence with reference to overall literacy, infrastructure and universal access and enrolment in schools. Two major developments in the recent years form the background to the present reform in teacher education the political recognition of Universalization of Elementary Education (UEE) as a legitimate demand and the state commitment towards UEE in the form of the Right of Children to Free and Compulsory Education Act, 2009.

This would increase the demand manifold for qualified elementary school teachers. The country has to address the need of supplying well qualified and professionally trained teachers in larger numbers in the coming years. At the same time, the demand for quality secondary education is steadily increasing.

1.7.1-Context for NCTE's 21st Century Literacy's Framework

The NCTE definition of 21st century literacy's makes it clear that the continued evolution of curriculum, assessment and teaching practice itself is necessary. Literacy has always been a collection of cultural and communicative practices shared among members of particular groups. As society and technology change, so does literacy. Because technology has increased the intensity and complexity of literate environments, the 21st century demands that a literate person possess a wide range of abilities and competencies, much literacy. These literacy are multiple, dynamic, and malleable. As in the past, they are inextricably linked with particular histories, life possibilities and social trajectories of individuals and groups. Active, successful participants in this 21st century global society must be able to: ? Develop proficiency and fluency with the tools of technology.

68 ? Build intentional cross-cultural connections and relationships with others so to pose and solve problems collaboratively and strengthen independent thought. ? Design and share information for global communities to meet a variety of purposes. ? Manage, analyze and synthesize multiple streams of simultaneous information. ? Create critique, analyze, and evaluate multimedia texts. Attend to the ethical responsibilities required by these complex environments. 1.7.2-Elements of the Framework Applied to students of English language arts, the literacy demands of the 21st century have implications for how teachers plan, support and assess student learning. Teachers benefit from reflecting on questions associated with 21st century literacy demands. The demands are: 1.7.2-A-Develop proficiency and fluency with the tools of technology

Students in the 21st century should have experience with and develop skills around technological tools used in the classroom and the world around them.

Through this they will learn about technology and learn through technology. In addition, they must be able to select the most appropriate tools to address particular needs. ? Students use technology as a tool for communication, research and creation of new works. ? Students evaluate and use digital tools and resources that match the work they are doing. ? Students find relevant and reliable sources that meet their needs. ? Students take risks and try new things with tools available to them. ? Students independently and collaboratively solve problems as they arise in their work. ? Students use a variety of tools correctly and efficiently.

69 1.7.2-B-Build connections and independent thought. Students in the 21st century need interpersonal skills in order to work collaboratively in both face-to-face and virtual environments to use and develop problem-solving skills. When learning experiences are grounded in well-informed teaching practices, the use of technology allows a wider range of voices to be heard, exposing students to opinions and norms outside of their own. Understanding the ways in which connections support learning and being intentional about creating connections and networks are important for 21st century learners. The understanding ways are: ? Students work in a group in ways that allow them to create new knowledge or to solve problems that can't be created or solved individually. ? Students work in groups to create new sources that can't be created or solved by individuals. ? Students work in groups of members with diverse perspectives and areas of expertise. ? Students build on one another's thinking to gain new understanding. ? Students learn to share new ways of thinking in ways that positively impact the work. ? Students gain new understandings by being part of a group or team. ? Students open to and intentional about learning from and with others. 1.7.2-C - Design and share information for global communities that have a variety of purposes: Students in the 21st century must be aware of the global nature of our world and be able to select, organize, and design information to be shared, understood, and distributed beyond their classrooms. ? Students use inquiry to ask questions and solve problems ? Students critically analyze a variety of information from a variety of sources ? Students take responsibility for communicating their ideas in a variety of ways

70 ? Students choose tools to share information that match their need and audience ? Students share and publish their work in a variety of ways ? Students solve real problems and share results with real audiences ? Students publish in ways that meet the needs of a particular, authentic audience ? Students consciously make connections between their work and that of the greater community. 1.7.2-D-Manage, analyze, and synthesize multiple streams of simultaneously presented information Students in the 21st century must be able to take information from multiple places and in a variety of different formats, determine its reliability, and create new knowledge from that information. ? Students create new ideas using knowledge gained ? Students locate information from a variety of sources ? Students analyze the credibility of information and its appropriateness in meeting their needs ? Students synthesize information from a variety of sources ? Students manage new information to help them solve problems ? Students use information to make decisions as informed citizens ? Students strive to see limitations and overlaps between multiple streams of information 1.7.2-E-Creat critiques, analyze, and evaluate multimedia texts Students in the 21st century must be critical consumers and creators of multimedia texts. The multimedia texts are: ? Students use tools to communicate original perspectives and to make new thinking visible

71 ? Students communicate information and ideas in a variety of forms and for various purposes ? Students communicate information and ideas to different audiences ? Students articulate thoughts and ideas so that others can understand and act on them ? Students analyze and evaluate the multimedia sources that they use ? Students evaluate multimedia sources for the effects of visuals, sounds, hyperlinks, and other features on the text's meaning or emotional impact ? Students evaluate their own multimedia works ? Students consider their own design choices as much as their choices about text

1.7.2-F-Attend to the ethical responsibilities required by complex environments Students in the 21st century must understand and adhere to legal and ethical practices as they use resources and create information. These are: ? Students share information in ways that consider all sources. ? Students practice the safe and legal use of technology. ? Students create products that are both informative and ethical.

1.7.3-Implications of the Framework for Assessments Assessments need to take into consideration both traditional components and elements that may be different for 21st century student work.

1.7.3. A-Traditional elements of assessment of 21st century student learning The traditional elements for assessing 21st century student work include relevance and reliability of information used in the work; significance of new information or understandings communicated throughout the process and in the final product; effectiveness of the work in achieving its purpose; impact of the work on the audience; creativity or aesthetics demonstrated in the final product; creativity, initiative, and effectiveness demonstrated in solving problems; efficiency and effectiveness of the student's process; and the student's legal and ethical process and behavior.

1.7.3. B-Newer elements of assessment of 21st century student learning Assessment of 21st century products of learning may be different because of technological tools. Some elements to consider include: ? Extent of students' access to 21st century tools both in and out of school; ? Range and depth of information readily accessible to students; ? Facility of students with technology tools; ? Extent to which tools can make artists, musicians, and designers of students not traditionally considered talented in those fields; ? Extent to which images and sound may amplify text; ? Extent to which students understand the power of their connections; ? Extent to which student products can emulate those of professionals; ? Extent to which students receive feedback from experts in the field; ? Potential interaction with and impact on a global audience; ? Students' selection of tools or media that most effectively communicate the intention of the product; ? Students' level of ethical and legal practice as they remix products; ? Level of ethics and safety exhibited in students' online behavior; and ? Extent to which students recognize the impact of their own digital footprint.

1.7.4-Assessment practices of 21st century student learning may need flexibility and responsiveness to situations such as: ? Students' greater proficiency with tools or formats than the teacher, which may generate outcomes not anticipated in an assessment rubric; ? Technology glitches beyond students' control that negatively impact the quality of the final products;

73 ? Scope of collaboration, in the classroom and globally, leading to a greater need for processes that assess progress and achievement of individuals and groups; ? Support and celebration of the increasing diversity in students' talents, imagination, perspectives, cultures, and lived experiences; ? Recognition that the processes of learning and doing are as important as the quality of the final product; ? Students' self-evaluation and reflection on process and product integrated into the learning process and contributing to students' continued growth; ? Ability of students, parents, and teachers to examine growth over time in authentic ways.

1.7.5-Selected Standards for the Language Arts pertaining to 21st Century Literacy ? Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works. ? Students read a wide range of literature from many periods in many genres to build an understanding of the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience. ? Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics). ? Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts. ? Students conduct research on issues and interests by generating ideas and questions,

74 and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience. ? Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge. ? Students whose first language is not English make use of their first language to develop competency in the English language arts and to develop understanding of content across the curriculum. ? Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information). Flow Chart in 21 st Century Pedagogy
<http://w.w.w.note.org/governance/21stcenturyframework>

75 1.8 Let us sum up In education often refers specifically to a planned sequence of instruction or its view of the student's experiences in terms of the educator's or schools instructional goals. Curriculum is incorporated with the plan interaction of pupils with instructional content, materials, resources and processes for evaluating of educational objectives.

In history of education, the term 'curriculum' was originally related to the concept of a course of studies followed by a pupil in a teaching institution.

In fact, the term curriculum is mostly used to refer to the existing contract between societies with regard to the educational experiences that learners should undergo during a certain phase of their lives.

Using educational concepts, we can say that the curriculum defines the educational foundations and contents, their sequencing in relation to the amount of time available for the learning experiences, the characteristics of the teaching institutions, the characteristics of the learning experiences, in particular from the point of view of methods to be used, the resources for learning and teaching (e.g. textbooks and new technologies), evaluation and teachers' profiles.

Curriculum is a comprehensive plan for an educational program to offer new improved manpower to fulfill the rising needs of a dynamic society. Education completes a man.

Students need quality education suitable for life. Perceiving the needs of the learners, appropriate changes are made in the curriculum, syllabus and textbook on a need basis. Currently changes have taken place in the evaluation system.

Evaluation is conducted through activities, observation and group discussion. The evaluation is done under two parts namely scholastic and co-scholastic activities. Scholastic activities have been further classified into two parts viz.

Formative and Summative Assessments. A holistic approach to education at the elementary level is a must as it is the most important subsection of the whole education system. Such an approach will facilitate the total development of a child by providing the right atmosphere for learners to develop and enrich their talent. Building self-concept, self image, sense of enterprise and sportsmanship and so on should be part of the educational process. Therefore, the curriculum is designed giving due emphasis on both scholastic and co-scholastic area.

A Child's holistic development is measured not only by his academic achievements. Sports & Games, Arts & Fine Arts and social skills combined together with intellectual excellence makes a student what he or she will be when he blossoms into an adult. In view of this opens an avenue of Co-Scholastic activities to prepare children with hearing impairment for his greater journey of life. Co-scholastic abilities are not just 'nice to have' or 'desirable to have', but 'must have' qualities.

Co-scholastic activities

like Yoga, Music, Dance, Sports and other activities moulds the wholesome personality in students and implemented for character development in students.

India has made considerable progress in school education since independence with reference to overall literacy, infrastructure and universal access and enrolment in schools.

76 1.9 Let us sum up 1. Write about details in approach to curriculum 2. Write about details in curriculum design for hearing impaired children. 3. Discuss about details curricular input children with hearing impairment in Scholastic areas. 4. What do mean by Scholastic activities. Discuss about details aim, important and scholastic achievement of student with hearing loss. 5. Discuss about details in relevant Areas of Non-Scholastic Assessment in hearing impairment. 6. Discuss about details in of Non-Scholastic Assessment Issue in hearing impairment. 7. Discuss about details Curricular guidelines children with hearing impairment in Non-Scholastic Areas 8. How many type of curricular adaptation in children with hearing impairment in Non-Scholastic areas? Discuss details. 9. Write about details Elements of theCurriculum Framework in 21 st century 10. Write a short note about literacy frame work in 21 st century. 11. Write a short noteabout Language Arts pertaining to 21st Century Literacy's with diagram. 1.10 References i. Elias, M. J. (2006). The connection between academic and social-emotional learning. In M. J. Elias & H. Arnold (Eds.), The educator's guide to emotional intelligence and academic achievement: Social and emotional learning in the classroom (pp. 4- 14). Thousand Oaks, CA: Corwin Press. ii. eric.ed.gov/full text/EJ683441 iii. Marsh, C. J. & Willis, G. (2003). Curriculum: Alternative approaches, ongoing issues. (3 rd ed.). Upper Saddle River, NJ: Merrill Prentice Hall.) 77 iv. Sharma,R.A.-Fundamental of Special education v. <https://en.wikipedia.org/wiki/Curriculum> vi. http://www.ibe.unesco.org/fileadmin/user_upload/archive/AIDS/doc/cecilia_e.pdf vii. [http://thesecondprinciple.com /instructional-design/types-of-curriculum/](http://thesecondprinciple.com/instructional-design/types-of-curriculum/) viii.<http://study.com/academy/lesson/types-of-curriculum-models.html> ix. [http://www.unom.ac.in/asc/Pdf/ CURRICULUM%20DESIGN%20AND%20DEVELOPMENT-1.pdf](http://www.unom.ac.in/asc/Pdf/CURRICULUM%20DESIGN%20AND%20DEVELOPMENT-1.pdf) x. <http://www.oucom.ohiou.edu/fd/Workshops%20for%20RPAC/ED2%206 Step%20Process%20of%20CD.pdf> xi. <http://www.languageinindia.com/feb2013/shanthi.pdf> xii. <http://www2.glos.ac.uk/gdn/icp/ideaf.pdf> xiii.<http://www.ncte.org/governance/21stcenturyframework>

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78 Unit - 2

Developing Literacy Skills: Reading Structure 2.1. Introduction 2.2. Objectives 2.3. Pre-requisites for reading and emergent reading skills 2.4. Assessment of reading skills at different levels 2.5. Approaches and Strategies to develop reading skills and independent reading 2.6. Types and Models of developing reading skills 2.7. Challenges and Remedial strategies 2.8.

Let's Sum Up 2.9. Check your Progress 2.10. References 2.1 Introduction Reading is a Constructive Process. Reading may be described as "getting meaning" from written text. A reader's skill in comprehension depends on three things: (i) the background knowledge of the reader. (ii) The accuracy with which the reader responds to printed or written material. (iii) The reader understands of the message of the text. "Reading is a language process that involves a dialogue between the reader and the author." (Hedge, 2000). It is a constructive, interactive process which takes place behind the eyes.

Definition of

Reading: Reading is a process of comprehending ideas from printed or written symbols to 79 associate the known meaning with these symbols. Anderson, Heibert Scott and Wilkinson (1985) defined reading as a process in which information from the text and the knowledge processed by the reader act together to produce meaning. 2.2.

Objectives: After studying this unit, the students should be able to Understand the concept of Reading. Understand the concept of prerequisite of reading and types of reading. Understand the approaches and Strategies involved in Developing reading. Understand the assessment of reading skills at different levels of students with hearing impairment. Understand the types and models of developing reading skills. Understand the challenges faced by students with hearing impairment reading and its remedial strategies. 2.3. Pre-requisites for reading and emergent reading skills: Pre-requisites for reading and emergent reading skills: Left to right or Right to left eye-hand-mind coordination. Knowledge of alphabets. Knowledge of pronunciation of symbols(phonetic skills). Ability to visually discriminate the symbol and group them to form word (she i.e. she). Ability to understand the meaning of word within the text. Ability to work out pronunciation of unknown word with the help of spelling.

80 2.4.

Assessment of reading skills at different levels:

Receptive One-Word Picture Vocabulary Test (ROWPVT): The ROWPVT assesses a student's knowledge of vocabulary by asking the child to point to the object being named. The test ends when the child cannot correctly identify the pictured meaning of the word in 6 out of 8 consecutive items. Test of Early Reading Ability (TERA-3): The TERA-3 measures reading ability of young children ages 3-6 through 8-6. Rather than assessing a child's reading readiness it assesses their mastery of early developing reading skills. The three sub tests include: Alphabet (knowledge of the alphabet and its uses), Conventions (knowledge of the conventions of print), and Meaning (measuring the construction of meaning from print). An overall Quotient is computed using all three subtest scores. Test of

Reading Comprehension (TORC): Eligibility for testing: Ages, 0-7 and 11-17 Able to understand directions of subtests Able to formulate the necessary responses Able to read English Administration Time: No time limits The entire test varies from 30 minutes to 90 minutes The average time being an hour Each subtest generally takes 5-15 minutes

81 General Vocabulary: Purpose: to measure the reader's understanding of vocabulary that is related to a general concept Description: 25 vocabulary questions Syntactic Similarities: Purpose: to measure the reader's understanding of meaningfully similar but syntactically different sentence structures Description: 20 questions Paragraph Reading: Purpose: ability to answer questions related to the paragraph Description: 6 paragraphs with 5 questions each Sentence Sequencing: Purpose: measure the ability to order sentences into a paragraph Description: 10 test questions – Consisting of 5 randomly ordered sentences and the reader has to put them in the correct order to form a paragraph. Mathematics Vocabulary: Purpose: understanding of mathematics vocabulary Description: 25 test questions Social Studies Vocabulary: Purpose: understand social studies vocabulary Description: 25 test questions Science Vocabulary: Purpose: understanding of science vocabulary

82 Description: 25 test questions Reading of Directions of Schoolwork: Purpose: measures understanding of written directions commonly found in schoolwork Description: 25 test questions – Consist of a printed command that the student has to carry out on the answer sheet 2.5.

Approaches and Strategies to develop reading skills and independent reading:

Phonics Approach Word recognition is taught through grapheme-phoneme associations, with the goal of

teaching the student to independently apply these skills to new words.

Phonics instruction may be synthetic or analytic. In the synthetic method, letter sounds are learned before the student goes on to blend the sounds to form words. The analytic method teaches letter sounds as integral parts of words. The sounds are usually taught in the sequence: vowels, consonants, consonant blends at the beginning of words (e.g., bl and dr) and consonant blends at the end of words (e.g., ld and mp), consonant and vowel digraphs (e.g., ch and sh), and diphthongs (e.g., au and oy). Critics of the phonics approach point out that the emphasis on pronunciation may lead to the student focusing more on decoding than comprehension. Some students may have trouble blending sounds to form words and others may become confused with words that do not conform to the phonetic "rules." However, advocates of phonics say that the programs are useful with remedial reading and developmental reading. Examples of phonics series are Science Research Associates, Merrill Phonics and DML's Cove School Reading Program.

83 Linguistics Approach In many programs, the whole-word approach issued. This means that words are taught in families as a whole (e.g., cat, hat, pat and rat). The focus is on words instead of isolated sounds. Words are chosen on the basis of similar spelling patterns and irregular spelling words are taught as sight words. Some advantages of this approach are that the student learns that reading is talk written down and develops a sense of sentence structure. The consistent visual patterns of the lessons guide students from familiar words to less familiar words to irregular words. Reading is taught by associating with the student's natural knowledge of his own language. Disadvantages are extremely controlled vocabulary, in which word-by-word reading is encouraged. Others criticize the programs for the emphasis on auditory memory skills and the use of nonsense words in the practice exercises. A sight word, or "look-say," approach: Those who advocate a sight word approach, in contrast to phonics, claim to be concerned that meaning be emphasized from the very outset of reading instruction. They stress helping children develop a stock of words that the children can recognize on sight. Thus instead of stressing letter/sound correspondences and phonics rules, teachers might use flash cards and other devices to help children learn to recognize basic words. Advocates of a sight word approach argue that if children can begin with a stock of about one hundred basic sight words, they will be able to read about half the words in any text they might ordinarily encounter. This approach was widely used from about 1930 until about the mid-1960s, when it became increasingly intertwined with (or permeated by) a phonics approach. Although prominent advocates of the sight word approach commonly expressed concern with meaning, during the heyday of the sight word approach actual classroom instruction came to focus heavily on the identification of words, and this emphasis continues implicitly in many of today's basal readers. Thus, like advocates of phonics, practitioners of sight word instruction as well as the general public reflect the "commonsense" assumption that once words

84 are identified, meaning will take care of itself. The sight word, or "look-say," approach differs from a phonics approach in that it focuses on whole words rather than on parts of words, but in practice, both are concerned more with word identification than with meaning. Today, the sight word approach survives primarily as part of a basal reader program, as a supplement to a basal program (e.g., Developing a Basic Sight Vocabulary), and/or as the labeling of objects in children's homes or the classroom environment. A whole language approach to education is sometimes claimed to be nothing-more than a new name for the sight word approach.; " Basal Reading Basal reader series form the core of many widely-used reading programs from preprimary to eighth grade. Depending on the series, basal readers may be meaning emphasis or code emphasis. Teacher manuals provide a highly-structured and comprehensive scope and sequence, lesson plans, and objectives. Vocabulary is controlled from level to level and reading skills cover word recognition, word attack and comprehension. Advantages: Advantages of basal readers are the structured, sequential manner in which reading is taught. The teacher manuals have teaching strategies, controlled vocabulary, assessment materials and objectives. Reading instruction is in a systematic, sequential and comprehension-oriented manner. Many basal reading programs recommend the directed reading activity procedure for lesson presentation. Students proceed through the steps of motivation preparation for the new concepts and vocabulary, guided reading and answering questions that give a purpose or goal for the reading, development of strengths through drills or workbook, application of skills and evaluation. A variation of the directed reading method is direct reading-thinking, where the student must generate the purposes for reading the selection, form questions, and read the selection. After reading, the teacher asks questions designed to get the group to think of answers and to justify their answers.

85 Disadvantages: Disadvantages of basal readers are the emphasis on teaching to a group rather than the individual. Critics of basal readers claim that the structure may limit creativity and not provide enough instruction on organizational skills and reading for secondary content levels. Basal readers, however, offer the advantage of a prepared comprehensive program and may be supplemented with other materials to meet individual needs. Language Experience Approach The language experience approach is similar to whole language in that reading is considered as a personal act, literature is emphasized and students are encouraged to write about their own life experiences.

The major difference is that written language is considered a secondary system to oral language, while whole language treats the two as parts of the same structure. The language experience approach is used primarily with beginner readers but can also be used with older elementary and with other older students for corrective instruction. Reading skills are developed along with listening, speaking and writing skills. The materials consist, for the most part, of the student's skills. The philosophy of language experience includes: 1 What students think about, they can talk about? 2 What students say, they can write or have someone write. 3 What students write or have someone write for them, they can read. Students dictate a story to a teacher as a group activity. Ideas for stories can originate from student artwork, news items or personal experiences, or they may be creative. Topic lists, word cards or idea lists can also be used to generate topics or ideas for a class story. The teacher writes down the stories in a first draft and the students read them back. The language patterns come from the students and they read their own written thoughts. The teacher provides guidance on word choice, sentence structure and the sounds of the letters and words. The students edit and revise the story on an experience chart. The teacher provides specific instruction in grammar, sentence structure and spelling, if the need arises, rather than using a specified schedule. As the students' progress, they

86 create their individual storybooks, adding illustrations if they wish. The storybooks are placed in folders to share with others. Progress is evaluated in terms of the changes in the oral and written expression, as well as in mechanics. There is no set method of evaluating student progress. That one disadvantage of the language experience approach. However, the emphasis on student experience and creativity stimulates interest and motivates the students. Strategies Involved in the Reading Process Reading is said to be a complex process and takes place in various steps. According to Searfoss and Readnece (1994), reading is a process, which involves four essential cue systems interacting with each other. They are: 1. The Graphophonic Cue System: The graphophonic cue system is the system of relating sounds or phonemes to the symbols or graphemes of print. Therefore learning the names of the letter and the various sounds they stand for is often part of beginning of reading instruction. For example, phonic instructions: words ending with 'at'-cat, bat, rat. 2. The Syntactic Cue System: The syntactic cue system is the set of underlying natural rules by which the language operates. Language is arranged and rearranged according-to' these 'rules. The acquisition of syntactic knowledge is accomplished without being able to state formally the rules of syntax that are used.. The child acquires the pattern of sentence-'Raju wants a ball.' But later on learns that Raju is noun (subject), wants is verb etc. and a sentence in English is generally written in SVO pattern. 3. The Semantic Cue System: The semantic cue system gives meaning to words, sentences and longer units of prints. It is the knowledge, gained through prior experiences, which readers carry around in their heads and bring to ea reading situation. Semantic development includes not on how much vocabulary is acquired, but also how words a used and understood at various stages of cognitive development arid in different context. 4. The Pragmatic Cue System: The pragmatic cue system incorporates the cultural

87 and social aspects of using language. Language is used to perform many functions an: how it is spoken and written varies according to purpose and audience. Language use varies among ethnic group social classes and geographical regions. When all cue systems are present in a reading situation, we can reasonably predict that the reader will be able to construct meaning from the print. Development of these cue systems is crucial to the development of reading skills. 2.6.

Types and Models of developing reading skills Reading instruction is not limited to a single period in a school day.

Reading goes on all day long in relation to all school subjects and activities.

Types of reading can be based on: Purpose, Type of Material, Style of Reading and Level of assistance.

Types of Reading Purpose Developmental Remedial Functional Recreational Type of Material Conversational Text based Style of Reading Loud Silent Level of Assistance Guided

88 Independent Reading based on the purpose:

The reading experiences can be differentiated into four types: Developmental, functional, remedial and recreational. It makes possible to separate and integrate the teaching of reading and the teaching of language through reading. (i) Developmental Reading: (Reading known language) Developmental reading consists of designed and planned reading lessons. Its purpose is to systematically develop and promote sequential skills in reading. Ideally, developmental reading is conducted with material where the language is completely known to the child so that there is no interference with the child's development of mature reading habits and skills. In this type of reading the child is presented with appealing reading material. The teacher observes and guides the child to strengthen the growing skill in reading. This helps the child to learn to use appropriate reading skills to independently figure out the meaning of known language. Whenever unknown language interferes with this process, the teacher takes steps to remove this obstacle. She either pre-teaches the unknown linguistic forms, or freely explains them

during reading and teaches

them in depth afterwards. The early readers and textbooks are especially useful for developmental reading as they provide a gradual progression from easy to more difficult level through grades. (

ii)

Remedial Reading: (Teaching language through reading) The aim of remedial reading is to correct specific language deficiencies. Remedial reading is especially used to promote language, but the activities can serve varied purposes. The teacher can return to the language forms found difficult during developmental reading and teach them thoroughly during remedial reading. The teacher can construct games, exercises and tests for further drill in understanding and use of these linguistic 'forms.

Teachers can find opportunities in activities

and experience for it. Systematic programmes may also be devised to teach aspects of

89 vocabulary (synonyms, antonyms, idioms, multiple meanings, figures of speech etc.), morphology (plural, verb forms, etc.) and syntax (clauses, question forms

etc.)

Remedial reading may also be used to provide drill in specific reading skills. Children who need more practice than is provided in developmental reading may benefit from special remedial activities. Remedial reading thus becomes part and parcel of special education. Also, as language and reading go hand in hand developmental reading and remedial reading

go hand in hand. (iii) Functional Reading: (Reading as means to an end) Functional reading represents reading in its natural form. In functional reading, reading is not the primary activity but there is a task, which is to be completed through reading. E.g. Reading a recipe to make a food item like pulav, follow directions to complete a puzzle, read label to know the owner of a book etc. There are numerous occasions for functional reading-following directions for a new game, putting together things to assemble a toy, comparing weights and prices on boxes of food items etc. All such activities demonstrate the children the importance of reading in life. Functional Reading

at Preschool Level Following activities can be taken: Incidental reading in class (names of biscuits etc.) Writing names on chair. Attendance charts. Health charts. Writing plans for the day/week and reading them. At Primary Level Reading newspapers. Doing activities following instructions (making paper caps, lime juice etc.).

90 Exposing to reading names of streets, names on shops, bus numbers through visits and daily travel from home to school. (iv)

Recreational Reading: (Reading for pleasure and information) Reading to gain pleasure is recreational reading. Structured reading activities

are

usually difficult task for the children. Therefore it is very important to include reading without struggling in the reading programmes. Children should be given daily opportunities to read whatever material they choose, whatever purpose they set for themselves, in whatever way and whatever level of comprehension they are capable of, without adult interference or guidance. Children should be provided with access to good libraries in class, in school and at home.

Attractive book displays, talks with authors, and storytelling sessions help to make reading an enjoyable experience. Such type of reading is very useful for cultivating the 'habit' of reading outside the school world. At the preschool, picture books should be provided. Activities of reading stories to the child can be undertaken. Based on Type of Reading Material The achievement in reading also depends on the type of material. On the basis of the material there are two types at reading.

Conversational Reading Conversational reading is one of the levels of reading proficiency developed gradually in the early school years. It is a transition step from informal to formal reading.

Conversational

reading is the reading of any non-commercial text that deals with the interest and experience of a child or group of children. The teacher writes

the

normal conversation that goes on during the various activities. The words and sentences used in language activities e.g., news conversations and other activities like projects about family, food, holidays, etc. direct experiences through trips, visits, etc. are written on the board, chart, cards or in teacher made books.

The written words correspond to the spoken language and are known to the children, so these words become sight words, i.e., the children recognize and identify the meanings of the

91 written words at sight (audio-visual reading). The teacher then implants these words in the various experiences. Types of Conversational Reading News: The news period is usually a conversational period. Children enjoy telling about their new possessions their places of visit, what they did with their families and friends. The news period offers an excellent opportunity for meaningful repetition of simple language pattern in oral and written form. This reading begins generally with some calendar work to identify the day of the week and the date, attendance and weather. Afterwards the sentences elicited from the students are written. At first, the sentences-ate very. simple stating bare facts. Gradually variations in language can be introduced, always keeping pace with children's progress. 1. For example: Raju said, "I did not eat the ice cream." Mother was very angry. She scolded, "Don't tell lies." News books can also be introduced where the child writes news from the class for the parents and from home for the class. 2. Direct Experience: Conversational reading can be based upon direct experience like. 1. Trips: The teacher can make experience chart about what the children have seen. 2. Activities: After an activity the experience of the children can be elicited from them and written down. The follow-up of experiential reading can be: 1. Books and Stories similar to children's experience. 2. Letter written in conjunction with some activities-to request permission or information, invitation, thank you letter, letters telling an absent child about the trip.

92 3. Making list of things required e.g., for trip, material needed during craftwork, steps carried out to perform an activity. 4. Signs labels and caption for pictures. 5. Teacher made stories based on the children's experiences. The experience chart should be the expression of the children's impressions, discoveries, and reactions. The teacher should act as recorder and co-ordinate the impressions of all the children. These charts should be illustrated as required. The benefit of experience charts is that the children will move easily with the text to read the printed symbols of incidents significant to them. Example of conversational reading: Topic -Visit to the garden Yesterday was a wonderful day. We went to the garden. There were many plants with flowers. Oh what fun, we played on the swing and seesaw. Text Based Reading In the

text based reading the meaning has to explicitly or implicitly drawn from the written words. It means that the meaning may either be clear or may be hidden and has to be understood. In schools teachers \ undertake text-based reading i.e., they impart information and knowledge usually through reading textbooks.

The two types of texts commonly used in schools are: Narrative Text: Text that tells a story or an event is narrative text. Stories come in variety of forms. Reading narrative texts requires readers to keep track of, and remember sequential events, flash back, and cause-effect events. The traits of the key players-human, animals etc. are prominent in a narrative text it has direct descriptions and provide subject matter for comprehension instruction. Narrative text helps the students to acquire interest in reading. Expository Text: Expository text is informational text. A subject textbook like 93 geography, science etc. is composed of expository text material. Articles in magazines and encyclopedia are also expository since they provide information. The structure or composition of expository text usually consists of one or more central ideas that are supported with related details. This is reflected in the headings and subheadings provided in the text. The specific expository style of a textbook varies depending on the information that is being conveyed. The expository text is usually less familiar. The social studies textbooks usually deal with a theme through grades. It is presented in an expository style. While Teaching: Learning from expository text, the context and the text that communicates it have to be dealt with. For successful instruction of the expository text the following is necessary. identification of the important content. identification of concepts and vocabulary that students must know if important content is to be understood and retained. previous knowledge assumed by the author. identifying features of text that might be confusing (For example, figurative language). usefulness of graphic aids included in the text. Expository text needs higher-level skills in comprehension. 3. Procedural Text: Procedural text is composed of description of procedures for doing something, for making something or for getting somewhere. The directions on numerous practice exercises that students are asked to do are procedural text. The purpose of procedural text is to 'read and follow' the directions or procedures exactly so that the desired goal is realized. The students should be provided more opportunities of reading such text through various activities.which may also improve the functional reading skills'in them.

94 Loud Reading and Silent Reading In a classroom situation reading takes place in various forms. When children start reading independently, they are presented with reading material. The reading of these materials in the teaching learning process may be loud or silent. Both oral and silent readings have their own significance in the process of comprehension. Loud Reading: Loud reading refers to reading aloud, i.e., using vocalization for reading. It is also known as oral reading. Oral reading can serve various purposes such as instruction, diagnosis and sharing. Loud Reading

for instruction: Certain instructional objectives for improving comprehension abilities rely on loud reading for their attainment. (a) Instructions about Typographic Signals: Written language is characterized by physical properties (typographic signals) that aid comprehension. The students have to be taught the significance of these signals, which is possible through loud reading. 1. The function of commas. Raju, my friend, is your classmate. Raju, my friend is your classmate. 2. Understanding the supra segmental aspects: Will you do me a favour? This is my new dress. This is my new dress. Thus loud reading demonstrates the importance of careful pronunciation and enunciation of words, appropriate volume, communicating feelings and facts. Loud Reading for Diagnosis: Loud reading can be used in schools for diagnosis- to identify a student's particular abilities and shortcomings. For example: Cues being used with unfamiliar words.

95 Use of contextual cues, spellings etc. Rearrangement of sequence of sounds (felt read as left etc.) Attention given to position of sound (initial, medial, final). Strategy for working out long complicated words. Tendency to omit words or depend on outside help. Understanding the errors made while reading etc. Loud Reading for Sharing: children need to read aloud to share what they have read. For the children who are shy, reading habits can be fostered through group oral reading, which reduces fear. Usually round robin reading-one child reads and others follow it silently) IS practiced in schools. Silent Reading:

The difference between loud reading and silent reading is that loud

reading is heard and silent is not heard. In silent reading subvocalisation is commonly present. Subvocalisation, also called as inner speech is

a mental pronunciation of words that is neither heard nor seen. It is observed that subvocalisation may facilitate the comprehension of difficult material by focusing the reader's attention on meaning.

The primary purpose of silent reading is to get or construct an author's message. Silent reading is assumed to be faster than the loud reading, because the eye movement on the text is faster. This type of reading can be used in classroom instruction when the focus is not on teaching reading and the children know to read. It should be used with increasing grades, as

the children should learn to construct meaning from the text rather than just pronouncing it.

Guided Reading and Independent Reading Variety in reading experience should be provided to the children for maximum effectiveness in reading. Guided and independent reading should always a component of a lesson fostering reading.

Guided Reading: Guided reading is an important step for a lesson. It is useful for

96 monitoring the student's progress. Guided practice can be written or oral. It gives a chance to the students to use what they have learnt while teacher is supervising. Since the students are being observed they can get a prompt feedback.

Wherever the student faces a problem, he can be explained there itself or the lesson can be retaught. The child can be given reinforcement for their performance. Developmental, remedial and functional readings are types of guided reading.

Independent Reading: Independent reading is reading without assistance. Many things that further facilitate growth in reading comprehension ability-general knowledge, vocabulary, and syntactic knowledge are developed through independent reading. This is reading extended pieces of textbooks, magazines, newspapers etc. The benefits of reading independent level material are: It allows for the consolidation and realistic use of what had been taught. It moves attention away from individual words to the meaning of connected text. It fosters good habits in reading. It adds to the reader's knowledge of the world. Promotes self-confidence and arouses greater interest in reading.

Models of Reading: In the last 40 years reading researchers have been studying the link between the reading process (what goes on in the brain) and how to teach reading. Depending on their interpretation of the reading process, they have developed a model of reading. Definition A reading model is a graphic attempt "to depict how an individual perceives a word, processes a clause, and comprehends a text." (Singer and Ruddell ,1985) Here are some kinds of reading models. Although there are many models of reading, reading researchers tend to classify them into three kinds.

97 Bottom-up Top-down Interactive Processing in Bottom-Up Model: Reader builds meaning from the smallest units of meaning to achieve comprehension. Example letters letter clusters words phrases sentences longer text meaning = comprehension Processing in Top-Down Model: Reader generates meaning by employing background knowledge, expectations, assumptions, and questions, and reads to confirm these expectations. Example Pre-reading activities (i.e. activating schema, previewing, and predicting) + background knowledge (cultural, linguistic, syntactic, and historical) = comprehension Processing in Interactive Model: Reader uses both bottom-up and top-down strategies simultaneously or alternately to comprehend the text. Example Reader uses top-down strategies until he/she encounters an unfamiliar word, then employs decoding skills to achieve comprehension. 2.7. Challenges and Remedial strategies: Students with hearing impairment and reading Students with hearing impairment, like hearing children, need to learn how to read and understand stories, passages and sentences from all subjects in school. They have to be able to distinguish the important facts and ideas from words they are

98 reading and identify which words are unimportant. Sometimes this is difficult for Students with hearing impairment because they are reading words or sentences they cannot understand. Some Students with hearing impairment will simply read each word, without understanding the meaning of what the words are conveying. It is important to check they understand what they are reading by questioning the child on the vocabulary, asking them to repeat the passage in their own words, asking them to draw or act it out and/or by asking the child questions about what they have read. What are some ideas for developing Students with hearing impairment enthusiasm for reading and writing? Read books to the Students with hearing impairment every day.

The books should be age appropriate and interesting. Reading together will improve the child's vocabulary, develop visual skills and assist in reading comprehension. They will begin to develop a love of books. This can be varied by asking the child to read a section, and then adults read a section, or both can both read at the same time. Don't put pressure on your child to read books which are too difficult or if they really don't want to. Instead let your child know indirectly that reading is encouraged, for example, let them stay up a little later on the condition that they read. Encourage an "enjoyment of reading by sharing the book together and talking, commenting on and questioning the story as it is read. Make a journal. Each day, write a short passage about anything at all, something experienced something which will happen, something noticed, etc. The deaf child reads what is written, and then writes back. Don't correct the spelling, punctuation or grammar in this journal. It is simply a "communication book" to support the development of positive attitudes towards reading and writing. Write notes to the

Students with hearing impairment instead of telling them

99 what is wanted. Ask them to write a note in reply. Write down where they will find a surprise. Read a story together and then together, use the theme of the story to make a new version or a new ending. Let your child dictate a story and you write it down or type it on the computer. Check frequently with your child that the meaning is correct. Ask your child to read the story along as you write it down. Your child can illustrate the story if they wish to. Keep these in a special folder for reading together later. Your child can write about pictures, photos, write letters, emails and shopping lists. Be a role model. Let the child see adults enjoy reading. Provide plenty of reading material, both for enjoyment and reference, in the home and make sure there is a special place for the deaf child's books. Join the local library and visit often. Establish a "reading time" for a short period each day to focus only on reading. Make it pleasurable. Always watch the television or DVDs with captions. 2.8.

Let's Sum Up In this sense reading goes on long relation between school subject and activities. So, one needs to learn and understand the content matter. It is the most important factor for a student with hearing impairment. That is why reading skill is a most important factor of student with hearing impairment became with the help of reading skill student with hearing impairment understand the meaning of a word and conveying the inner meaning of the text passage.

100 2.9. Check your Progress 1. Define reading. What are the prerequisites of reading? 2. Describe in brief about the various assessment tools for reading skills of students with hearing impairment. 3. Describe in detail about various types and models of reading. 4. What are the strategies followed in developing reading? Describe approaches to develop reading skills. 5. Write the challenges faced by students with hearing impairment while reading. Discuss its remedial strategies in detail. 2.10. References Anderson, R. c., Heibert, E., Scott, J., & Wilkinson, 1. (~985). Becoming a nation of readers: The report of the Commission on Reading. Champaign, IL: Center for the Study of Reading.

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101 Unit - 3

Developing Literacy Skills: Writing Structure 3.1. Introduction 3.2. Objectives 3.3.
Pre-requisites for writing and emergent writing skills 3.4. Assessment of written language at different levels 3.5.
Components and types of writing 3.6. Steps and Strategies in Developing Writing 3.7. Challenges and Remedial Strategies
3.8.

Let's Sum Up 3.9. Check your Progress 3.10. References 3.1 Introduction Writing is an act of communication and a
purposeful means of addressing an audience. It is not only writing a sentence but an activity of producing a text in a
context. Writing as an act that takes place within a context, that accomplishes a particular purpose, and that is
appropriately shaped for its intended audience (Weigle, 2002). It means writing is not only as the product of an individual
but also as a social act because writing is activities that are socially and culturally shaped and individually and socially
purposed. Writing needs some process of thinking. By knowing the process of writing, students can develop their ability
to create a good written text. Writing is a process of thinking in which writers figure out their thoughts then put them into
written language (Brown, 2001). During the process of thinking that sometimes needs a long time, the writers are asked
to explore their knowledge, experiences, or memories to find and then determine a topic to write. Furthermore, Harmer
(2004) sees writing as a kind of process wheel, where the writers move both around the circumstance of the wheel and
across the spokes. It describes the complex stages that the writers need to go through to write something.

102 Each stage can be continuously repeated until the writers feel no need to go to the previous stages. Based on the
above definitions of writing, it can be concluded that writing is an act that takes place within a context, which
accomplishes a particular purposes a-relatively permanent record of information, opinions, benefits, feelings, arguments,
explanations, and theories. In addition, writing is also a process of developing ideas into a coherent written language. 3.2.

Objectives: After studying this unit the students should be able to : Understand the concept of
writing Understand the concept of prerequisite of writing, components and types of writing Understand the Steps and
Strategies involved in Developing Writing Understand the assessment of written language at different levels of students
with hearing impairment Understand the challenges faced by students with hearing impairment while writing and its
remedial strategies 3.3. Prerequisites of writing and emergent writing skills: Various activities should be given to the
children from a very early age to develop the skills of writing. Some of the Prerequisites are: Good Observation: Good
observational skills are needed to be developed right from an early age. They should be exposed to various things in the
house, environment, etc. They should be exposed to various pictures, story books to relate and understand things around
them. Various exercises can be given for finding out what is missing in the picture, finding out what is wrong in the
picture, completing the given picture etc. Good Eye Hand Co-ordination: Eye hand co-ordination should be developed
to have good writing skills. Small children could be given various activities

103 like water play, stringing beads together, lacing and swing boards, butting and zipping, etc. Developments of
fine motor skills: Gross and fine motor skills should be develop in the children to enable them to hold a pencil and write
properly.

Activities like piling of blocks, stringing beads, picking up lumps of sugar, sorting dal and grains can be taken. Also playing,
tracing in damp sand, clay and plasticize would help in developing gross and fine motor skills. The children should also
be given a lot of scribbling and colouring exercises. Development of pattern perception: Development of pattern
perception is also very important aspect for learning to write. Activities like sorting block, beads etc. according to the
shapes, colours, sizes can be undertaken. Placing the items in order, completing the given pattern can be given to the
children. The children can also be asked to move things along a given line or move their fingers along the given pattern.
Good Memory: Writing also requires a good memory, recall and ability to recapitulate. Without these, the children will
not able to write on their own. For this, memory games could be taken like placing things in the same order,
remembering the sequence, remembering various actions, pattern writing etc.

Regular Practice: Foe developing writing skills the children should regularly practice at

the school and home. They should do various activities at the home also to develop good eye hand co-ordination, fine motor skills, memory, etc. Only with regular practice and repetition the children will be perfect. It is very important for the children with H.I to develop this habit right from an early age, as they tend to forget very fast. Language Development: It is a very important prerequisite for writing. The child could express himself adequately through writing only if he has base of good language, so it has to be developed adequately from the beginning.

Reading Comprehension: It is also necessary that the reading comprehension
104 of the child be developed.

Only if the reading skills are developed the children would be able to write. 3.4. Assessment of written language at different levels: Writing is one of the most complex and difficult tasks for all students. At a basic level, writers must produce letters, words, and sentences that are readable by an audience by an audience. In other words, they must know the conventions of spelling and punctuation and use appropriate vocabulary and syntactical structures. At a higher level, they must be able to select topics, plan and organize ideas, and make decisions about the information to provide their audience (Powers & Wilgus, 1983). Several authors (Moore, 1996; Paul, 1998) have commented on the difficulty that students with hearing impairment have writing in English. Because of difficulty accessing and learning English syntactical and morphological structures, either auditorily or visually, they make numerous errors at the sentence level. In addition, because many students with hearing impairment have difficulty with reading, their exposure to models of good writing may be limited. Research on the writing of school-age students with hearing impairment shows that they display considerable delays when compared with hearing classmates. The assessment of written language at different levels is discussed below.

Oral and Written Language Scales (OWLS) The OWLS assesses higher order thinking, semantics, syntax, vocabulary, and pragmatics. It includes a Listening Comprehension Scale (picture pointing), an Oral Expression Scale (answering questions, and sentence completion) and a Written Expression Scale (use of conventions, syntactical forms, and ability to communicate meaningfully). TOWL-4: Test of Written Language-

Fourth Edition Ages: 9-0 through 17-11 Testing Time: 60-90 minutes

105 Administration: Individual or Group The fourth edition of Test of Written Language (TOWL-4) is a norm-referenced, comprehensive diagnostic test of written expression. It is used to (a) identify students who write poorly and, therefore, need special help, (b) determine students' particular strengths and weaknesses in various writing abilities, (c) document students' progress in special writing programs, and (d) measure writing. Subtests The TOWL-4 has two forms (i.e., Form A and Form B), each of which contains seven subtests. The sub tests represent the conventional, linguistic, and conceptual aspects of writing. Subtests 1-5 use contrived formats; subtests 6-7 use a spontaneously written story to assess important aspects of language. The subtests are: Vocabulary - The student writes a sentence that incorporates a stimulus word. E.g.: For ran, a student writes, "I ran up the hill." Spelling - The student writes sentences from dictation, making proper use of spelling rules. Punctuation - The student writes sentences from dictation, making proper use of punctuation and capitalization rules. Logical Sentences - The student edits an illogical sentence so that it makes better sense. E.g.: "John blinked his nose" is changed to "John blinked his eye." Sentence Combining - The student integrates the meaning of several short sentences into one grammatically correct written sentence. E.g.: "John drives fast" is combined with "John has a red car," making "John drives his red car fast." Contextual Conventions - The student writes a story in response to a stimulus picture. Points are earned for satisfying specific arbitrary requirements relative to orthographic (E.g.: punctuation, spelling) and grammatical conventions (E.g.: sentence construction, noun-verb agreement).

106 Story Composition - The student's story is evaluated relative to the quality of its composition. 3.5. Components and types of writing: Writing is an

ongoing process. It is necessary to develop interest of the children in

reading and writing from an early age. A sound base of language and reading habits would help a child to express himself or herself independently. There three types of writing. 1. Copying 2. Guided writing 3. Independent writing 1. Copying:

It means observing, looking and doing the same. It calls for imitation of the same pattern and do the same accordingly. At the beginning, the children could be asked to imitate gesture, or actions. Teachers can play games of imitation like clapping hands, jumping, putting hands up etc. Later children could be asked to imitate the teachers' action song, words or sentences. The children gradually learn to copy various things. They would also learn to copy the patterns in the sand, blackboard with their fingers. Activities like placing

of beads, blocks from left to right in a line, would also be taken for copying. Copying patterns with matchsticks is an enjoyable experience. Step by step children should be encouraged to move eye-hand coordination, pattern perception skills and development of fine motor skills should be developed amongst the children. Various age appropriate exercises can also be given to the children like: Copying the pictures and colours Joining dots to complete the picture Copying the alphabets

107 Joining the dotted words Tracing over the patterns Copying the whole word Copying the short phrases and sentences altogether

Copying the short passages, stories, conversations, picture description etc. 2.

Guided writing: After the children learn to copy patterns, pictures, words, sentences from the blackboard, charts or books, they can be slowly guided to start writing their experiences. In special schools the teacher's guide the children to write words, phrases, sentences after a news or conversation, directed activity or visit. The teacher can also provide clues and guide the children to expand on a given topic or printed form.

The teacher can guide the children to read instructions and solve various writing exercises and answer the questions.

Various

exercises can also be given to the children based on stories, passages or picture talks. Later, the teacher can guide the children for writing passages and essays on a given topic. Various

exercises can be given to the children

for developing guided writing like: Choosing and writing the words, sentences correctly by looking at the objects or pictures. Writing various words related to a given word.

e.g. Mango the words made would be fruit, raw, red, sweet, sour. seed etc. Rebus game For example, + cil= Pencil

Writing one word answer, short answer, long answer based on the passage

prepared on conversations, visits, textbooks etc. Circling/underlining/ filling the proper noun, verbs, adverbs, adjective from the given choices. Sequencing a conversation/story

108 Writing sentences in various tenses Forming various questions for underlined word/phrases 3.

Independent writing: Once the children are guided to write slowly and steadily, they need to be weaned from guided to independent writing. Children have to think, reason out and write from their memory, relating it to their experiences. The writing process consists of composing, spellings and handwriting. Composing involves planning and expressive language skills. 3.6.

Steps and Strategies in Developing Writing: The process of writing is a good way to know students' ability and creativity in expressing their ideas. Students need to be aware of the writing process. It is because composing is a series of stages that can vary in sequence and are often recursive, even though they must be ordered in certain ways in a text. Focusing on the process does not mean that the result of writing is not important. The final written product could be the written evidence of the writers' creativity. In other words, it can be said that a good process will lead to a good result. To develop the topics in a good process, there are some ways to go through (Brown, 2001). The writing process that is the stages the writer goes through in, order to produce something in his final written form. There are four-steps in the writing process- planning, drafting, editing and final draft (Harmer, 2004). Each step is described as follows: Step 1: Planning In planning stage, students plan and decide what they are going to write. They start gathering information and ideas for writing by making notes or planning in their minds. While planning, they consider three main aspects i.e. the purpose of the writing, the target group or audience they are writing for and the content structure which they have decided to include.

109 Step 2: Drafting In this stage, they write tentative ideas which are related to the topic that they are going to write without paying attention to the errors. Step 3: Editing (reflecting and revising) After making draft, they re-read their draft to see where it works or not. Perhaps the order of the information is not clear or the sentence is ambiguous. The process of editing may be taken from oral or written comments by peers or teachers. They will help the students to make a revision of their writing. Revising is looking back over what has been written. Step 4: Final version The students make a change of their work after the process of editing. The final product may be different from the first draft after going through some steps. All of the writing process above cannot be separated because those are elements in composing a good written text. Writers are made as well as born. Teachers who give time and energy, lots of practice and stimulus and who foster good writing will reap great reward in the classroom. The management of the writing class needs to be flexible and meet the needs of the strategies in developing writing of the children. It is most important therefore to understand those strategies. They can appear to have different labels in academic writing but are basically similar in description. Pre-Emergent Writing: The child at this stage has no great alphabetic understanding and so cannot decode letter-sound relationships. He will mainly scribble and use symbols and signs and very often will show evidence of letters in various places on the page. At this scribble stage the child will have a good understanding that communication of a message is at work. Knowledge of story content and structure will also be present at this stage. Personal stories, sentences or phrases for pictures will be based on experiences both real and imaginary. Most children will begin to develop phonemic

110 awareness and begin to write some letters but will use reversals and other common mistakes. As he progresses to word writing, spacing, directionality and even invented spelling the confidence grows. Some basic sight words will be used from memory. Children at this stage will greatly benefit from teacher modelling of this process and a consistent use of the Language Experience Chart. Emergent Writing: At this stage the child will have had experience of the different stages of phonological awareness and will have the ability to replace phonemes to make new words e.g. cat to mat. The letter order within words may not be fully developed and reversals may still occur. The child will write full sentences but very often the pattern is the same and each sentence will have the same beginning or ending. Very often at this stage it is difficult to maintain a topic and so the sequence may vary. Experiences with literature and use of books will begin to change the way in which the child writes and so style will develop and an experimental use of punctuation. Ideas and opinions are evident at this stage and a variety of genres should be explored. Early Writing: At this stage sentence construction develops further and more complete thoughts are evident. Practice at expanding sentences and use of descriptive words will help here. The maintenance of the topic has improved and the related sentences will be seen. The length of the piece of writing will have changed. Approximate spelling will still be used but evidence of spelling patterns will also help the child to attack difficult words. Work done on story structure will show here, as character, setting and action will form the basis of story writing. A good grasp of the "who," "doing what", and "where" will become habit. Pictorial recording will still be common. Help will be needed with simple editing and use of editing symbols will foster independence in this area. Developing Writing: Expanding story writing will include character, setting, plot, time and very often a personal response. Greater evidence of fluency in spelling will be a feature here

111 including knowledge of silent letters and homonyms. Punctuation will be seen here also but it will not be fully developed. Greater detail and more descriptive writing will develop. Exploration of a greater variety of writing styles and genres will begin and lots of practice is needed here. Constant practice at editing and redrafting will continue to develop independent writing. Established Writing: At this stage beginning, middle and endings are clear. A greater sense of audience and purpose influences the writing. Sentence construction, has developed even further and more complex sentences will be found. The use of paragraphs will show good sequence as a piece is introduced, developed and concluded. Editing and redrafting should be well developed as the child revises use of grammar and punctuation, but also revisits written ideas. Spelling will be more consistent and use of dictionaries and a thesaurus will be evident here. Story-writing elements will be more developed here, as resolution of problems and dialogue will be mixed with persuasive writing and clear personal responses. 3.7. Challenges and Remedial Strategies: There is a strong relationship between language, reading and writing. Hearing children usually start school with a strongly developed language; they know how language works, how it fits together to make correct sentences, they know the purpose of language and they have many words to express themselves. Language has given them a link to the outside world and through language they will have developed a strong general knowledge base. They can question, debate, argue and reason and use language to control the world around them. But due to lack in hearing, students with hearing impairment are significantly delayed in language and written expression; many teachers have struggled with ways to assist their students when writing paragraphs. Often the students struggle with prewriting skills where they are to formulate and organize their ideas before writing. This is the most creative step in the writing process.

112 Sometimes students with hearing impairment will have errors in grammar, tenses and word endings. Writing sentences with correct sentence structure depends on having an understanding of how our language fits together. They show through their written work that they may have gaps in their understanding of how language works. Many students with hearing impairment have wonderful ideas and it's at this stage they become motivated to write. Once their ideas are organized, they are then ready to write, but English syntax, grammar, and word order complicate the process often leading to the student's frustration and loss of interest in writing. Students with hearing impairment will often need repetition of correct usage of different sentence structures so they can gain a clear understanding of how words fit together to make sentences correctly. They will need to have encouragement so they gain confidence in written expression. Often students with hearing impairment prefer to write about facts they know rather than to use their imagination. There is some evidence that young students with hearing impairment may have limited opportunities for imaginary play and this limits the development of their imagination. Reading requires imagination as each word adds to the picture building in the reader's mind. Interactive Writing Strategies: Interactive Writing Strategies was created in 1991 by a research group from The Ohio State University and from Columbus, Ohio (Fountas, McCarrier, & Pinnell 1994). Interactive writing was developed from Moira McKensie's work with shared writing and from the language experience approach by Ashton- Warner (Collom, Tompkins 2004). During shared writing and language experience the teacher acts as scribe for the students. Interactive Writing differs in that the teacher and the students work together to write a text, or as the literature calls it "sharing the pen". This allows the students to take an active role in the writing process while the teacher scaffolds the support given to the students (Button, Johnson, & Furgerson 1996). During Interactive Writing students use their skills in language, conventions of print, and how words work to create meaningful writing and become competent, independent writers (McCarrier, Imnell, & Fountas, 2000).

113 Strategic and Interactive Writing Instruction (SIWI) Strategies: SIWI largely involves guided and collaborative writing. Students work along with the teacher to co-construct, monitor and edit a piece of text. When the group reaches a consensus to add a phrase or a sentence to the text, the teacher writes the students' word for word expressions (including grammar and meaning errors as they are communicated) on an essay. The teacher then opens the floor for further generation of ideas, or the beginning of revising or editing dialogue. Writing as a recursive process is demonstrated, for participants fluidly move back and forth between ideal text generation, revising and editing. The teacher provides scaffolding and support to students in performing tasks beyond their current levels, with the expectation that students will gradually appropriate: these skills and strategies for independent use. As students grow in confidence, the teacher will move to paired or small group writing and then independent writing. SRWI consists of two major instructional components: (a) the use of writing process strategies or strategic writing instruction and (b) apprenticeship in writing through guided and interactive practice or interactive writing instruction. (a) Strategic writing instruction: SIWI is strategic in the sense that students are introduced to the approaches of expert writers through the use of word or symbol procedural facilitators. These are temporary supports in place to guide students' planning of successful action around writing processes. It is intended that students become deliberate writers during all parts of the writing process. (b) Interactive writing instruction: SIWI is designed to apprentice students in the construction of text through interactive or discursive instruction using an activity format comparable to the adapted format. The collaborative format of SIWI provides a way for teachers to transfer the control of writing processes and strategies over to students. Students are exposed to the thinking, words and actions of more-knowledge able-writers in the context of activity and, over time, appropriate these for their own. Power Writing Strategy: It is a writing strategy adapted from J.E.Sparks Write for Power. It is a framework

114 or strategy that can be used By teachers at all grade levels and across all content areas to, teach writing. Through the implementation of graphic or visual organizers, Power Writing develops organization and communication skills while providing a consistent formula for writing paragraphs. Each paragraph contains: 0 - Background, 1 - Main Idea, 2 - Details, 3 - Supporting Details. Power Writing has 4 steps/writing levels. Step 1, beginning paragraph writing: The student writes about the main idea, adds three detail sentences, and concludes with a closing remark about the main idea. The student follows the 1-2-2-2-1 format. Example: 1 Junk Food I Enjoy (Main Idea) 2 Brownies (Detail) 2 Pizza (Detail) 2 M&M's (Detail) 1 Favorite Foods (Main Idea Restated) I really like three kinds of junk food. I love brownies. I also like pizza. I think M&M's are awesome. I love junk food. Step 2, adding more details: When a student has become proficient at Step 1; he is ready to add more details in his writing. It's time to go to Step 2. Step 2 introduces number 3 which is another supporting detail. It follows a 1-23-23-23-1 format. Example: 1 Junk Food I Enjoy (Main Idea) 2 Brownies (Detail) 3 Lots of Chocolate (Supporting detail) 2 Pizza (Detail)

115 3 Pepperoni (Supporting detail) 2 M&M's (Detail) 3 Red ones (Supporting detail) 1 Favorite Foods (Main Idea Restated) I really like three kinds of junk food. I love brownies. They have lots of chocolate in them. I also like pizza. Pepperoni is the best! I think M&M's are super. I always eat the red one first. I love junk food. Step 3, adding background information and more details: It follows a 001-233-233-133 format. 0 Night (Background) 0 Hungry (Background) 1 Junk Food I Enjoy (Main Idea) 2 Brownies (Detail) 3 Lots of Chocolate (Supporting Detail) 3 Warm Inside (support Detail) 2 Pizza (Detail) 3 Pepperoni (Supporting Detail) 3 Thick Crust (Supporting Detail) 2 M&M's (Detail) 3 Red Ones (Supporting Detail) 3 Bags and Bags (Supporting Detail) 1 Favorite Foods (Main Idea Restated) 3 Eating all day (Detail) 3 Tastes great (Detail)

116 It was late at night. I was really hungry. I thought about the three kinds of junk food I like to eat. I love brownies. They have lots of chocolate in them. They make me feel warm inside. I also like pizza. Pepperoni is the best. I like pizza with a thick crust. I think M&M's are super. I always eat the red ones first. I could eat ten bags of them. I love junk food! I could eat these foods all day. They taste great. There is a Step 4 for more proficient writers that follow a 001-2333-2333-2333-1333 format. In conclusion, because this writing strategy is so visual and follows the same format story after story, the students have been able to write paragraphs with amazing ease. After teacher modeling as a shared writing activity, students with hearing impairment quickly become familiar with the format. 3.8. Let's Sum Up Writing is an act of communication and a purposeful means of addressing an audience. In this unit basic prerequisites have been discussed thoroughly. Three basic types of writing along with steps and strategies like pre-emergent writing, emergent writing, early writing, developing writing are also mentioned in this unit. Students with hearing impairment faced various challenges while writing but strategies like SIWI, Interactive writing and Power writing makes them independent writer. 3.9. Check your Progress 1. Define writing. What are the prerequisites of writing? 2. Describe in brief about the various assessment tools for writing of students with hearing impairment. 4. Describe in detail about types of writing. 5. What are the steps followed in developing writing? Describe the strategies involved in developing writing. 6. Write the challenges faced by students with, hearing impairment while writing. Discuss its remedial strategies in detail.

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Unit - 4 Curricular Adaptation Structure 4.1 Introduction 4.2 Objectives 4.3
Curricular adaptation-meaning and principle 4.4 Need assessment and decision making for adaptation 4.5 Adapting curriculum-content, teaching learning material, and instructions :
Adaptation of Curriculum 4.6
Types of adaptation and process. 4.7 Adaptation and accommodations in Student's Evaluation and Examinations. 4.8
Let us sum up 4.9 Check your progress: 4.10 References 4.1

Introduction

There is no recipe for adapting general education curriculum to meet each student's needs. Each teacher, each student, each classroom is unique and adaptations are specific to each situation. Keep in mind that curriculum does not always need to be modified. By providing multi-level instruction you will find that adapting a lesson may not always be necessary. Differentiating instruction and providing multiple ways assess allows more flexibility for students to meet the standards and requirements of the class. At other times, the curriculum can be made more accessible through accommodations.

We all know that children with hearing impairment often have inadequate language in all forms especially in spoken or written. They find it

difficult to understand the information given in text books or other material. They also find it hard to understand what the teacher teaches, if their learning style and mode of communication does not match the

119 teachers teaching style and

mode of communication. The only way to overcome this difficulty is to make teaching learner centric via use of simple

terms or providing a glossary, avoiding use of complex sentences and saying things in simpler sentences

or reorganizing the language in a way that child finds it easier to comprehend. Illustrations and diagrammatic

representations could also be used with the help of teaching aids. Many examples may be given visually, orally or

in writing to make the information clear; in this way the child would be able to learn even the difficult and higher order

concept. All such improvisation in materials and methods to assist the process of learning constitute

curriculum adaptation. 4.2

Objectives After going through

this unit

you will be able to ?

Understand the

meaning

and principles of curricular adaptation. ?

Conduct necessary assessment and make decision for adaptation. ? Understand the area of

adapting curriculum- content, teaching-learning material, and instruction. ? Understand types of adaptation and process.

? Discuss adaptation and accommodations in student's evaluation and examinations 4.3 Curricular

adaptation-meaning and

principle Adaptations in its lay terms mean the act of fitting in a situation. Curriculum adaptation of, curriculum when planned well

will certainly benefit all

pupils, not just those with special needs.

The adapted curriculum should be helpful and advantageous to the

students. It must be feasible for the teacher and the system to implement. For children with special needs, the curriculum

should be planned in such a way that it inter-relates the facets of classroom services special support services and

personnel and co-curricular activities. Which can facilitate Curriculum integration in its most specific situation. The needs

of learners with specific disabilities are varied. They should be given an

120 opportunity to have access to curriculum throughout the school span just like their age mates. The learning

atmosphere should be such as to generate self motivation, and self- monitoring among the learners. The instructional

materials developed should create conducive conditions and provide experience to the learners. The adapted curriculum

should be such that it suits the needs of the deprived, the disadvantaged and the challenged view to bringing them at par with other

students. Several writers have described appropriate procedures for adapting curriculum and instruction.

The steps identify by

Deschenes et al (1999); Dettmer et al. (2002), Hoover and Patton 1997 can be summarized as: • Selecting the subject or topic to be taught; identifying the specific content to be included; •

Deciding on the way the lesson will be organized and conducted for most students; repairing any

necessary adaptations (

e.g.

shorter assignments, easier textbook, extra use of concrete materials) Teaching the lesson., along with necessary

additional changes. • Providing extra assistance to certain students while the lesson is in progress.

Adaptation can, be made in different areas

like the entire curriculum. Itself or different areas of curriculum like the text book material or resources, teaching

strategies and assessment. However It is also

recommended that adaptations and modifications should not be used unless absolutely necessary and should be faded as soon as possible in order to make the student independent at later stage of schooling. Before proceed further we will discuss about the meaning and differences of adaptation, accommodation and modification. ?

Curricular Adaptations are changes permissible in educational environments which allow the student equal opportunity to obtain access, results, benefits, and levels of achievement.

These adaptations consist of both accommodations and modifications.

Some curricular adaptations do not fundamentally alter or lower standards or expectations in either the instructional or assessment phases of a course of study and can be designated as "accommodations."

These accommodations provide access to participate in the Least Restrictive Environment (L.R.E.) and an opportunity to demonstrate mastery of performance standards.

Some adaptations do alter or lower standards or expectations and can

121 be termed "modifications." These modifications, although providing access, will necessitate careful selection of assessment components to achieve accountability for performance.

General Principles in adapting the Curriculum and Selecting the Curriculum Content 1

Breadth and Depth Considering the total development of the children and time constraint, attention needs to be given to maintaining a good balance in the curriculum in terms of breadth and depth when making adaptations or when designing learning materials for the children. Neither of these elements in the curriculum should be emphasized to the exclusion of the other. 2 Continuity Change in levels, particularly from the primary to the secondary, change of schools and change of teachers may possibly leave gaps in the children's knowledge, which are often an obstacle to progress in learning. To ensure continuity, the teacher needs to identify these possible gaps in individual children through assessment and take remedial action to bridge these gaps without, however, neglecting the general progress of the whole class. 3 Previous Knowledge Learning is often easier and more effective when built upon previous knowledge. It is therefore important that the teacher should identify the previous knowledge of individual children in specific subjects and establish their baselines. Plans as to what learning materials and teaching approaches to use can then be formulated. This will not only bridge possible gaps in the children's knowledge but also avoid unnecessary overlapping of learning materials. 4 Individual Differences Though basically schools and classes for hearing impaired children are encouraged to follow the mainstream curriculum with adaptations, consideration needs to be given to

122 individual differences in the children in terms of ability and interest so that individual learning materials can be designed. 5 Communication Competence As the ability to communicate is a prerequisite skill both in studies and in everyday life, every effort needs to be made to develop communication competence in the children. 6 Residual Hearing There is a general misunderstanding that hearing impaired children cannot perceive sounds whereas in fact most of these children have residual hearing. With sufficient training given to the children and with the help of effective amplification equipment, their use of residual hearing will help to improve their abilities to perceive sounds in the environment, which in turn will be helpful to language development. Therefore, the teacher needs to encourage the children to maximize their use of residual hearing for language development. Language Across the Curriculum The learning of language should not be confined to language lessons only. Instead, it should be extended across the curriculum. Spontaneous language situations can be built casually into the lessons of other subjects to motivate the children to practise using the language for communication purposes. However, this should not be overdone, or these lessons will be turned into language lessons. 4.4

Need assessment and decision making for adaptation If the IEP team decides that a child needs a particular modification or accommodation, this information must be included in the IEP. Supports are also available for those who work with the child, to help them help that child be successful. Supports for school staff must also be written into the IEP. Some of these supports might include: ? attending a conference or training related to the child's needs, ? getting help from another staff member or administrative person,

123 ? having an aide in the classroom, or ? getting special equipment or teaching materials.

Assessments: Assessments are procedures that are individualized for each student. An Educational Institution may use a variety of assessment tools and strategies to gather sufficient relevant functional, developmental, and academic information about the child. This information may assist in determining if the child is a student with a disability

and the content of the child's IEP. Academic information includes your child's progress in the general curriculum, or for a preschool child, participation in appropriate activities. Assessments include printed tests, observations, information from parents, as well as other sources of information that are: ? Selected and administered in a way that is not racially or culturally discriminatory; ?

Administered in the child's native language or other mode of communication and in the form most likely to yield accurate information on what the child knows and can do academically, developmentally, and functionally, unless it is not feasible to do so; ? Used for the purposes for which the assessments or measures are valid and reliable; ? Are administered by trained and knowledgeable personnel

according to the

instructions provided by the producer of the test; ? Tailored to identify specific areas of educational need, not merely to provide a single general intelligence quotient;

and ? Selected to accurately reflect a child's aptitude or achievement, rather than the impaired sensory, manual, or speaking skills, except where these skills are the factors that the test is to measure. Each report of assessment procedures shall include: ? A description of the child's performance in each area of suspected disability; ? Relevant functional, cognitive, developmental, behavioral, and physical

124 information; ? Instructional implications for the child's participation in the general curriculum or, for a preschool child, participation in appropriate activities; and ? For any assessments not administered under standard conditions, a description of how it varied from standard administration procedures.

Initial Evaluation: The initial evaluation shall be comprehensive enough to ensure a child is assessed in all areas related to the suspected disability, including, if appropriate: ?

Academic performance ? Communication ? General intelligence ? Health, including hearing and vision ? Motor abilities ?

Social, emotional, and behavioral status No single procedure is used to determine if

a child is a student with a disability and to determine an appropriate educational program for the child.

A child may not be identified as a student with a disability in need of special education and related services if the determinant factor is: ? A lack of appropriate instruction in reading, including the essential components of reading instruction, which are:

A Curricular Adaptation and

Decision-making Process This

decision-making flowchart can

be used to conceptualize the proces of selecting and implementing curricular adaptations. It should be used as a tool for a team in determining an individual student's needs.

Identify the student's individual educational goals and objectives to be emphasized during general education activities

125 Next Articulate the expectations for the student's performance in general education activities

Next

Determine what to teach As a team, determine the content of the general education activity, theme or unit study Next

Determine how to teach As a team, determine if, without modification, the student can actively participate and achieve the same essential outcomes as non-disabled classmates. If the student cannot achieve the same outcomes... Next

Select

of design appropriate adaptations

next Select Select Employ Select Engineer Design Select instructional lesson student- curricular the modified natural arrangement format specific goals physical and materials supports and teaching specific to social supervision strategies the classroom

lesson environment Next

If the above adaptation strategies are not effective, design an alternative activity

Next Evaluate effectiveness of adaptations

Curriculum Adaptations

It is important to correlate adaptations with the IEP. In other words, we are not adapting for adaptations sake but, to meet the student's needs as identified

on an IEP. a. Curriculum as is. This is

the

type we forget most frequently. We need to constantly

126 be looking at the general education curriculum and asking if the students on IEPs may gain benefit from participating in the curriculum as is. We need to keep in mind that incidental learning does occur. Curriculum as is supports outcomes as identified in standard curriculum.

b. Different objective within the same activity and curriculum. The student with an IEP works with all the other students in the classroom participating in the activity when possible but, with a different learning objective from the other students. This is where the principle of partial participation fits. Examples include: ? A student with a short attention span staying on task for 5 minutes. ? Using a switch to activate a communication device to share during a class discussion. ? Expressing one's thoughts by drawing

in a

journal instead of writing. ? Holding a book during reading time. ? Understanding the effect World War II has on the present rather than knowing the names and dates of key battles. c. Material or environmental adaptations. The material or environmental changes are utilized so that participation in the general education curriculum by the student with the IEP may occur. Examples include: ? 5 spelling words from the weekly list instead of the standard 20. ? Completing a cooking assignment by following picture directions rather than written directions ? Changing the grouping of the class from large group to small groups (possible with the additional support staff). ? Changing the instructional delivery from lecture to the cooperative learning format ? Using a computer to write an assignment instead of paper and pencil. ? Reading a test to a student. ? Highlighting the important concepts in a textbook. ? Having the student listen to a taped textbook. ? Using enlarged print ?

Using an assistive technology device

127 ? Using visual cues such as picture and/or word schedules for those who have difficulty staying on task. ? Using a note taking guide listing the key concepts during a lecture. d. Providing Physical assistance. Assistance from another person may be needed for a student to participate

in a

classroom activity. If possible, it is better to use natural supports (peers) as these will be the people always present in the student's life. If the use of peers is not possible, then either the support teacher, the paraprofessional, the classroom teacher, the classroom aide, or a parent volunteer may provide the assistance. Most peers and staff will need training in the correct way of providing physical assistance. In addition, we need to keep in mind the principle of partial participations. Examples include: ? Starting a computer for an student with an IEP (Individualized Educational Programme) to use. ? Guiding a hand during handwriting. ? Assisting in activating a switch. ? Completing most of the steps of an activity and having a student with an IEP do the remainder. ? Pushing a student in a wheelchair to the next activity. e. Alternative/substitute curriculum. This is sometimes referred to as functional curriculum as it usually involves the acquisition of "life skills." The decision to use alternative/substitute curriculum is a major change and needs to be reflected on the IEP. This decision should be carefully made after weighing all

of

the pros and cons of using an alternative curriculum. The alternative curriculum may or may not take place in the general education classroom. Examples include: ? Community-based instruction (which all students may benefit from!) ? Learning job skills in the school cafeteria. ? Learning how to use a communication device.

128 ? Doing laundry for the athletic department ? Learning cooking/grooming skills at the home. 4.5

Adapting curriculum-content, teaching learning material, and instructions. Adaptation of Curriculum We already know that

curriculum has a broad range of experiences. It is the totality of all teaching learning experiences provided to a child inside and outside the classroom for bringing about the desired results.

Hence curriculum adaptation would include adaptation in: 1. syllabus, methods and techniques of teaching. 2. co-curricular activities. 3. evaluation procedure. 4. teaching learning materials. All the above would have to be adapted differently at different levels i.e., preschool, primary and secondary.

1. Adaptation of Syllabus, Teaching Methods and Techniques
The special school for children with hearing impairment is planned for duration of four to five years. This is so as to develop the natural language base required for primary education. However the duration depends upon the language level. It may even be curtailed if the child's achieves age appropriate language and communication skills. The teacher student ratio of 1:4 or 5 is maintained in pre-schools. Similar to regular schools, a special curriculum for the hearing impaired is prepared by the respective schools taking into consideration the children's needs and social and cultural background. It is especially aimed at developing functional language so as to facilitate the development of communication skills. Activities are specially contrived to develop receptive and expressive language. Various special methods like natural, structural and maternal reflective method are also used to teach language.

Variety of

techniques like show and tell, news conversation, storytelling, directed activity, visits; poems etc.

are used to

129 enhance language learning. Rigorous drill work is done through play way method.

Calendar activities, mathematical skills, environmental studies and physical activities are included to provide language rich experience. Adaptation in these includes changes like teaching mathematical concepts through word problems and emphasizing the verbs and question forms in the language classes. Along with language, listening and speech skills are developed through auditory training. Speech reading is also fostered. Different techniques are used for the development of reading skills. The 'Whole word method' is used for teaching reading along with phonic method. The entire learning is based on the experiences of the children. Parents are also empowered to become equal partners in the educational process because much of the language learning experiences are experienced at home. Adapting the resources Resource materials are not just the text books, but also those materials, which the teacher selects for instructing the students. Adapting resources is considered to be one of the areas which require improvement. Resource materials include texts, worksheets, exercises, black board notes, and computer software. Some strategies given by James and Brown (1998) Squires (2001) which can be employed for modification of resource materials which are as follows:

Simplify the language (use short sentences, substitute simple words for difficult terms) Pre-teach any new vocabulary (if a difficult word cannot be simplified, ensure that it is looked at and discussed before students are expected to read it unaided) Provide clear illustrations or diagrams Improve legibility of print and layout Remove unnecessary detail Present information in small blocks of text, rather than dense paragraphs. Use bullet points and lists, rather than paragraphs where possible

130 make printed instructions or questions clear and simple Use cues or prompts where responses are required from the students (e.g. provide the initial letter of the answer, or use dashes to show the number of words required in the answer).

Adapting the text books Text book is an important resource material and is central to the whole teaching learning process. It is always a guide for the teacher and a uniting factor in language learning of a wide area. It is unquestionably the most widely used instructional tool. According to Hummel (1998) text books constitute the primary vehicle for delivering content knowledge and for determining in large measure what goes in a class. Access to text books is a significant factor in predicting academic Achievement (Heyneman et. al 1998) text books is a I .11 1998) Textbooks are thus a significant aspect of the educative process as necessary as the classroom itself, as indispensable as the classroom teacher. Textbooks have been commonly developed for all children. In some of the western countries a choice exists for selection of textbooks according to the reading level of the child. Such a kind of facility is not available in India and all children special or reading deficits follow the same text books. A study conducted by Wadekar and Mathew (2002) reveals that the special teachers of children with hearing impairment opine that the textbooks followed for children with hearing impairment are actually written for typical children and so the hearing impaired find it difficult to comprehend the textual language or content. Teachers strongly recommended for developing adapted textbook for instructional purpose and for self learning. One of the observations of the teachers is that the text books language is too complex and differs from everyday language of the hearing impaired. Usually the textbook

language is attuned to the Language of the hearing, children. Too many concepts are presented together.

The presentation does not facilitate conceptual clarity among children with hearing impairment, because of the following: Vocabulary

load. Complex and long sentence structure.

131 Use of too many abstract word. Usage of idiomatic language. Wadekar and Mathew (2002) opine that due to the above mentioned factors, children with hearing impairment show less interest in using the textbooks rather they refrain from using these. Children try to pronounce the words without understanding the meaning, and use superficial visual matching while answering the question. However problems like unfamiliar vocabulary, idioms and phrases, and specialized vocabulary are some of the problems faced by normal hearing children also. Adaptation of the material could overcome some of these problems. Adaptation is not reducing or changing the content, but the thrust is on the simplicity for knowledge acquisition some strategies suggested can be the following. Simple meaning, to the new vocabulary can be provided. Complex sentences can be made into simpler ones. Abstract words can be explained with illustration. For idiomatic expression suitable explanation has to be given. If the adaptation is minimum it can be done on the existing material itself. If required, additional booklets can be used to supplement the textbook. Adapting the approach Since children with hearing impairment have problem with understanding and expressing their needs through language, there is a need to improvise the approach to teach them. Given below are some approaches that are suitable to teaching children with hearing impairment As per the convenience of the particular child, a teacher has to adapt the approach to communicate effectively to the child. Children with hearing impairment can be taught to understand what has been communicated to the end respond appropriately through different ways like. Verbal or oral-aural approach When a child is taught to communicate using speech, it is known as the verbal approach. In the verbal approach both the sender of the message as well as the receiver of the

132 message would use speech for communication. There are several advantages of teaching speech to a child with hearing impairment. The advantage of communicating through speech is that they adjust more easily to their surroundings, throughout their life, thus improving the quality of their life. When a child uses the verbal mode for communication, he/she can study more easily in an inclusive set-up, thereby widening the vocational options. The Pasco can participate I utilize the information I entertainment provisions available in the society. Hence the child will have less psychological stress. However, while using this approach to teach. The teacher has to be careful to use clear speech, short sentences, well-timed pitch and slow pace of speech. It is also necessary to make the children with hearing impairment position in such a way that they get a clear view of the teacher to facilitate better reception of speech. It is essential to make the children seated away from. The source of noise. If any in the vicinity of the class to avoid auditory distraction. Non-verbal approaches - Non-verbal approaches include any method where the individual with communication disorder tries to communicate without using speech. The most common among nonverbal method is communicating with hand shapes and movements. When, a person uses his/her hands in a specific and systematic way to communicate, it is known as manual form of communication. There are different ways in which the manual form of communication can take place. Some of them are finger spelling and sign language. Children who use the manual method communicate comprehend better even if there is no useful residual hearing. The person can learn easily and faster than speech and as a result psychological stress is less. To use these approach in teaching process, the teacher has to be well versed with it the care has to be taken to see that the sign used by the teacher means the same to the students. since the written form of communication use verbal language there is additional burden for children to learn that also because writing is mandatory in our education system. Combined approach Sometimes children with communication disorders are helped to learn and use both verbal and manual methods. Combining the two approaches may help them to learn to

133 communicate easier and better. Some of the examples of combined approach are cued speech and total communication. Depending on the situation, the teacher has to make use of the communication approaches. The main idea is that the child comprehends the lesson. While adapting the material, the approach that may be used to communicate the same may also be decided. In our classrooms most of the times, total communication is used to reach children with hearing impairment. Adaptations in methods Different methods of teaching are used to teach typically developing children in the classroom: However, while teaching children with hearing impairment, the same methods could be used, but it has to be modified according to the needs of the children with hearing impairment. Below given are some methods that can be improvised to suit children hearing impairment. Project method Project method applies the principle of learning with through planning which requires total involvement of the children. Children with hearing impairment learn better when they are involved in the teaching learning process and when they become a part of it. So, teachers can make use of the project method so that children become actively involved in teaching learning process. Project method aims at providing community life activities on small-scale in the school. The project-method is the outcome of the pragmatic educational philosophy of John Dewey, the noted American philosopher-cum-educator. The pragmatic educational philosophy lays great stress on providing different kinds of rich experiences to children. The project method is the expression of the wide spread dissatisfaction against the bookish, encyclopedic method which makes children passive and in which children are drilled and spoon-fed with information which mostly is unconnected with real life situations. Activity method There is no doubt that given the chance children with hearing impairment can achieve

134 better when curriculum materials emphasize active learning and hands on activities. Children learn enthusiastically and quickly, when they are actively involved in the teaching-learning process. The biological science curriculum study (BSCS) has developed materials characterized by low verbal content, and an emphasis on hands on activities, The study resulted in substantial gains and retention of the content for children with hearing impairment who participated in the study.(Grant et al., 1975). In activity method a person engages in an activity in which they are free to do what they want. They learn through their mistakes, as they are sure to make errors in their freedom to explore the situation, There is ample opportunity given to the child for self-expression. Heuristic method The word 'Heuristic' is derived from a Greek word 'heuriskein' which means 'I discover' or 'I find'. Hence the heuristic method is the method in which children discover and find things for themselves and are placed in the position of discoveries or inventors. This method was first used by Prof. Henry Edward Armstrong of the Imperial College London in the teaching of science. Prof Armstrong involved his students in finding out by themselves instead of telling or lecturing them. Laboratory work was compulsory for every student where he could discover instead of being told. The main objective of the heuristic method is "to make pupils more exact, more truthful observant, thoughtful and dexterous to lay the solid foundation for future self-education and to encourage the growth of a spirit of enquiry and research. School subjects could be made interesting if the right kind of method and technique is employed. A child with hearing impairment learns better when different senses are involved in the learning process. When a child with hearing impairment is allowed to touch, feel, see, hear and manipulate, he learns better. The same principle is utilized by the heuristic methods wherein children learn by themselves by discovering it. Guidance of teacher at every stage is essential. Depending on the content, suitable method can be adapted. The teacher has to be creative to adapt the material, approach and method as per the situational demand. Though this seems laborious initially, as the benefits are multifold, teachers will be motivated to - use improvised techniques in their day today classes.

135 2. Adaptation

of Co curricular Activities In special preschool curriculum the drawing and craftwork are considered as supplementary for language learning.

Every subject and every lesson in a preschool programme becomes a language-learning lesson. Hence celebration of functions and festivals are included not only for social purposes but also for

providing language learning experiences. Competitions are also organized with a dual purpose. First, to develop competitive spirit and secondly to provide an experience to learn language.

E.g. through fancy dress competition of community helpers teachers increase the general knowledge about the community helpers and also encourage communication through interaction. 3. Adaptation of Evaluation The assessments are a continuous activity conducted both, individually and in group in the preschool curriculum. The children are assessed prior to teaching in order to know their language and knowledge levels. These are need used to plan the objectives, lessons and while deciding the teaching strategies.

Various standardized tests and teacher made tests are used for assessing the development of linguistic, conceptual and literacy skills in the children with hearing impairment.

In a special preschool curriculum assessment of both language and knowledge are given equal importance.

Need based adapted worksheets are prepared by the teacher for evaluation. Depending upon the levels, teachers may give clues in brackets, use pictures in the sheets, or give different kinds of puzzles etc.

Auditory skills and speech skills are also evaluated

for setting the teaching goals. 4. Adaptation of Teaching Learning Materials Amplification devices have to be installed in a preschool class.

Induction loop system, Frequency Modulated hearing aids are more suitable at preschool level as they do not obstruct the mobility of the children and provide flexibility to both the teachers and the preschoolers. Lot of teaching learning material are required while teaching the children with hearing impaired at pre-school. Flash cards, charts, models etc. are extensively used, Storybooks' scrapbooks for conversations, teacher made reading materials are also prepared. Sometimes experiences are enriched through real objects.

For this a variety

136 of material is

used like pieces of different types of cloth, feathers, stones, sand pebbles, etc.

Though globes, weather cock, maps are not required for the curricular subjects; these teaching aids are also sometimes used by the teachers for developing concepts while undertaking news conversations in the preschool class. The various adaptations done for the children with hearing impairment in the curricular transactions have been discussed. All these are done with an aim of to facilitating language development. The set goals of special education can be achieved only if these adaptations are implemented properly. This is possible when an appropriate infrastructure is made available and the activities are scheduled properly. Therefore certain adaptations have to be made in the environment to make it learner friendly. So adaptations are required in the infrastructure and time-table for the children with hearing impairment. Since opportunities for learning especially for language development have to be 'seized', adaptation in the time-table are also very essential. (a) Adaptation

of Classroom Infrastructure and Arrangement: Adaptation of infrastructure has to be made in terms of arrangement

of light, furniture including blackboard, level of teacher's chair etc.

This is done to facilitate good listening and speech reading. The walls and floor is also adapted considering the acoustic features to reduce noise.

The arrangement of a preschool is flexible as the small children have to undertake various activities. Group activities are conducted in a semicircular seating arrangement to facilitate communication skills. While as for other activities like free play, individualized teaching, reading' speech teaching the arrangement can be different.

Sometimes speech booth with mirrors are also created in the class. (b) Adaptation of Schedule:

The time-table at preschool level is very flexible. The duration of each period is also flexible.

the techniques used for teaching language like directed activity, story visits usually find a place in timetable itself .Also ,auditory training ,speech teaching and reading are also include in the time table .though there may be an allocated slot for news conversation,this slot also get adjusted according to the seized opportunity

137 for news conversation.Ususally

the morning hours are allocated for the teaching of new things and later hours for the drill work, The recess time is also utilized for providing

teaching learning experiences and language learning experience by either the teachers, or voluntary workers or teacher assistants. Adaptations at Primary and Secondary Level 1. Adaptation of Syllabus, Teaching Methods and Techniques

The syllabus at these levels is similar to that of the regular schools. However only one language is compulsory.

The activities of news conversation,

auditory and speech training are still continued at least during the list levels. However as the children progress towards secondary level, emphasis on these activities is gradually reduced.

At the secondary level the syllabus is similar to that of the regular schools but only one language is compulsory. There is flexibility to choose either higher or lower level of this language. Various vocational subjects are offered in place of the other two languages. In some state educational boards, children are given choice of lower Maths (Maths of Std. 7th) instead of algebra and geometry.

Instead of science they can opt for Home science (Physiology and Hygiene). Special vocational training subjects are also included in some educational boards. Work experience is included in the syllabus of some educational boards too. Since the Preschool 'focuses on language development, at the primary and secondary level along with language, subject teaching is also emphasized. Reading lessons are geared towards development of independent reading skills take an important position.

Development of mathematical language is emphasized for solving word problems and other equations through mathematics. Various methods like project method, demonstration method, heuristic method, lecture method are also used in an adapted form. While teaching from textbooks, different techniques of teaching like narration, questioning, and dramatization are used instead of the routine Listening, Reading and Speaking Method (LRS Method).

138 Many a times children are group as for auditory training and speech teaching. Gestures and finger spellings (if required) are also incorporated while teaching the primary and secondary

children. Art and craft subjects are again supplementary lessons for language development. Physical education is also used for development of auditory skills and language.

Various activities to develop observation skills, communication skills are included along with the regular school subjects. Rigorous drill work is done through follow-ups. 2. Adaptation of Co-curricular Activities All co-curricular activities are geared towards language develop-ment. Festivals and competition are conducted with dual purpose of language teaching and socialization.

Outdoor sports are also conducted and these experiences are used for developing interaction and communication.

Girl guides, hiking and excursion are taken for promoting social integration. Inter and Infra School (both special and regular schools) competitions are specially undertaken to

facilitate mainstreaming. Prevocational skills are developed through activities likes fabric painting, book binding, screen printing, computer training etc.

in these sections. 3. Adaptation of Evaluation Strategies Continuous and ongoing evaluations is a regular feature of special education at all levels. Every topic ends with an evaluation. Due to problems in understanding of language and difficulties in reading, sometimes less weightage is given to inferential type of questions in the evaluation. While evaluating the children .with hearing impairment equal weightage is given to knowledge and language assessment. Auditory and speech skills are also evaluated to plan further strategies of teaching. At the secondary level, marks assigned may vary depending upon the subjects opted. Marks of some subjects like lower maths, home science are combined with vocational subjects. Extra half an hour is given to the students for the exams if required. Adaptations in the infrastructure and schedule are also required at the primary and secondary level also for successful implementation of the - adapted curricula.

139 4. Adaptation in Teaching Learning material Group amplification devices are installed in the classroom. Teaching aids like charts, models are extensively used. These days even Computer Assisted Instructions are given to the children in special schools. Considering the problems of language and reading, textbooks used for the special children are adapted so that the children understand the concepts through reading.

While adapting the textbooks, the language is made simple, concepts are made clear through simple presentation and extra examples, illustrations are also added and the presentation of matter is made simple through use

of bullets forms, tree diagrams, pie-diagrams etc. (a) Adaptation in Classroom Arrangement and Infrastructure:

The seating arrangement in the primary and secondary sections of the students is semicircular or U shaped and is usually fixed.

Group hearing aids are installed. Folding blackboards with provision of graphs are also used. Soft boards are placed near the blackboards to pin charts etc.

Arrangement of lights in the class is also adapted. Assistive listening devices like glowing lights instead of bells etc. are also some of the adopted features.

Acoustical treatment is given to the walls and floor to reduce noise levels. Classrooms have different corners for individual and group teaching and other pre-vocational activities. (b) Adaptation of Time-Table: Auditory training and speech training have a place in the time-table along with other subjects. Distribution of hours is need based. More hours are allocated for language. Co-curricular activities also have place in the time-table. Adaptations in Continual Education : The avenue of open education though distance mode is also available to the children with hearing impairment. This programme has flexibility in terms of age, time, choice of subjects and evaluation. Adaptation is done in terms of Special Accredited Institutions setting up to provide barrier free environment to the disabled students. Though the syllabus and subjects remain the same as students with normal hearing, the number of hours of contact programme, the methods and techniques of teaching during the contact sessions is adapted for the children with disabilities.

140 4.6 Types of adaptation and process.

Nine Types of Adaptations

Size

Adapt

the number of items that the learner is expected to learner compete.

For example: Reduce the number of social studies terms a learner must learn at any one time.

Time Adapt the time allotted and allowed for learning, task completion or testing. For example: Individualize a timeline for completing a task;

pace learning differently (increase or decrease) for some learners.

Input Adapt

the

way instruction is delivered to the learner. For example:

Use different visual aids; plan

more concrete examples; provide hands-on activities; place students in cooperative groups.

Difficulty

Adapt

the skill level, problem type, or the rules on how the learner may approach the work. For example: Allow a calculator for

math problems; simplify task directions; change rules to accommodate learner needs.

Degree of

Participation Adapt the extent to which a learner is actively involved in the task.

141 For example: In geography, have a student hold the globe, while others point out the locations.

Alternate Goals Adapt the goals or outcome expectations while using the same materials.

For example: In social studies, expect one student to be able to locate just the states while others learn to locate capitals as well.

Level of Support Increase the amount of personal assistance with specific learner.

For example: Assign peer buddies, teaching assistants, peer tutors.

Output Adapt how the learner can respond to instruction For example: Allow a verbal vs. written

response; use a communication book for students; allow students to show knowledge with hands-on materials.

Substitute Curriculum Provide the

different instruction and materials to meet a learner's individual goals.

For example: Individualize a timeline for completing a task; pace learning differently (increase or decrease) for some learners.

For adapting curriculum successfully an educator should follow the process-

Step 1. Create a Plan for Adapting Materials Effective adaptations require sustained development and support. They must be made

142 within the framework of a larger plan that includes consideration of (a) basic and strategic skills instruction and (b) the roles of people involved in the adaptation process. In some cases, it is important to involve your administrator and curriculum or program coordinator from the beginning, and identify exactly who will be responsible for making, implementing, supporting and evaluating the adaptation over the course of the year. As much as possible, involve students, parents, paraprofessionals, and others. Adaptations that can benefit an entire class or several classes are more likely to be supported and maintained. Step 2. Identify and Evaluate the Demands that Students Are Not Meeting The purpose of this step is to define the problem to be addressed by the adaptation. Observe students' performance when they use typical instructional materials. They may have difficulty acquiring or getting the important information from written materials, storing or remembering the information presented in the materials, or expressing the information or demonstrating competence on written tests. If students have difficulty with a given task, different solutions may be required depending on the level of difficulty and the student's individual needs. Step 3. Develop Goals for Teaching Strategies and Making Adaptations Some problems can be solved by adaptations; other problems may signal the need for intensive instruction in skills or strategies. Often, teachers may need to provide adaptations while simultaneously teaching the student the learning strategies he or she needs in order to perform the work. All adaptations lead students to become dependent on the person who makes them. Before an adaptation is made for an individual student, educators must carefully consider the best approach to addressing the student's difficulty and promoting success. Adaptations should be approached as short-term solutions within a long-term plan for teaching skills and strategies that will promote the student's independence as a learner and ultimately reduce the need for adaptations. Step 4. Determine Whether Content or Format Adaptations Are Needed Content adaptations may be made only when the student's Individualized Educational Program (IEP) notes that the general curriculum is inappropriate for this student. Content adaptations must also meet local and state education standards. In some cases, the IEP may address the degree to which the requirements associated with meeting state standards and taking assessments may be modified. The teacher must decide which parts of the curriculum the student will be required to learn and will constitute mastery of the course content. When the curriculum is considered appropriate for the student, adaptations may focus on format rather than content. Again, the teacher must identify the critical elements of course content that students must learn: First, identify the critical course ideas or concepts. Then identify the information that must be mastered in each unit to ensure that the critical course ideas are mastered. Finally, determine how students will demonstrate their mastery at the end of each unit and at the end of the course. Format adaptations are made to compensate for mismatches between the presentation or design of the materials and the skills and strategies of the student. In format adaptations, the content is not altered. Step 5. Identify the Features of the Materials that Need To Be Adapted The design of materials can present many different types of problems for students who struggle. Teachers adapting materials should examine each curricular unit for features that might cause a learning problem. For example, the content may be very abstract, complex, or poorly organized, or it might present too much information. It may not be relevant to students or it may be boring. Further, it may call for skills or strategies or background information that the student does not possess. It may present activities that do not lead to mastery, or it may fail to give students cues about how to think about or study the information. Materials also may not provide a variety of flexible options through which students can demonstrate competence. Guidelines for identifying these and other problems in the design of instructional materials may be found in resources like those listed at the end of this article. Step 6. Determine the Type of Adaptation That Will Enable the Student To Meet the Demand Once the materials have been evaluated and possible problem areas identified, the type

144 of format adaptation must be selected. Format adaptations can be made by Altering existing materials-Rewrite, reorganize, add to, or recast the information so that the student can access the regular curriculum material independently, e.g., prepare a study guide and audiotape. Mediating existing materials-provide additional instructional support, guidance, and direction to the student in the use of the materials. Alter your instruction to mediate the barriers presented by the materials so that you directly lead the student to interact with the materials in different ways. For example, have students survey the reading material, collaboratively preview the text, and create an outline of the material to use as a study guide. Selecting alternate materials-Select new materials that are more sensitive to the needs of students with disabilities or are inherently designed to compensate for learning problems. For example, use an interactive computer program that cues critical ideas, reads text, inserts graphic organizers, defines and illustrates words, presents and reinforces learning in smaller increments, and provides more opportunities for practice and cumulative review. Step 7. Inform Students and Parents About the Adaptation Adaptations are more successful when they are offered and introduced to students at the beginning of the year. Parents should also be informed about them at the beginning of the year. Students should be taught clear strategies to use any adaptation effectively and how to process the information received through the adaptation. As students' progress, they should be taught how to recognize the need for and request materials adaptations. Step 8. Implement, Evaluate, and Adjust the Adaptation As the adaptation is implemented, the teacher should evaluate its effects to determine whether the desired outcomes are being achieved. If not, adjustments will need to be made either in the adaptation or the instructions to the student in its use. Adaptations should significantly reduce failure and learning difficulties. Step 9. Fade the Adaptation When Possible Adaptations usually are short-term solutions to allow classroom learning and participation

145 until the needed skills and strategies can be taught. Once the adaptation is in place, the teacher should begin to plan with other teachers how to teach the needed skills and strategies. Once the student has learned the necessary skills and strategies, the adaptation should be faded. The adaptation should not be removed until the student possesses the skills and strategies to learn and complete tasks independently. For some students, an adaptation may be required for several months, while for others; it may be maintained for years. 4.7

Adaptations and accommodations in students evaluation and examinations. Accomodations are not the same as instructional interventions for student with hearing impairment. It helps hearing impairment students access information and show what they know and are able to do and who are unable to achieve grade-level benchmarks due to a significant disability and may learn alternate achievement standards about the next generation. Continuous and ongoing evaluations is a regular feature of special education at all levels. Every topic ends with an evaluation. Due to problems in understanding of language and difficulties in reading, sometimes less weightage is given to inferential type of questions in the evaluation. While evaluating the children .with hearing impairment equal weightage is given to knowledge and language assessment. Auditory and speech skills are also evaluated to plan further strategies of teaching. At the secondary level, marks assigned may vary depending upon the subjects opted. Marks of some subjects like lower maths, home science are combined with vocational subjects. Extra half an hour is given to the students for the exams if required. Adaptations in the infrastructure and schedule are also required at the primary and secondary level also for successful implementation of the - adapted curricula.

146 ? Use peer tutor, paraprofessional, or volunteer to work with student to review for test. ? Allow test items to be signed to the student and the student to respond in sign. ? Allow tests to be taken with teacher or paraprofessional who works with students who are deaf or hard of hearing. ? Provide extra time to complete tests and quizzes. ? Allow test items to be read to the student. ? Modify vocabulary used in test items to match student abilities. ? Modify the number of test items. ? Provide short tests on a more frequent basis. ? Chart progress or lack of progress. ? Provide additional information to explain test questions and instructions. ? Allow student to use notes/study guide/textbook on tests. ? Evaluate daily work/participation in addition to tests. ? Use projects or portfolios in lieu of tests. ? Provide graphic cues (e.g., arrows, stop signs) on answer forms. ? Give alternative forms of the test (e.g., matching, multiple choice questions, fill in the blank, true/false questions, short answer questions, essay questions). ? Teach test-taking skills. 4.8

Let us sum up In this unit we have discussed about the Meaning and Principles of curricular adaptation. We have also discussed about the necessary assessment and decision making for curricular adaptation. We came to know about the areas where adaptation is done. We

147 discussed different types and process of adaptation .The unit ends with the discussion on the adaptation and accommodations in Student's Evaluation and Examinations 4.9

Explain Different types of

Methods and Tools for Curricular Evaluation ? Discuss recent trend and Challenges in Curricular Evaluation 5.3 Concept Need for Curricular Evaluation

What is the curriculum? Curriculum is a set of planned and purposeful learning experiences, based on intended learning outcomes and organized around the developmental levels of students. It can take many forms according to the viewpoints from which it is approached. Tyler (1949) quoted in Kelly suggested that the curriculum has to be seen as consisting of four elements: objectives, content, methods and evaluation. He seeks to answer the four fundamental questions in developing any curriculum: 1.

What educational purposes should the school seeks to attain? 2. What educational experiences can be provided that is likely to attain these purposes? 3. How can these educational experiences be effectively organized? 4. How can we determine whether these purposes are being attained?

These four questions can be viewed as the four main elements in the Curriculum Development Process. As can be seen in Tyler's last question and the model of the Curriculum Development Process, curriculum evaluation is an integral part of curriculum development. Curriculum evaluation is used not only to determine the attainment of the purposes but also "to gauge the value and effectiveness of any

151 particular piece of educational activity - whether national project or any particular piece of work undertaken with our own pupils" (Kelly 1989, p. 187). Curricular evaluation means rendering value judgment to a set of experiences selected for educational purposes. It is a process that involves gathering information about the effectiveness of Curricular and measurement is done in terms of levels of achievement of the pre-set objectives. Among the many reasons for undertaking Curriculum evaluation we have the following: To allow the curriculum developers and implementers be certain about the functions of the curriculum put in place (feedback) It also gives information on the relevancy of the curriculum in the society. Information on the effectiveness of the instructional materials is obtained through evaluation. Curriculum evaluation is a necessary and important aspect of any national education system. It provides the basis for curriculum policy decisions, for feedback on continuous curriculum adjustments and processes of curriculum implementation. The fundamental concerns of curriculum evaluation relate to: Effectiveness and efficiency of translating government education policy into educational practice; Status of curriculum contents and practices in the contexts of global, national and local concerns; The achievement of the goals and aims of educational programmes. 5.4

Factors associated with curricular evaluation (learner, content, instructor and resources)

Learner The ultimate goal of curriculum evaluation is to ensure that the curriculum is effective in promoting improved quality of student learning. Student assessment therefore

152 connotes assessment of student learning. Assessment of student learning has always been a powerful influence on how and what teachers teach and is thus an important source of feedback on the appropriateness implementation of curriculum content. Fulfilling the diverse objectives of diagnosis, certification and accountability requires different kinds of assessment instruments and strategies selected to achieve specific purposes. Assessment of student learning could be summative or formative, and there are various types of tests to address different needs such as standardized tests, performance-based tests, ability tests, aptitude tests and intelligence tests.

Curricular Content The goals of education reflect perceived needs and expectations of society. Curriculum decisions are made within the context of these goals. It is important that goals determine content. Allowances must be made for variations in curriculum content to reflect the unique needs of communities in general and of students in particular. Thus a close association among those who set goals, create content and implement curriculum is essential. Goals for education include possession of respect for self and others, a sense of social responsibility, feelings of self worth and integrity, and the knowledge, skills (including ethical and living skills) and attitudes required in a democratic society. The basics in education are those learning experiences that assist students in acquiring knowledge, skills and attitudes that contribute to continued learning, social awareness, and cognizance of a changing society, responsible citizenship and personal well being.

Instructor The Code of Professional Conduct and the Declaration of Rights and Responsibilities for Teachers identify members of the teaching profession as major advocates for the educational welfare of students. Because it is teachers who must translate curriculum into specific learning experiences, teachers must be central figures in curriculum decision making. Decisions concerning objectives, content, interaction and student evaluation must be made by sources as close to the students as possible. Classroom

153 teachers are also in the best position to develop evaluation strategies that align with the curriculum and address the individual learning needs of students. It is a teacher's role to facilitate learning experiences of students. Efficient expedition of this role requires the provision by school jurisdictions of adequate time and resources to translate the aims and objectives of curriculum into learning activities that will meet the needs, motivation and capabilities of students. Professional education and teaching experience prepare teachers well for having a major voice at all levels of curriculum decision making.

Curriculum evaluation involves, Intra-curricular evaluation, Teacher evaluation of students, Student evaluation of teachers, Materials evaluation, Verification of methods, Evaluation of tests and improvement/ change/ modification, System revision. Curriculum development phases consist of Instructional development, Materials & media development, Methods of teaching & testing. Implementation of the Curriculum involves Instructional scheme of each subject to be completed in the semester, Planning the lessons as per the timetable, Using the transactional strategies, Using the appropriate media, Providing the learning resources, Promoting classroom learning experiences, Progressive testing. After evaluating the prepared curriculum it is observed that the curriculum is not satisfactory then developer turns for revising and improving phase.

Curriculum Support Even with good curriculum content and processes in place, attention needs to be given to mechanisms that will support curriculum. Without adequate funding and resources, the best curriculum becomes difficult to implement. Implementation of a new curriculum requires that draft program and resources are evaluated through a pilot project, approved programs and resources are available at least eight months prior to implementation and sufficient funding is available for teacher inservice and purchase of approved resources. An important support mechanism to the delivery of curriculum is the provision of library services via libraries and qualified teacher librarians; these services can bolster all levels of instruction. In meeting needs of students, considerable attention must be given to those students with special needs. While this may be done via special programs and courses to meet a wide range of talent and ability, there is an obligation for society to provide the

154 education system with the resources to identify those with special needs and, where required, provide professional assistance to design and offer special programs.

Relationship Between Curriculum, Student Assessment and Evaluation Student assessment and evaluation are an integral part of curriculum development. Teachers understand the complexity of curriculum which in Alberta is expressed in the form of learning outcomes. They further recognize that many learning outcomes cannot be measured using the traditional pencil-and-paper techniques. As such, students must be assessed and evaluated on the curriculum they have been taught. Classroom teachers design student evaluation based on the curriculum that students have been taught. It is unfair and unethical for teachers to evaluate students on material they have not had the opportunity to learn.

5.5 Areas of Curricular Evaluation : Context, Input, Process and Product. The CIPP Evaluation Model

One very useful approach to educational evaluation is known as the CIPP, or Context, Input, Process, Product approach, developed by Stufflebeam (1983). This provides a systematic way of looking at many different aspects of the curriculum development process. There is a risk, however, that it may be directed only by experts or outsiders, and for this reason it is vital to identify ways in which various stakeholders can be meaningfully involved.

CIPP Model Use for Curriculum Use for Curriculum Component Development Evaluation

Context To define the operating environment context within which the relevant to the curriculum, curriculum will be delivered. describing the actual and Determine the specific intended conditions of the characteristics of the learners. program, identifying unmet Most importantly, it helps to needs, and diagnosing barriers establish a rationale for the that prevent needs from determination of the being met. curriculum objectives.

155 CIPP Model Use for Curriculum Use for Curriculum Component Development Evaluation Input To identify and assess the To determine to what extent capabilities, strategies, and available resources were used designs available for to achieve the curriculum implementing the curriculum objectives. as related to the curriculum's objectives. Determine what internal resources are needed to enable achievement of the objectives and to search for external resources when required. Also, the input phase considers the cost to implement the curriculum. Process To identify the procedural To identify deficiencies design that will be used to in the procedural design implement the curriculum. or in the implementation The curriculum objectives of the curriculum, i.e., are translated in specific what actually took place activities that constitute during instruction. To the instructional design. provide information necessary to make modifications to the implementation strategies used during instruction. To maintain procedural documentation. Products To define the measurable To compare actual outcomes outcomes of the curriculum against a standard of what is both during and at the acceptable to make judgments completion of instruction. to continue, terminate, modify, These outcomes are directly or refocus an activity. related to the curriculum objectives.

156 Context evaluation Objective: To determine the operating context To identify and assess needs and opportunities in the context To diagnose problems underlying the needs and opportunities Method: By comparing the actual and the intended inputs and outputs Relation to decision making: For deciding upon settings to be served For changes needed in planning Input Evaluation Objective: To identify and assess system capabilities, available input strategies and designs for implementing the strategies Method: Analyzing resources, solution strategies, procedural designs for relevance, feasibility and economy. Relation to decision making: For selecting sources of support solution strategies and procedural designs for structure changing activities. Entry behavior of students Curriculum Objectives Detailed contents Methods and media Competencies of teaching faculty Appropriateness of teaching / learning resources

157 Process evaluation Objectives: To identify process defects in the procedural design or its implementation Method: By monitoring the procedural barriers and remaining alert to unanticipated ones and describing the actual process. Relation to decision making: For implanting and refining the programme design and procedure for effective process control. Feedback to judge The effectiveness of teaching –learning methods Utilization of physical facilities Utilization of teaching learning process Effectiveness of system of evaluation of students performance Product evaluation: Objectives: To relate outcome information to objectives and to context input and process information Method: Measurement Vs Standards interpreting the outcome Relation to decision making: For deciding to continue, terminate, modify, build or refocus a change of activity. 5.6 Methods and tools for curricular evaluation. Action Research: Why Do We Promote School-based Curriculum Action Research? Collaborative school-based curriculum action research aims to : enable teachers to enhance quality learning and teaching through knowledge

158 generated and constructed in the process of critical and systematic inquiry into different learning and teaching issues; develop teachers' competence in curriculum development and research literacy as well as their sense of curriculum ownership; and develop schools into learning organizations through collaborative team work within schools and professional sharing in school networks. How Do We Conduct Collaborative School-based Curriculum Action Research? In the course of school-based curriculum development, teachers' critical reflections will help them identify issues worth addressing in the form of an action research. The following steps illustrate the basic cycle in action research : 1. Examine critically learning- or teaching-related issues worth researching into. 2. Define the research focus and review literature for current theories and practice. 3. Develop action plans or intervention strategies. 4. Implement action plans in contexts. 5. Collect evidence and reflect on effectiveness of actions. 6. Draw conclusions and use feedback to improve learning and teaching. 7. Start a new cycle if necessary. As teachers progress through this spiral cycle, they improve their teaching through continual reflection and move closer to the solution of the identified problems. Taking the role as facilitator, Curriculum Officers from the SBCD(P) Section work as partners with teachers, rendering professional support throughout the research cycle, assisting them in reflecting and conceptualizing tacit knowledge embedded in their practice. How Can These Reports Be Used? This series of action research reports portrays the participating teachers educational beliefs and philosophy, and the developmental pathway undertaken to improve the school curriculum. The curriculum design, intervention strategies, action plans, research tools and instruments, as well as the findings and recommendations may be valuable references for teachers who intend to launch school-based curriculum development and/or collaborative action research in their schools. We sincerely hope that this series can serve as a platform to stimulate professional dialogue in curriculum research and development, and to spark off a research culture in primary schools in Hong Kong.

159 Student Feedback: When using student feedback to evaluate your curriculum it is important to be clear what kind of information you want and therefore how you elicit it. Methods of obtaining student feedback Methods of obtaining student feedback may be formal or informal, structured, semi- structured or unstructured. They include surveys, minute papers, focus groups and student consultations. Formal, structured student surveys etc. Teaching Evaluation for Development Service (TEDS) TEDS provides formal student surveys focused on teaching and unit. TEDS receives survey orders from individual staff and Department Administrators, creates the surveys, receives and processes the data and provides reports on the results to individuals and Department Heads. Method TEDS surveys are usually conducted towards the end of the semester, providing feedback on students' experience of teaching and learning in the unit as a whole. Early Feedback surveys can be conducted in weeks 2-4 of the semester, to provide formative feedback and enable teachers to respond to student needs as the teaching period unfolds. Documentation TEDS provides summary reports for all surveys with at least four responses. These reports include: a graphical and numerical summary of the distribution of student ratings for each question; the response rate, and the mean and variation (standard deviation) of student ratings for each question; copies of student responses to open ended questions; A Reflection Sheet for you to record your own reflections and responses to the results you have received. Reports and completed reflection sheets should be kept in your Academic Portfolio, as they provide evidence of your critical reflective practice in teaching.

160 Informal, semi-structured surveys Early Evaluation Early evaluation is useful in providing you with information on current student experience in your unit, especially if you are new to teaching. It gives you the opportunity to respond to issues identified by current students, engages students early with the feedback process, and also helps produce higher quality feedback at the end of the semester. Minute Paper or "3 Minute Evaluation" An excellent means of collecting information about your teaching during the semester is the Minute Paper or 3-minute evaluation. Method Ask the students to write comments about no more than two specific aspects of your class each week or two, and to leave the comments on a table as they leave the room. For instance: What are the best aspects of the teaching? What could the lecturer improve on? What was the most important thing you learned in class today? What do you still have questions about? An example of this type of informal, quick survey is provided in the Useful Links section below. From this form of feedback, it's easy to see areas in which you can make changes quickly (a request for sources of more information on a topic, for example, can simply be provided on an overhead the following week). Responding promptly to this type of feedback demonstrates to students that you care about the learning environment and their experience. If students raise issues that are not so easy to respond to quickly, you can still acknowledge their concerns and indicate your willingness to address them when time permits. You might also, if appropriate, take this opportunity to advise them about changing their own approach to learning in the unit.

161 Documentation Keep a record of Early Feedback Surveys and Minute Papers you've used, including your rationale for any optional questions you've chosen to include. Record and reflect on the feedback you receive and document your reflections and any action taken in response, in your Academic Portfolio. Follow this up by relating the results and your responses to the results of any later formal evaluation you undertake. Informal, unstructured feedback Method Ad hoc student consultations and discussions are an important source of informal feedback on how things are going in your unit. For this reason, in units with multiple teachers (lecturers and tutors) it's vitally important that the whole teaching team come together several times over the course of the teaching period to share information gained through this type of informal interaction with students. It is especially useful for a lecturer to hear from tutors about frequently asked questions, and aspects of the unit content or delivery that might be causing confusion or might be particularly challenging for some groups of students. Identifying these types of difficulties and challenges as the semester unfolds enables both lecturers and tutors to respond by focusing on those areas causing problems and by giving detailed feedback on relevant assessment tasks. This also provides an opportunity to follow up on the effectiveness of responses in a later, more formal evaluation . Documentation Note observations from teaching team meetings and your own informal interaction with students, and record your reflections on these and any actions taken in response, in your Academic Portfolio. Semi-formal, semi-structured student feedback Focus groups Focus groups are in-depth qualitative interviews conducted with a small group of carefully selected people, brought together to discuss a specific aspect of concern. Unlike the broad, one-way flow of information you receive from written evaluation instruments, focus groups provide a rich source of detailed information through the exchange of ideas and viewpoints from the group discussion. Focus groups allow a

162 more in-depth exploration of student experience and perspectives on a range of learning and teaching issues. Method Focus groups should be facilitated by an independent person unconnected with the teaching and assessment of the unit being evaluated. Their role is to develop a trusting relationship with the group, ask questions and elicit discussion. Decide on the aspects of curriculum on which you would like to obtain feedback, and the type of feedback you would find most useful. Discuss this with the focus group facilitator and together devise some questions to trigger group discussion. An experienced facilitator will be able to steer the discussion in the required direction, while maintaining an informal atmosphere and approach. The invitation to students to participate in a focus group should: clearly state the purpose of the focus group; include an assurance of anonymity of student responses; note that the focus group is to be conducted by an independent facilitator; and direct students to contact the facilitator to indicate their willingness to participate. Further, you should ensure that the timing of the focus group doesn't clash with times in which students will be preparing for major assessment tasks or examinations. It is appropriate to offer students some form of incentive for participation. If you would like to use the focus group method to obtain feedback on your unit, speak to your Department. Ideally, this should form a component of a planned cycle of unit evaluation, coordinated at Program or Department level, so that you would normally only conduct a focus group at most every three years in any one unit. Alternatively, focus groups are useful to run before and after a substantial change or development in curriculum (including changed mode of delivery), in order to accurately assess the impact of the change.

163 Documentation The focus group facilitator should provide you with a report including analysis of results and a summary of key points. If you have requested it, the report might also include recommendations for development. You should include key points from the report and record your reflections on this and any actions you take in response to its findings, in your Academic Portfolio. The Peer Review Process The purpose of peer reviewing our curriculum is to improve the quality of our work by strengthening our understanding of curriculum development, quality assessment, and effective instruction. Teams of teachers engage in a process during which a curriculum unit is analyzed to determine the extent to which it meets certain criteria. Adjustments are made to the unit based upon feedback from the team. Ideally, teachers from both within and outside the discipline or grade level participate in the peer review process. Thus, teachers gain a stronger perspective on the vertical and cross-disciplinary connections within our curriculum. Method Ask a trusted colleague (this might be your supervisor, mentor or one of your peers) to sit in on one of your face-to-face or online classes and provide you with feedback. Brief them in advance about the aspects of your teaching that you would like them to focus on. For instance, are you able to be heard clearly in the class? Are your explanations coherent? Do your slides communicate important ideas clearly? Do you need slides at all? Do your students seem involved in the class? Are the questions you ask and answer suitable? Below you will find links to some resources that may assist you and your colleagues with this process. Although much peer observation naturally focuses on classroom performance, there are many other aspects of teaching and the curriculum to which it can be applied. The scope of POT may therefore include but is not limited to: a review of learning and teaching materials and activities; assessment items; supervision; field work; classroom performance; learning outcomes; moderation of assessment; postgraduate supervision; online teaching; etc. A separate advice section on collegial review of curriculum and resources is included here, but really the advice is similar and any of the resources can be adapted and modified to suit.

164 Documentation Include your colleague's comments and your own reflections and subsequent responses (changes in approach, curriculum development, professional learning) in your teaching portfolio. Technique used to evaluate the curriculum There are many ways to evaluate the curriculum. Here are some common ways. Several of these would normally be used in combination: ? discussion with class ? informal conversation or observation ? individual student interviews ? evaluation forms ? observation in class/session of teacher/trainer by colleagues ? video-tape of own teaching (micro-teaching) ? organizational documents ? participant contract ? performance test ? questionnaire ? self-assessment ? written test

5.7 Challenges in curricular evaluation
Problems of Evaluation and Supervision (i) The greatest problem of education the world over is that of responsibility and control. According to Adeyinka (2008), "As a result of the prevalence of multiple system of education in the country, there is the problem of diversification and

165 control. Who controls what levels of education? Most times, people do not have the requisite skills to ensure that activities in schools are carried out in the most effective and efficient way possible. Some of which are the ability to find and interpret information and also communicate with people. Furthermore, people do shy away from evaluation because it exposes the weakness of the organization. (ii) Unstable subject syllabi: There are many examination bodies and there is need for schools and colleges to meet the requirement of the examining bodies. The school subject syllabi are changed or modified regularly. This poses a major problem to curriculum evaluation and supervision. Prospect for Curriculum

Development The numbers of pilot schools should be increase and fully utilized in order for the trial testing in curriculum development and evaluation.

For any new change in curriculum development, there should be regular annual long vacation courses for school teachers to get them acquainted to the philosophy, objectives, content and delivery method of project materials and also expose them to new techniques in education.

Mandatory continuing professional development. There is provision in the National Policy on Education relating to the continuous training of teachers and instructors. This will avail the teachers the opportunity to develop and demonstrate their profound competence against set standards. Use of information technology for teaching and learning: ICT programmes have been incorporated in all teachers training programmes. These will boast the curriculum implementation when fully harnessed. Furthermore, technology should be used in the curriculum development process to reduce the time taken to develop the curriculum. In using the electronic process, materials are developed and distributed on an information data base and made accessible to stakeholder to go through and make inputs. This reduces the meeting times and stakeholders. Grey areas are also involved using conference call.

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Let us sum up In this unit we have discussed about the concept and need for curricular evaluation. We have also discussed about the important factors associated with curricular evaluation like learner, content, instructor and Resources. We came to know about different areas of curricular evaluation and different types of methods and tools for curricular evaluation. The unit ends with the discussion on the recent trend and Challenges in Curricular Evaluation. 5.9 Check your progress: 1. What is curricular evaluation? Explain the importance of curricular Evaluation. 2. Enumerate the important factors associated with curricular evaluation? 3. Explain in detail the Areas of Curricular Evaluation? 4. Which are the Methods and Tools for Curricular Evaluation? 5. Discuss the Challenges in Curricular Evaluation. 5.10

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Netaji Subhas Open University

From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

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9 Unit - 1 Curriculum Designing Structure 1.1 Introduction 1.2 Objectives 1.3 Meaning, Definition, Concept and Principles of Curriculum 1.4 Types and approaches of Curriculum Designing 1.4.1 Types of Curriculum 1.4.2 Approaches to Curriculum Designing 1.5 Curriculum Domains – Personal, Social, Academics, Recreational and Community living 1.5.1 Personal Skills 1.5.2 Social Skills 1.5.3 Academics 1.5.4 Occupational Skills 1.5.5 Recreational Skills 1.6 Steps in developing curriculum, challenges of developing curriculum for inclusion 1.6.1

Steps

in developing curriculum 1.6.2 Challenges of developing curriculum for inclusion 1.7 Curriculum evaluation, Implementation in inclusion 1.7.1 Curriculum evaluation 1.7.2 Implementation in inclusion 1.8 Let Us Sum Up 1.9 Check Your Progress 1.10

References

10 1.1 Introduction You may be aware that curriculum includes all the necessary activities that are required to prepare the students to lead a successful life in the society.

The word curriculum is derived from the Latin root 'Currus' which means a chariot or runway.

It has the same meaning as word 'Curse' in English, it also closely resembles the term 'Karyakram' used in Sanskrit for any programme undertaken to be completed by individual or a group. Hence, curriculum is a programme of various activities of learning or studies taken up by a student over a period of time to achieve a goal in view.

This unit is intended to discuss the basic concept about curriculum development, its principles, procedures and changing trends in curriculum development of persons with mental retardation in inclusive set up. 1.2 Objective Explain meaning, definition, concept and principles of curriculum. Narrate types and approaches of curriculum designing. Demonstrate different curriculum domains. Explain steps, challenges of developing curriculum for inclusion. Discuss about curriculum evaluation and implementation in

inclusive set up. 1.3 Meaning, Definition, Concept and Principles of Curriculum Meaning : Neasly and Evans (1967) state that curriculum includes all the planned experiences provided by the school to assist the pupils in attaining the designated learning outcomes to the best of their abilities. The Key words here are 'planned experience' and 'designated learning outcome'. The provider is the special school or special educator in the context and receiver is the pupil the disabled child here. It is also essential as noted above that a good curriculum should assist in achieving the best of the students abilities. While keeping in mind the general curriculum principles, the special education curriculum should consider certain specific aspects.

11 Definition : Curriculum is the heart and soul of any educational process. It is the sum total of all that rendered by an educational institution in bringing out the required changes in the child. The activities range from class room to play ground or beyond. As you may have experienced, every society prepares the children in social competencies through the process of adjustment with the environment in which they live. The curriculum is an instrument to fulfill such objectives. Curriculum is defined by many experts. The common definitions are given below : Kerr notes that "

All the learning which is planned and guided by the teacher is carried out in group for individual inside or outside the school." According to Cunningham, "The curriculum

is a tool in the hand of an artist (teacher) to mould his materials (students) according to his ideas in his studio (

class room)." "Curriculum

includes the

totality of experiences that a pupil receives

through the manifold activities that go on in the school in the class room, library, laboratory, workshop, play ground and in numerous informal

context between

teacher and

pupil. In this case the whole of the school becomes the

curriculum which can touch the lives of the students at all points and help in the evolution of balanced personality" (

Secondary education commission 1952). "Curriculum can refer to

the total structure of ideas and activities developed by an educational institution to meet the needs of students to achieve desired

education al aims.’ (Dictionary of Education 1981). Concept : Simply put, curriculum is the content to be taught and instruction is the process of teaching. In other words curriculum is ‘what to teach’ and instruction is ‘how to teach’. Curriculum is not limited to the courses of study, but, includes what ever learning that takes place within and out side the class room and school; even planned social learning is include in the curriculum. Therefore, the curriculum can be content or subject matter taught to the students, pre planned programme, course offered in the school, intended learning out comes, cultural presentation and cultural reproduction, planned learning experience and social reconstruction.

Principles of Curriculum Development : The curriculum is a dynamic process of teaching-learning. In this modern age of science and technology, it is a programme which cannot remain static because, the 12 quantum of knowledge in all field is increasing rapidly and so is the quality of techniques and tools of instruction. The curriculum is ever charging.

It has to be planned, implemented, revised and reoriented from time to time. Hence, there are a few principle that are to be followed if the curriculum for any group of learners is to be conducted, and implemented. Goal-oriented Unless there are clear goals in view, the curriculum cannot be developed and implemented for any group. For example, if a programme is meant for a child without durability, the goal will be

to give him knowledge and competency on various subjects based on the norms. Therefore, the curriculum is subject-centered. If the programme is to be made for a child with mental retardation, the goal will be to develop specific behaviors or skills and therefore, the curriculum has to be skill-oriented and activity- centered. The goal determines the direction in which curriculum is to be shaped. Age appropriate The content of the curriculum should focus on the age of the learners. The contents selected for teaching in the kindergarten class will not appropriate for children of primary classes. It is because the ability, attitude and interest of a child

of higher age group will not match with lower age group. Similarly the curriculum set for a higher level cannot be used for children at a lower level.

Keeping in mind the Piagetian stages of cognitive development and the

developmental task pertaining to each stage, the curriculum must be planned according to the age and ability level of the child. Need based As every learner has defferent needs and abilities, the curriculum has to provide a variety of experiences in the class room

focusing on personal, social vocational and recreational needs. This principle is more relevant for children with mental retardation who have special needs as individuals. Each child with mental retardation is trained through planning an individualized Educational Programme (IEP) after considering their potentials and individual needs.

Children with mental retardation can benefit little from common curriculum with academic activities provided in group situation, as done for non-disabled children in regular schools. Though inclusive education measures are in progress, careful adaptation in content, process and evaluation are imperative for successful inclusion.

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Level appropriate The pattern of the curriculum has to much the grade level of the learners. In a regular school, the content in any subject taught to children is based on the grade in which they are placed. For example, mathematics at primary level must be easier than that in secondary or higher secondary level. This

principle is most relevant for the children with mental retardation whose current level is to be determined before the IEP can

be devised. Up to date In this modern age, many changes and innovations are

taking place in the field of education and special education, based on the

research or experimentation. The curriculum should be revised and re-oriented periodically to incorporate the latest content, methods materials and techniques of the training and

Curriculum enrichment should be a continuous process.

Creative All children should get an opportunity to be creative and innovative. The curriculum must motivate children to solve problems, develop new ideas and meet challenges of life. Children should be encouraged to do experiment in classroom situation.

This is also relevant for children with mental retardation who also show creativity when they are properly motivated and guided.

The current trend of Activity Based Learning (ABL) provides ample opportunities for encouraging children to become creative.

Integrated At all levels, the Curriculum must be integrated and Cohesive and learning experiences are to be organized in a sequential order. Besides, it must relate to the activities of daily life (ADL) of children with special needs. This also means that the programme should be pragmatic and functional for learners. It should provide insights

for successful practical life leading towards habilitation and rehabilitation in case of Children with intellectual disability.

Comprehensive Curriculum

has to be

comprehensive enough to cover various co-curricular activities like arts, crafts, music, yoga, exercises, field trips, visits, concerts and cultural functions.

This principle is also applicable for children with intellectual disability who enjoy and participate in such activities more readily than in academic activities

involving

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abstract concepts. Theme teaching is a good example of comprehensive approach which cuts across various academic areas through selected themes. 1.4

Types

and Approaches of Curriculum Designing 1.4.1. Types of Curriculum The

special educator will have to be aware of the following

five factors that act as guide in curriculum planning: 1. What is the main

goal or focus of curriculum? (Child, activity or situation as a whole?) 2. What are the

specific objectives that lead to achieve the goal? 3. What are the methods of instruction that are relevant in achieving the Goal? 4. What are the learning experiences/contents to be taught to achieve

the goal? 5. What are the materials needed to achieve the goal. Based on the above considerations, curriculum for special needs children have been evolved.

child centered curriculum. activity centered curriculum holistic curriculum. Child Centered Curriculum (CCC) In this, the child is in the centre of the Curriculum in

the teaching and learning process. The Child's ability, aptitude and interest are to be identified before a programme planned and executed. The child as an individual is valued and hence this kind of curriculum is child focused. This approach is very apt for children with mental retardation.

The main characteristic of the CCC are as follows: Basis CCC plan is based on the philosophy that each child is unique, each child is different and each child is an individual.

Each one should learn according to his ability aptitude and interest. The learner is the focus for whom the content and proceed decision will be made.

15 Aim The objective of CCC plan is to help each child to develop his skills, based on his abilities. It is to make him to realize

his best self and to achieve an optimum level of functioning.

Contents

Learning experience

should be provided according to the needs and abilities of

the child. Method The teacher will devise those technique of teaching and learning which will be suitable to the ability, aptitude and interest of each child. If

the child

is interested in play, the teacher will use the play way method of teaching and the objective will be entirely individualized and specific to the child. Materials The teacher will select/

develop the aids for learning suited to the age, ability and aptitude of each child. Pictures, charts, models and kits will be prepared with the special needs

of the child in view. Activity-Centered Curriculum (ACC) In

this plan, the activity or task is given more importance than the learner and his limitations.

Many a time it can be seen that the regular school curricula are activity centered as they are preplanned and the teacher is to focus on 'completing syllabus' rather than considering the pace of learning by the students. In the context of mental retardation

the important task or activities are identified for the benefit of the child and they are taught repeatedly through verbal, visual and real experiences in the class or out side. The child has to repeat the task or practice the skill frequently to

achieve maintain and generatize the learnt skill. The main characteristics of the ACC Plan are as follows: Basis ACC plan is based on the philosophy that task and skills are very important

and

the child must learn them through repeated programme in class and with frequent reinforcement by the teacher.

16 Aim The objective of ACC plan is to help the child

to develop certain skills so that he is able to improve his level of functioning. Contents The learning experience are related to task and skills which will be planned in advance. They are to be listed in sequential order and a detailed task

analysis is to be done for implementing the programme in class. Method The teacher has to use all available techniques to make the task easy and interesting. The techniques like task analysis, chanting, modeling, shaping and reinforcing and so on will used for teaching.

Materials The teacher has to prepare adequate teaching material in view of task or skill,

he is teaching the child. He has to

use a blackboard, charts, pictures, models, flash cards, audio visual aids, and

field trips to make the task a meaningful learning experience. Holistic Curriculum (

HC) A holistic curriculum is an eclectic model blending the needs of the child and the existing curriculum the right combination of what is expected from the child.

The main characteristic of HC plan are as follows: Basis HC plan is based on the philosophy that the life of a child is integrated with his total environment. He should trained in a

manners to master a few skills, so that he can become independent as far as possible.

Aim The objective of HC plan is to help the child

to

achieve competence and confidence in life as an effective and productive member of the community. Contents The learning experience as widely selected to expose the child to his full development and total adjustments within his social,

economical, and vocational environment in 17 life so that when he grows as an adult he will be a contributing member of the society. Therefore, emphasis will be on different kinds of functional activities, skills and experiences that make the child a successful person. Method The teacher has to use a variety of methods of teaching. Class room techniques alone will not be adequate. So the teacher has to organize visit, field trips, demonstrations, projects, exhibitions to give the children sufficient exposure to the world outside. It will help them to gain confidence and become competent in life.

Materials

The teacher will have to use a wide variety of teaching materials in the classroom as well as out side the classroom. The materials can be pictures, charts, models, objects, tools, audio-visuals, films, filmstrips, flash cards and even visits and field trips outside the

class-room. 1.4.2. Approaches to Curriculum Designing

There are varied approaches to development of curriculum. Some are common in both general and special education while some are more suitable for

children with special needs. It is the responsibility of the teacher to select a suitable approach or a combination of more than one approach with the aim to reach the student with the most suited curriculum and instructional process.

Some of the commonly used approaches include. Developmental approach Functional approach Ecological approach Unit approach Development approach Developmental approach pertains to integration of academic learning and developmental tasks aiming at accomplishing the ultimate goal of individual potentials, and the global needs and motives. The curriculum includes, instructions for achieving maximum possible personal enhancement and social competence.

18

Development approach of

the curriculum focuses on the learner's growth (Physical and mental) activities, aptitudes and interests. The programme should be related closely to each child as an individual, his development in term of capacities and limitations, keeping in mind, the developmental norms and the tasks that he is expected to perform in that age.

The aim is to help the individual to grow up and to lead a productive adult life. The teacher has to diagnose the special needs, deficit skills and unique talents of each child and then develop a programme as a personal package with all the necessary content, materials and techniques of training and management.

Functional approach

Ideally in special education as in regular education, the curriculum should be derived from an analysis of the needs of the individual and the role he is expected to perform in the society. Therefore, a good curriculum should be focus on imparting social competencies to children with intellectual disability so

the

they live as independently as possible in the community. With the trend toward inclusive education, the curriculum for children with mental retardation is generally an adaptation of the regular education curriculum with a focus on vocational education. This training allows for appropriate job placement of the child when he is ready for it. Such a curriculum includes

functional reading, writing, arithmetics, time, travel, money and other related skills.

Generalization or

transfer of classroom learning to application of skills in natural environment is an important aspect of this curriculum.

Curriculum

used with children who are moderately and severely retarded emphasize training as on functional activities.

The content of the curriculum are chosen from various tasks that have a high probability of beings required in day-to-day living. These tasks include personal, social, occupational and recreational activities. Academic skills are incorporated where the children have ability to learn.

Considering the unique needs of the child, the content, process and materials are planned to achieve independent functioning level.

A functional approach to the curriculum designing

means the programmes should be planned and implemented with view to improve functional competencies of children in activities of daily living (ADL)

such as brushing, dressing, eating, drinking, toileting, communicating and so on.

These activities make the child competent in performing day-to-day tasks and attain an independent level of functioning.

Functional academics

is incorporated when the children have required ability.

Ecological approach Wallace and Larsen (1978) have pointed that if a child is to be assessed, it is essential

19 that various environmental factors should be taken into consideration to determine their influence in either imitating or maintaining a skill or behavior.

For instance, a child with mild mental retardation in an urban environment becomes a cause of concern to parents as early as at pre-school (LKG / UKG) level, when the parents find him to be subnormal in school. On the other hand, "in a rural area even with mild mental retardation might be

well

accepted without any problem. He might be performing the major work output expected of him in the rural area, which may be

agriculture, dairy or poultry farming which his fellow men do.

An ecological orientation to a curriculum means the programmes should be planned and implemented, keeping in view the environmental factors that influence a child's life. Ecology includes all the factors affecting a child such as natural geographical, urban, rural, social, cultural and vocational factors. The curriculum has to help each child to be productive and effective members of community when grows up. It is more relevant if it include all the environmental factors or situations in which

the

child lives at present. In other words, the curriculum should incorporate instructions in those situations which are closely related to his natural environments viz, personal, social, school, recreational and vocational settings

while planning the curriculum the teacher assesses the student's present and future environment and then, compares the environmental details to the child's abilities. This generate a picture of discrepancy between the environmental demand on him and the child's current abilities. Then the teacher will follow accordingly curriculum to fill the gap.

Unit approach/ thematic approach

It is based on teaching concepts through themes. For example, if transport is taken as a theme, reading, writing, math, environmental science—all will be taught through the theme of transport. The content will be level appropriate. A pre-primary curriculum may talk of modes of transport while a prevocational curriculum may include the professions related to transport systems and various skills needed to learn while traveling in each of the modes, such as money, time, measurement skills (distance) and so on. As this approach is activity oriented and based on the concrete experience, this is suitable for children with mental retardation at all levels and can be taught in group situations also. It should be kept in mind that it needs prior preparation, resources, systematic planning, implementation and evaluation systems.

20 1.5

Curriculum Domains—Personal, Social, Academics, Recreational and Community Living. The currirulum content for the children with mental reterdation requires focus on

leading the students towards personal adequency, social competency and economic independence.

The curriculum

for the children with mental retardation

includes coree

areas such as personal, social, functional academics, occupational and recreational skills with the aim to prepare them for independent living.

If we aim to prepare persons with

mental retardation to lead life with independence and dignity and to become a contributing member of the society is warranted, then the above mentioned content areas should be considered.

1.5.1. Personal Skills

Personal skills include eating toileting bathing, brushing and grooming. The tasks involved in these skills vary for children of different ages and level of functioning. For example dressing skills at preprimary level may refer to wearing clothes but the same dressing skill at secondary level may mean selection of the right clothes to wear for an occasion matching accessories for the dress. Ironing of clothes and maintaining their wardrobe and so on. In addition, to perform the tasks in any area, appropriate motor skills (gross motor and fine motor), language and communication skills are also required. For example pouring water from the water filter and drinking from the glass. The girl has to go to the kitchen, identify the glass and take the glass, open the tap (finger grasp), pour water in the glass, close the tap and drink from the glass. Another example can be considered, the family has gone to visit their friend's house and the girl feels thirsty. They has to communicate to her mother or the host (Communication) that she needs water. Therefore, we need to remember that skills are not taught in isolation but they has to be generalized. Personal domain include the following skills which are to be taught to the children with intellectual disability: Eating and Meal Time Management Toileting Bathing Brushing Grooming skills

21 Dressing skills Menstrual hygiene Shaving

1.5.2. Social Skills

Social behaviour of the students play a vital role in their independent living. Many of the children with mental retardation behave inappropriately in the social situations. Therefore, teaching of appropriate social skills is a major focus in the curriculum for children with mental retardation. These skills are related to social exchange coping with demands of environment and controlling impulses. It also includes the development of social skills to respond to situational cues and making choices. To be accepted as a member of the group and part of the community, one needs to have good interpersonal relationship. The main areas where social skills need to be taught to the children are as follows: Situations in school, in neighbourhood and in the community Standing in a queue, sharing, turn taking behaviour etc. Travelling by buses, trains and crossing the road with safety. When bullied, beaten or in distress, asking for help/ managing the situation is also a social competency to be taught. Acceptable and appropriate interpersonal behaviour in home, school, community and any other social situations. Taking care of personal belonging, understanding of right and civic roles etc. Language and Communication Skills Languages and communications are means of socialization. Like social skills language and communication help us to interact with the environment and therefore, communication must become part of all activities. While teaching young children the following points should be considered :- Proceed from known to unknown. Use various co-curricular activities for training. Use all modes of Communications.

22 Include scope for field trips Use playway methods.

To teach social and language skills the school should focus on: Greeting people and use of polite gestures and courtesies. Group game Story telling Narrating experiences. Discussing important news (TV / News papers / neighbour hood) Receiving and passing on telephonic message to appropriate person. Getting involved in various functions in the school. Maintaining conversations. Activities at home can include social training like Greeting people and courtesies. Interacting with family members and guests. Attending social and religious functions. Sharing experiences with siblings. Receiving telephone calls. Going out with family. In addition to developing appropriate social behaviours, we have to reduce the socially inappropriate behaviours.

1.5.3.

Academics. The functional academic refer to the literacy and numeracy skills. The children with mental retardation need to learn these skills

for leading independent lives. It includes reading, writing and arithmetics.

Functional Reading Functional reading is defined as student's actions or responses resulting from reading the printed word.

Primary goal is the development of their ability to read signboards,

23 labels, directions and so on (

concept of survival)

for their protection.

The second goal is reading for information and instruction -newspaper, telephone book, job application and so on. The

third goal is reading for pleasures-magazines, comics, story books

etc.

Whole word approach is a widely used method in teaching functional reading. Through the whole word approach the students learn to recognize and read words and later receive decoding instructions (to spell).

A variety of strategies have been used in teaching sight word vocabulary. Recent attention has been focused on the imagery level of the word to be learnt.

High imagery words are usually concrete and include nouns such as ball, mango fan and house. Low imagery include abstract terms such as beautiful, good and have. In some instances high imagery can be provided for low imagery words by using the word in context. For example, consider the word 'Sour' "I ate mango. It is sour", becomes more concrete and student can remember better. Pairing of words with concrete objects and /or pictures will facilitate development of high imagery level in the students. Here, the concrete word 'mango' helps in learning the abstract word 'sour'.

Functional Writing One of the important modes of communication is written expression. Writing demands eye hand co-ordination, motor co-ordination,

sense of direction and recognition of symbols (Pictures/ Letters/ numbers/ Words/ Punctuations and so on). Some writing tasks demand horizontal writing (

left to write as in writing words)

and some demand vertical writing as in arithmetics (addition, subtraction) and some demand a combination of both as in statement sums. Tracing writing involves four stages.

They are: 1. Tracing 2. Joining dots (

if needed) 3. Copying 4.

Fill in the blanks 5. Writing from memory (including spelling learning) To write sight words, students have to go through steps using auditory, visual, tactile and kinesthetic inputs.

24

Functional Arithmetic We are in daily contact situations which require the use of number skills.

For example, when we buy half a dozen bananas from the fruit vendor we glance at the bunch to check whether it contains six bananas or not. We use number skills in various setting such as at home, in community and at work place—how many plates to place on the table, which bus number to take to reach work place how much is the bus fare, how long it takes to reach office and so on.

Before beginning with numbers, make sure the child is aware of pre-math concepts

or is able to generalize the pre-requisite skills to mathematics

such as more less, far- near, heavy-light, tall-short-long,

left-right,

one-money,

and so on. The following are the points to be considered while planning and teaching arithmetic skills: The content should be arranged us a sequential order for which the task analytic approach is applied.

Use concrete materials

for meaning of concepts. Meaningful materials should be widely used inside or outside the school. Teach concrete to sub concrete then to abstract. Instruction must be practical and functional. Oppertunities of sufficient practice. Provision of generalization beyond the classroom.

Programme must be flexible to meet the individual child's need. A functional mathematics curriculum should include use of calenders

time, money, measurements (mass, volume, weight, distance) which are necessary for daily living activities. The content must be graded from easy to difficult, distributed from pre primary to prevocational levels. 1.5.4.

Occupational Skills Occupational skills are essential for the overall development of persons with mental retardation. To prepare an individual with mental retardation for independent living, training in over all developmental skills is important. Occupational skills includes activities such as cooking, shopping, gardening and house keeping. However, the curriculum content

for pre-primary and primary level will be less when compared in

25 secondary and prevocational level. As the child is promoted to the next level the occupational skills increase proportionately in the curriculum content and the personal skills will reduce as he would have gained competency in most of the personal skills. Introduce the skills in school and teach the children. Simultaneously, keep the family, informed and involved so that they extend the training at home too. Such activities can be household activities, such as sweeping, dusting, washing, peeling, cutting vegetables and so on.

Identifying and reading label on edible items, writing a shopping list are also other examples.

Performing these activities require application of functional reading writing and arithmetic skills.

Through the joint efforts of school and

home, appropriate work habits, punctuality, regularity, sincerity, persistence, proper work behavior, hand functioning, eye hand coordination and required community living skills (travelling, shopping, banking skills) can be taught to the students. Eye hand co-ordination

and hand functioning which are important prerequisite skills for any vocation can be improved by activities such as: Cutting, pasting Sorting, peeling, shelling, cutting vegetables. Using of different hand tools, files.

Screwing and unscrewing. Sewing, knitting. Pouring and keeping water bottles. Dish washing and arranging. In the school, engage the students in various simulated activities to assess the interests of the students.: Wood polishing, cutting, nailing, screwing. Assembling Labeling different items/tools (in the workshop) Binding and painting work.

Sewing and knitting. Packaging work. Gardening (Cleaning gardens, watering plants and planting)

26 Operation of different machines. Various community living skills by organizing following activities for students

Preparation of shopping list Budgeting Shopping Banking, post office, hospitals—attend and use. Use of public transport.

Domestic Skills Dusting, sweeping, mopping. Washing utensils. Cooking simple meals or helping in cooking. Washing clothes, drying, folding and ironing. Packing lunch boxes. Buying vegetables. Stitching buttons on garments. Decorating house during festivals. Booking LPG Cylinders. Paying bills. In short any useful activity that is repetitive and frequently used but does not require decision making abilities can be taught to persons with mental retardation. School curriculum has to play an important role in developing these skills with the children as these are absolutely functional and of high value to the child and family in making him a contributing member to the home and society. This is what the purpose of functional curriculum is.

27 1.5.5. Recreational Skills Play is

a major component in the curriculum. Research evidence shows that children with limited play skills and

who were rarely touched had brains that were 20-30 percent smaller than normal (Nash 1997, as quoted by

Chen 1999). Young Children who have severe and multiple disabilities need training to use their senses and physical abilities to

carry out activities. Such training will help the child to understand information by exploring the environment. By exploring in environment helps to develop

concept mobility and communication. Persons with disabilities also requires time for recreation. Many a time, they are unable to decide the activities for

the recreation. In the school time table there should be

the time slots for recreational activities when students can be given opportunity to participate in various co-curricular activities. Use of leisure time and engaging in recreational activities do not come naturally to persons with mental retardation. They need to be prompted to take part in such activities.

After finding out their aptitude and interest they should be involved

in suitable activities. Recreational activities should take a significant place in the overall

curriculum. 1.6

Steps in developing curriculum, challenges of developing curriculum for inclusion. 1.6.1. Steps in developing curriculum
The curriculum development process can be divided into six steps. They are: Formulation of objectives. Selection of learning experiences Determination of the content. Preparation of learning materials/activities. Implementation Evaluation. These steps can be arranged in a sequential order

28 Formulation of objectives. ? Selection of learning experiences ? Determination of the content. ? Preparation of learning materials/activities. ? Implementation ? Evaluation. Assessment of Educational Needs India is multi-cultural society. Since the background of students different from culture to culture, place to place, time to time, even student to student in a class room, it is important to assess the individual need of the students. We should identify the needs of the target group for whom curriculum is to be developed. As a first step, the curriculum planners should make a need analysis of different categories of learners. This analysis leads to a detailed description of activities, the requirements and expected learning experiences. It provides details of the knowledge, skills and attitudes required by/individuals to perform the tasks involved in learning a concept. Formulation of objectives Objectives should be grouped in terms of three domains—cognitive, affective and psychomotor. Proper grouping of objectives will help us in planning and developing a meaningful curriculum in terms of the suitability and relevance of its content and evolution. For each need of the learner, there should be corresponding objectives. Hence, these can be as many educational objectives as the educational need are. Each educational objective will suggest a series (and a variety) of learning experiences. Objectives will be most functional if they are stated in terms of expected behavioural changes in the students of the going through teaching/instruction/schooling. Attainment of objectives should lead the learners to attain overall goal(s) of education. 29 Objectives should be modified updated or eliminated based on the changing needs of the students and the society this would help to maintain the quality of education. The statement of objectives should be worded properly so that the learner and the teacher are able to understand the intended outcomes. Selection of learning experiences Early experiences include physical, mental and educational experiences and their interactions. These bring desirable changes in behaviour of the learners. And change in the learners will lead to the attainment of curricular objective. Criteria of selection of learning experiences are as follows: A learning experience should satisfy the recognized needs of the learner. It should be appropriate to the maturity and understanding of the learner. It should build towards consistent continuing and dynamic goals. It should be based on social values. It preferably should be positive. It should be realistic. It should be efficient. It should not be limited by artificial barriers such as the four walls of the class room. Learning experiences should involve total behaviour. It should be feasible for accomplishment. Determination of the Content. Contents refer to the subject matter or the compendium of facts, concepts, generalizations, principles and theories. The subject matter to a large extent, contributes to the growth and development of a democratic, secular and socialist society. So, the content is considered as one of the most important components of curriculum development. The following can be considered while selecting the content: Is the subject matter significant to an organized field of knowledge? Is it useful? Is it interesting enough to the learner? Does the subject matter contribute to the growth and development of a democratic society? Apart from the above, content should have the following characteristics: The content should help the learner to become self-reliant and self-sufficient. It should be significant in contributing to basic ideas and concepts.

30 The selected content should be valid so that it should fulfill the objectives and goals of education. It should suit the personality and intellectual capabilities of the students. It should be useful in the job situation of the learners. It should be feasible in terms of time, costs and contemporary social climate. Preparation of learning materials/activities By now you have studied about assessment of educational needs of the learners, statement of objectives, and identification of the contents. This is done by preparing learning materials/activities. Learning experiences and contents of organizing, integrating and sequencing of materials and activities depend on the availability of learning situations in the schools and classrooms, infrastructural availability, developmental levels of learners, principles of learning and the cultural contexts of students and teachers. Learning materials include anything that leads to learning such as, text books, supplementary readers, audio and visual programme and other relevant teacher made material. Preparation of learning materials is a complex task, it demands a through understanding of the teaching-learning process. As you have already learned, Bruner talks about three modes of learning. They are. Enactive mode – activity based learning. Iconic mode – learning by use images diagrams. Symbolic mode – Learning by use of symbols/languages. There are various criteria for selection of learning materials depending on the selected mode of learning. Wood (1963) has suggested six criteria for learning materials. They are as follows: All learning materials should make a definite contribution to the satisfaction of recognized need on the part of the learner. They should be a variety of learning materials to provide for the individual differences, usually found in a group of students. Learning materials should be as authentic as possible. This will tend to increase the objectivity of analysis and the accuracy of conclusions drawn. Learning materials should be selected on the basis of efficiency. These materials

31 that result in the greatest amount of learning in the least amount of time should be given preference. Economy is always a factor if there is a choice between two types of materials of equal learning value, the less expensive one should be chosen. Even neither when the learning values are not quite equal, practical factors may demand the choice for the less expensive one.

Implementation After the preparation of learning materials/objectives, the next step is the implementation of the curriculum in the classroom. This is the stage of actual teaching learning or transaction of curriculum. Teachers, Principals, Supervisors and Members of school management are involved in the proper implementation of the curriculum. Agarwal (1990) suggested the following major factors leading to the efficient implementation of the curriculum. Adequate preparation of the teachers by the Boards and State Department of Education for meeting, the changed requirements of the new curriculum Sufficient supply of the teaching aids and equipment is needed for the impelmentation of the curriculum. Community participation with curriculum. Adequate preparedness of the students to accept the curriculum with its additional requirements of energy, money and time. Adequate supervisory and guidance facilities for teachers needed for effective implementation on the curriculum.

Evaluation An essential aspect of good curriculum is the evaluation of curriculum, which should be continuous. The primary purpose of evaluation of curriculum is to ensure quality control and suitable modification in the curriculum. Evaluation may be qualitative. It may be done both at 'macro' level as well as micro level. It also may be done both at formative and summative stages. Curriculum evaluation determines the worth of curriculum. It determines, whether curriculum fulfils its purpose for which it is planned. 1.6.2 Challenges of Developing Curriculum

for inclusion Historically, educational services for children with mental retardation where designed to be provided in segregated settings. With the efficacy of research done in recent 32 years, the idea of providing services as close to the normal environment as possible has become the trend to inclusion. When developing such a programme, the varied needs of children with mental retardation with various culture practices should be taken into consideration. This makes it defficult to develop an ideal curriculum and plan programme uniformly. This is also one of the reasons for not having a common curriculum for all the individuals with intellectual disability.

As suggested by Lieberman (1992) the curriculum for children with mental retardation should therefore focus on: 1. The need of the students. 2. the probability that the intervention requires a special set of arrangements that are generally not available in regular class room settings. It is imperative that the shift of emphasis is made in curriculum priority from academics in regular classrooms to student based needs. When curriculum has to focus on all-round development as mentioned earlier, it should

be need based. It has to take into account the functions to be performed by the individual in his environment and the required competencies for it. Baine (1991) recommends an ecology based curriculum where the task involves assessment of not only the person with intellectual disability but also the functions he has to perform along with non disabled persons in a given environment. This allows for a discrepancy analysis, leading to specific focus on the strength of the individual with intellectual disability and selection of appropriate tasks and activities to be taught as suited to his environment.

The

approach being a functional one is likely to be meaningful to the individual if used at secondary school level. The primary level curriculum for children with intellectual disability will predominantly include personal, social, basic academic and introductory occupational skills. Co-curricular

activities, recreational and leisure activities should not be ignored and should be included as in the regular school curriculum. Infactt inclusion will be

more meaningful in the schools when recreational and leisure activities are planned for children with mental retardation along with those for non-disabled school children. When functional academic area is planned in the curriculum, it should focus on those areas which will

be of utility to the children with mental retardation. It is a waste of time teaching those activities that they will not use in present or future environments,

33 because, it is the need/opportunity for application of what is taught and what will benefit them. A study (Narayan and Myreddi 1996) was conducted to compare the functional curriculum with the one that is in use at regular schools. Minimum level of learning (MLL 1992) as prescribed by NCERT was item endorsed with the listed thing in the Functional Assessment Checklist for Programming (FACP) (Narayan et as, 1992) from preparimary to prevocational level covering the ages of 3 to 18 years for children with mental retardation upto prevocational age level happens to cover about 43% of the regular curriculum upto class III. The coverage showed 65% of class I. 42% of class II and 23% of class III. This again emphasized that primary education covers functional skills to a large extent making it possible for children with intellectual disability to learn. The essence of need based content area from regular primary education can be included in the curriculum area for academic learning of children with mental retardation. As they grow older or move to higher classes, need based education with ecological consideration is more suitable with specific evaluation criteria.

The cultural trend towards inclusive education, poses yet another challenge, the educators will have to face. The concept of inclusion demands that all children should be part of the educational and community mainstream. The Persons with Disability Act India (1995) also highlights equal opportunities for all support of inclusive education

and special education and the new role to which they have to adapt themselves. The peer group adjustment, the resource requirement and administrative decisions are other components of this concept. In India, the inclusive education is at infancy demanding tremendous efforts by all concerned to study its efficacy. In Short The curriculum should be developed after identifying the functional daily activities that are to be performed by the child with mental retardation in a given environment, may it be urban, rural, industrial, slum or semi urban areas. The curriculum should include specific activities that need to be mastered rather than are broad skill areas such as gross motor, fine motor, and socialization, language and so on. The Curriculum should emphasise process of training to be conducted as far as possible in the natural environment and that steps should be taken to minimize transfer of learning.

34 The inclusion of academic skills in the curriculum such as reading, writing and arithmetic must be absolutely function oriented and that the person with intellectual disability uses the skills learnt in his daily living. For instance, some times, the

special educators have their students working on 2 digits, 2 line additions on paper, but unable to say correctly, if they asked, orally, three cars and four autos make a total of how many vehicles. This happens because the addition taught on paper has not function oriented and was not generalized. Therefore, the curriculum must relate academic to its function in day to day life. In addition to academic skills, self care and communication skills, the curriculum should provide for recreational skills, home management skills, health and safety and community oriented skills which contribute to social competence. Though the initial instructions of certain skills begin in classrooms, as the child learns the skills and gains mastery over them, they have to be community referenced, as eventually a person with mental retardation has to live in the community. The curriculum should take into consideration, the economic, social, cultural and such environmental characteristics of the society in which the person with intellectual disability live. This should be emphasized especially in the aspects of vocational training. Local resources and occupations must be taken into consideration and the person will be trained accordingly. To conclude, a good curriculum should take into consideration the environments in which the persons with intellectual disability lives namely, home and family, community, school, vocational and occupational areas. The skills should be identified, organized, sequential and the training should be given in the natural environment. By this, the person with intellectual disability is taught what is required for him to be independent in his society. 1.7

Curriculum evaluation, Implementation in inclusion 1.7.1. Curriculum evaluation Curriculum evaluation refers to evaluation of the defferent components of Curriculum, namely objective, contents, learning materials, teaching strategies and students evaluation procedure.

35 The purpose of Curriculum evaluation is to get feedback for further modification and refinement in the curriculum. Curriculum is a complete design of planning. All teaching learning procedures are directed by this planning. So quality of curriculum is equivalent to the quality of education. Therefore, curriculum evaluation is the essential part of the education valuation, draws on one's judgement to determine the over all value of the Curriculums Evaluation of Curriculums Contineous. There are mainly two types of curriculum evaluation namely summative and formative evaluation. Summative evaluation: Summative evaluation takes place after the implementation of the curriculum and learning and provides information and feedback that sums up the effectiveness of curriculum. According to A. J. Nitko (1983), "Summative evaluation describes judgements about the merit of an already completed programme, procedure or product." Objective of summative evaluations: Whether the Curriculum is appropriate for the particular level/class. It helps to determine the ultimate out comes of the students and their curriculum. Whether it is designed as per the needs of the students with intellectual disability. It helps to connect between the ultimate aims and immediate aims of the curriculum. It determines the time limit of the curriculum implementation. It helps to link between present level and subsequent level of the curriculum designed for the children with intellectual disability Characteristics of the Summative evaluation: It leads to the use of well-defined evaluation designs. It focuses on analysis. It is concerned with broad range of issues. Its instruments are reliable and valid. It tends to stress local effects.

36 Advantages of Summative evaluation of Curriculum: It is time and cost effective. It is least complex in nature. It can be done by the teachers. It is more reliable and valid. It helps to determine the incompleteness, errors and problems of curriculum. Disadvantages of Summative exaluation & Curriculum: It is very difficult to evaluate the curriculum during the implementation. Under qualified teachers can not evaluate properly. It involves the intellegence, interest, motivation of students which are very difficult to relate with the curriculum. Evaluation may be affected by the use of unappropriate tests. Formative evaluation of Curriculum Formative evaluation of curriculum provides feedback and information during the implementation process, while learning is taking place and while learning is occurring. Formative assessment measures the curricular aims, objectives, teaching strategies. curricular contents, teaching-learning materials selection, instructional methodology, students progress including learning out comes and teachers competencies in the present Curriculum. A primary focus of formative evaluation of curriculum is to identify areas like objectives, contents, teaching strategies, methodology etc. that may need improvement. Formative evaluation is to determine teaching effectiveness and curriculum relevancy. Formative evaluation has allowed to 'rethink' and 're-deliver' that objectives, contents, selection of materials teaching strategies etc to ensure the curriculum is on track. Characteristion of Formative evaluation: It relatively focuses on molecular analysis It is cause seeking. Its design is exploratory and flexible. It tends to ignore the local effects of a perticular programme. It seeks to identify influential variables.

37 Stage of formative evaluation of Curriculum Stage 1. The aim of this stage of evaluation is to evaluate the basis of the curriculum. It is very important to assess the physical and mental status of the learners which is comparable to the basis of Curriculum. Stage 2. Accumulated basis derived from the Stage 1 should be verified properly. The aims of the curriculum should be evaluated in this stage. Stage 3. In this stage the curricular contents need to be verified. Stage 4. Evaluation of implementation including methods, teaching strategies is also an important part. Stage 5. Evaluation of the arrangements of Curriculum contents is the main task of this stage. The infrastructure, competencies of teachers, socio-economical needs etc are also to be evaluated during the formative evaluation of curriculum. Advantages of formative evaluation: It helps to keep the curriculum almost errorless. Every stage of curriculum are verified appropriately. It helps to predict the effectiveness of curriculum in advance. Preparation of teachers training can be done in well advance. Disadvantage of formative evaluation: It takes long time. It requires involvement of experts, people and various organizations. Effectiveness of the curriculum may decrease as formative evaluation takes a long time. 1.7.2. Implementation in inclusion The academic learning and the abstractions involved in it makes it difficult for a child with mental retardation to cope with regular curriculum in inclusive set-up. Janney & Snell (2000) offer three considerations in curricular adaptation (1) Simplified, (2) Supplementary and (3) Alternative which are very essential for implementation of curriculum in inclusive education.

38

Simplified curriculum Simplified curriculum includes fewer concepts and skills rather than the entire scope of the general curriculum. Example: Structure and functions of part of the eye. The text books have detailed description of parts of the eye. Iris, pupil, cornea, lens, aqueous humor, vitreous humor, optic nerve with difficult terminology and the functions eye. A child with mental retardation can just be taught major parts and functions. The parts that are visible so he comprehends (eyelid, pupil, iris) and focus on care of eyes, symptoms of problem of eyes, care of the eye glasses and such other information which is more functional and simplified and taken from regular educational curriculum.

Supplementary Curriculum Supplementary curriculum includes basic skills such as reading, writing, maths and also social skills, study skills and learning strategies. This helps children in organizing themselves to improve memory and helps in learning. This type of curriculum is most useful for children with learning disabilities and these who have emotional/behaviour problems. Example: Student attends regular class but performs poorly in exams. In such cases supplementary classes are provided

for test taking, organizing time, paraphrasing, noting main points and practicing test taking skills.

Alternative Curriculum An alternative curriculum emphasizes skills needed to participate in activities in the community living. An alternative curriculum therefore, can be functional, community referenced curriculum, determined by assessing the student and his environment. Functional academics forms part of the community referenced curriculum. Depending on the level of retardation, emphasis can be given on personal, social and

communication skills. Opportunity for partial participation in school activities is recommended for children with severe retardation. Example: If in the class curriculum demands 'gardening activity' a severely disabled child may perhaps participate by holding the hosepipe with the help of his/her peer for watering plant. He may receive his individualized instruction which may have minimum common content with his age appropriate regular curriculum. It is an alternative curriculum with the common objective of leading towards independent living.

39 In inclusive set-up the:

peer-tutoring, team-teaching unique teaching strategies uses of effective teaching learning material reduction of subjects extension of the time to complete curriculum flexibility of examination system can be beneficial for the children with intellectual

disability. 1.8 Let Us Sum Up We discussed in this unit underlying meaning, definition, concepts and principles of curriculum which are goal oriented, age appropriate, need based, Level appropriate, upto date, creative, integrative and comprehensive. We discussed the different types and approaches of curriculum, designing which includes child centered curriculum (c.c.c), activity centered curriculum (ACC) and holistic curriculum (HC) types and different approaches like– develop mental approach, functional approach, ecological approach and unit approach. The curricular contents for children with intellectual disability focus on personal, social, academic and occupational domains. All these areas covered in curriculum content at all levels. A combination of various techniques has to be used while teaching a particular skill and can use different techniques for different students even for teaching the same skill. The curriculum, stages moves sequentially from formation of objectives to the evaluation. We discussed the curriculum evaluation which includes summative and formative evaluations of curriculum. Lastly we discussed the implementation of curriculum in inclusion using different curriculum adaptations like simplified, supplementary and alternative curriculum. 1.9 Check Your Progress 1. Define curriculum. Is curriculum same as syllabus? Discuss.

40 2. Describe any 2 principles with examples to be taken into consideration while constructive the curriculum in the context of intellectual disability. 3. Compare the developmental, functional and approaches to curriculum development and highlight the similarities and differences. 4. Think of a theme and group of children in preprimary to prevocational levels. Narrate how the theme chosen by you will provide the cencipts suitable at each of these level. 5. Development of personal skills varies according to culture and region. Discuss. 6. List social skills that you will include in primary level curriculum. 7. Discuss the methods of teaching functional academics to children with ID. 8. Prepare a list of resources available in our community to teach occupational skills for students with intellectual disability. 9. Write the various steps of curriculum development in sequence. Explains with example. 10. Assessment of educational needs is an essential component of curriculum development. Discuss. 11. Write different advantages and disadvantages of summative and formative evaluations of curriculum. 12. How do you implement the curriculum in inclusion? 1.10 References :

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Unit - 2

Curriculum At Pre-school And Primary School Level Structure 2.1. Introduction 2.2 Objectives 2.3 Significance of Early Childhood Education and School Readiness 2.3.1 Early Childhood Education and School Readiness 2.3.2 Importance of Early Learning 2.3.3 Need and Challenges in India 2.3.4 School Readiness Program 2.4 Early childhood education curricular domains 2.4.1 Social Emotional Development 2.4.2 Language and Literacy/English Language Development 2.4.3 Science 2.4.4 Mathematics 2.4.5 Visual and Performing Arts 2.4.6 Social Studies 2.4.7 Focal Areas of Development in Early Childhood Education Program 2.5 Curriculum Domains for Early Childhood Education and Sensory Mechanism 2.5.1 Principles for Designing Early childhood Education Curriculum 2.6 Sensitization of family, involvement in pre-school and primary level 2.6.1 Family Involvement and Sensitization 2.6.2 The Importance of Parent Involvement in Early Childhood Education 2.6.3 Framework for Accessible Family Involvement

43 2.7
Implication of pre- school and primary levels for Intervention, documentation, record maintenance and report writing 2.7.1
Meaning and Importance of Record Keeping 2.7.2 Why Do We Record And Document Observations? 2.7.3 Report Writing 2.8

Let us Sum Up 2.9 Check your Progress 2.10 References 2.1 Introduction

Early childhood is

a crucial stage of life in terms of a child's physical, intellectual, emotional and social development. Growth of mental and physical abilities progress at an astounding rate and a very high proportion of learning takes place from birth to age six. It is a time when children particularly need high quality personal care and learning experiences. Education begins from the moment the child is brought home from the hospital and continues on when the child starts to attend playgroups and kindergartens. The learning capabilities of humans continue for the rest of their lives but not at the same intensity that is demonstrated in the preschool years. With this in mind, babies and toddlers need positive early learning experiences to help their intellectual, social and emotional development and this lays the foundation for later school success. Children taught at an early age usually benefit in the following ways: improved social skills, less or no need for special education instruction during subsequent school years, better grades, and enhanced attention spans. Likewise, some researchers have concluded that young children enrolled in pre-school programs usually have fewer behavioral problems, and do not become involved with crime in their adolescent and young adult years. The three broad objectives of ECCE are: holistic development of the child to enable him/her to realise his/her maximum potential; preparation for schooling; providing support services for women and girls.

44 The curriculum is defined as age appropriate, all round, play based, integrated, experiential, flexible, and contextual. The guiding principles of the ECCE curriculum are: Play as the basis of learning, Art as the basis of education, Recognition of the special features of children's thinking, Primacy of experience rather than expertise Experience of familiarity and challenge in everyday routines Mix of formal and informal interaction Blend of the textual (basic literacy and numeracy) and the cultural elements Use of local materials, arts, and knowledge Developmentally appropriate practice, flexibility, and plurality Health, well-being, and healthy habits Globally, many events have contributed to the realisation of the significance of the early childhood years for a country's economic progress. The beginnings of this change started with the United Nations Convention on the Rights of the Child in 1989. For the first time, there was a set of international standards and measures intended to protect and promote the well-being of children in society. The second major event that drew attention to the issue of early childhood was the creation of the Human Development Index, a summary measure of human development, by the United Nations Development Programme (UNDP) in 1990. The Human Development Index measures the achievements of countries on three basic dimensions of human development: (1) a long and healthy life; (2) knowledge; and (3) a decent standard of living; it includes indicators that specifically relate to children, namely, mortality, education, and child labour. The third important event in the international arena was the World Conference on Education For All (EF A), held in Jomtien, Thailand in 1990, where a global commitment to education was made in a document beginning with the famous words 'Learning begins at birth'. In addition, the World Education Forum, held in Dakar, Senegal in April 2000, reiterated the importance of ECCE through the involvement of the state, the family, and the community. India is signatory to all these agreements. 2.2

Objectives After going through this unit you will be able to

Discuss the different

curricular domains in preschool education. Discuss the significance of preschool education. Narrate the role of parents in preschool and primary education. Discuss

the importance of record maintenance. 2.3 Significance of Early Childhood Education And School Readiness

All children need and deserve a good start. Attending high quality early childhood programs is an important part of starting early and starting right. 2.3.1 Early Childhood Education and School Readiness: Early childhood is defined as the period from conception through eight years of age. The earliest years of a child's life are critical. These years determine child's survival and thriving in life, and lay the foundations for her/ his learning and holistic development. It is during the early years that children develop the cognitive, physical, social and emotional skills that they need to succeed in life. These early experiences are largely determined by supportive family and community care practices, proper nutrition and health care, learning opportunities, which in turn are dependent on enabling policies and investments for young children and families. ECE positively impacts on attendance, retention, and learning of children in elementary and higher education. The National Education Association recognizes that a high-quality early childhood program includes five, critical components: Provides a well-rounded curriculum that supports all areas of development

46 Addresses child health, nutrition, and family needs as part of a comprehensive service network Assesses children to enhance student learning and identify concerns Employs well-educated, adequately conversent teachers Provides small class sizes and low teacher-child ratios The U.S. Department of Education recognizes that the effectiveness of an early childhood program is dependent upon a number of factors: A quality staff An appropriate environment Consistent scheduling Parental involvement Proper grouping practices This federal agency also recognizes additional characteristics of a high-quality early education program: A balance between individual, small group, and large group activities A balanced schedule that does not result in rushed or fatigued children A clear statement of goals and a comprehensive philosophy that addresses all areas of child development A strong foundation in language development, literacy and mathematics. Access to a safe, nurturing, and stimulating environment, along with the supervision and guidance of competent, caring adults Engages children in purposeful learning activities and play, which is instructed by teachers who work from lesson and activity plans Nutritious meals and snacks Teachers and staff who regularly communicate with parents and caregivers Teachers who frequently check children's progress

2.3.2 Importance of Early Learning Research

into the human brain shows that the period from birth to the age of 8 is a critical phase for brain development and therefore the best time for learning. The

47 influence of the external environment is crucial to brain development. If a safe and accepting environment with abundant sensory stimulation is available in early childhood, children will have positive brain development which is beneficial to their future learning. According to the theory of multiple intelligences, there are many aspects of human intelligence and every individual has varied strengths. Pre-primary institutions should provide a diversified learning environment for children to develop their different potentials.

2.3.3 Need and Challenges in India

In India, according to Census 2011 data there are 164.48 million children of 0-6 years of age. Recognizing the need to provide quality pre-primary programmes, a number of constitutional and policy provisions have been made such as the 86th Constitutional Amendment which introduced Article 21 A on the right to free and compulsory education for 6-14 years old children and Article 45 to urge states to provide ECCE for all children until they complete the age of six years.

The Right of Children to Free and Compulsory Education (RTE) Act 2010

guarantees children their right to quality elementary education. ECE is not recognized as a compulsory provision by RTE, but RTE urges states to provide free pre-school education for children above three years. The 12th Five Year Plan acknowledges the importance of ECL and improving school preparedness. The Government of India approved the National Early Childhood Care and Education (ECCE) Policy in 2013. The Policy framework also includes the National Curriculum Framework and Quality Standards for Early Childhood Care and Education. The Policy caters to all children under 6 years of age and commits to universal access to quality early childhood education. The Ministry of Women and Child Development (MWCD) is the nodal department for ECCE. MWCD is responsible for the Integrated Child Development Services (ICDS) programme, which is a centrally sponsored and state administered [CCI: programme, covering around 38 million children through a network of almost 1.4 million Aanganwadi centres (a village courtyard). rCDS includes delivery of an integrated package of services such as supplementary nutrition, immunization, health check-up, preschool education, referral services and nutrition & health education. ECCE is one of the components and aims at psycho-social development of children and developing school readiness. Despite the recognition of the importance of ECE by the Government of India, the challenges in implementation still remain. There are still substantial numbers of children

48 not enrolled in preschools. Even in elementary education, while there is a significant rise in enrolments, the dropout rate continues to be a matter of concern, with drop outs being highest in the first two grades of elementary schooling. Learning assessments also show that literacy skills are poor in early primary grades. This points to the urgency of helping children, particularly from first generation families, develop adequate school readiness through a good quality ECE programme, to enable them to make a smooth transition. 2.3.4 School Readiness Program Children's School Readiness is affected by the early care and learning experiences they receive. The research in brain development emphasizes that early learning (especially from birth to five) directly influences a child's ability to learn and succeed in school. These studies have contributed to a growing awareness of the importance of quality early education and prekindergarten experiences. Research indicates that pre schoolers who attend high quality programs: Enter kindergarten with skills necessary for school success. Show greater understanding of verbal and numerical concepts. Are more socially competent. Show ability to stay with an activity longer. Are more likely to make typical progress through the primary grades. Are less often placed in special education classes. Are less likely to be retained in kindergarten. Children's readiness for successful transition into kindergarten needs to be viewed as a community responsibility. Parents, prekindergarten teachers, elementary schools, and local community programs working together provide the best base for children's success in school. Readiness needs to be defined in broad developmental terms so that the uniqueness of each child is preserved and respected. The National Education Goals Panel definition of school readiness covers three key areas: children's readiness for school schools' readiness for children family and community supports and services that contribute to children's readiness for school success

49 Five Essential Elements of School Readiness 1. Early Care and Education 2. Parenting and Family Support 3. Health and Social Services 4. Schools' Readiness for Children/School Capacity 5. Program Infrastructure, Administration and Evaluation 2.4 Early Childhood Education Curricular Domains 2.4.1 Social/Emotional Development Young children need social and emotional competencies. These skills are acquired through the development of close relationships, shared conversations and a nurturing environment. Preschool teachers guide children in learning social skills that include responsibility and self-control. Social emotional skills are developed through the shared activities of an appropriate and well designed preschool classroom environment. Preschool social emotional components are: Self-awareness and regulation Social emotional understanding Empathy and caring Initiative in learning Interactions with familiar adults and peers Group participation Cooperation and responsibility Relationship-attachment to parents, teachers and caregivers 2.4.2 Language And Literacy/English Language Development Children's early language growth and later language outcomes are directly related to the verbal communication children receive from adults and other children. In the preschool classroom, students have meaningful and comprehensive opportunities for language stimulation. Teachers embrace the primary language of the child while supporting the development of English

50 The key competencies for being ready for kindergarten and becoming fluent communicators and readers are as follows Language and Literacy 1. Language use 2. Vocabulary and grammar 3. Concepts about print 4. Phonological awareness 5. Word and letter recognition 6. Comprehension and analysis of age appropriate text 7. Literacy interest and response 8. Writing Categories of English Language Development Listening Speaking Reading Writing 2.4.3 Science Science in preschool fosters a joy of discovery and a positive approach to learning. Children become confident learner identifying solutions and problem solving through persistent hands on experimentation cum critical thinkers for lifetime. The content of Science in preschool consists of: The skills and language of science/scientific inquiry Knowledge of Physical Sciences, Life Sciences, and Earth Sciences 2.4.4 Mathematics Young children explore the mathematic domains through interactions with their everyday environment. Children experience mathematics through the daily routine by counting, sorting, building shapes, measuring, and estimating. The preschool classroom is designed with intention and order to promote mathematics experiences as the children play and explore their world. There are five main developmental mathematics strands:

51 Number sense Algebra and functions (classification and patterning) Measurement Geometry Mathematical reasoning

2.4.5 Visual And Performing Arts The visual and performing arts are natural to young children, exhibited early in the form of scribbling, pretending, humming, and swaying to music. In the preschool classroom, we engage and encourage children in arts activities on a regular basis. These activities lay the foundation and help children for successful learning Arts experiences are more about process than product Arts are inclusive and common to all Cultural competence and appreciation of the arts Artistic thinking processes and problem solving Learning through dramatic and active play Aesthetics in the classroom and intentional environment design Disposition of learning and meaningful connections to the world

2.4.6 Social Studies Children learn early how people live in the social world. Their preschool classroom mirrors the larger society with its diverse ethnic, religious, and socioeconomic backgrounds. Preschool teachers help children to think about themselves and their roles and responsibilities that they and others assume. Children are developing a sense of belonging to places and groups that are meaningful to them. They learn about the time and how their current experience is affected by their personal past and relates to their future The components of Social Studies in preschool are: Sense of time (history) Sense of place (geography and ecology) A preschool community member (civics)

52 Self and society Market place (economics) 2.4.7 Focal Areas of Development in Early Childhood Education Program

The early childhood years are filled with staggering growth and development. There are four main areas of development that occur all at the same time: Physical development: In the first years of growth young children are physically developing at a rapid pace. There is both gross motor (crawling, walking, running) and fine motor development (eye-hand coordination, hutting, writing, weaving) happening all at once. Social development: Understanding how to communicate, sharing, making friends, and getting along with others is just the tip of the iceberg when it comes to social development in the first five years of life. Emotional development: The building blocks for a positive self-esteem and self-confidence starts in early childhood. Young children are also learning how to cope and appropriately express their own emotions such as fear, sadness, anger, and happiness. Social and emotional development often comes hand in hand since how a child copes socially often impacts his or her emotional well-being. Cognitive development: Young children are always processing information about their world. They do so through both structured and unstructured activities, play, and by interacting with others. From experiences such as these, young children develop their understanding and abilities in the areas like mathematics, science language, art. The mind of a young child absorbs information like a sponge.

2.5 Curriculum Domains for Early Childhood Education and Sensory Mechanism 2.5.1 Principles for Designing Early childhood Education Curriculum We should adopt the following principles for designing the early childhood education curriculum. All children are capable of learning. The curriculum should be designed with a child-centred approach and from the children's perspective. It should be geared to meet their abilities, needs, learning styles, experiences and interests.

53 a. Curriculum should meet children's developmental needs and abilities: When designing the curriculum, institutions should identify children's best learning moments to meet their developmental needs and abilities, and provide them with sufficient space for a balanced development. b. Curriculum should relate to children's experiences and interests: Children's previous experiences influence their learning. Curriculum planning should therefore be based on childrens' experiences and should relate to the environment in which they live. In addition, the curriculum should be interesting, so that the children are self-motivated and ready to take an active role in learning. c. Curriculum should cater for children's holistic development in the cognitive, language, physical, affective, social and aesthetic aspects: Cognitive, language, physical, affective, social and aesthetic developments are interrelated and interwoven. Therefore, in the process of curriculum planning, due consideration should be given to children's overall development, so that individual developmental needs will be met in a comprehensive and well-balanced manner. d. Curriculum should foster children's knowledge, skills and attitudes in different learning areas: A pre-primary curriculum should take into account all six learning areas and the relevant concepts, skills and attitudes. e. Play may be a learning strategy: Children loves to play, which enables them to enjoy the freedom and fun of sharing and working with others. They learn effectively in a pleasurable atmosphere. Play is also one of the most effective ways of learning, since it enables them to express their inner feelings and explore the real world. Therefore, pre-primary institutions should incorporate play activities into different learning areas and plan the curriculum through an integrated approach.

The curriculum must address the following interrelated domains of holistic development through an integrated and play based approach which focuses on development of life skills.

Physical and Motor Development: Gross motor skills; coordination of fine muscles with dexterity; eye hand coordination; sense of balance, physical co-

54 ordination,

and awareness of space and direction; nutrition, health status and practices. Language Development: Listening and comprehension; oral skills/speaking and communicating; vocabulary development; pre- literacy/emergent literacy skills like

phonological awareness; print awareness and concepts; letter-sound correspondence; recognition of letters; building words and sentences and early writing.

Introduction to language of school transaction. Cognitive Development:

Development of various concepts including pre number and number concepts and operations (knowledge and skills related to comparing, classification, serialization, conservation of space and quantity, one to one correspondence; counting); spatial sense; patterns and estimations in measurement; data handling; skills related to sequential thinking, critical thinking, observing, reasoning and problem solving;

and knowledge about concepts and physical, social and biological environment. Socio-Personal and Emotional Development:

Development of self-confidence; self-control; life skills/ self-help skills; habit formation; initiative and curiosity; engagement and

persistence; cooperation; compassion; social relationships; group interaction; pro- social behaviour; expressing feelings, accepting others feelings . Sensorial

Development: Development of the five senses through visual, auditory and kinaesthetic experiences .

Development of Creative and Aesthetic Appreciation:

Exploring different art forms, develop dispositions, expression and appreciation for artistic, dance/ drama and musical activities 2.6

Sensitization of Family, Involvement in Pre-school and Primary Level 2.6.1

Family Involvement and Sensitization Family involvement means that families work together with caregivers and teachers to create an atmosphere that strengthens learning both at the program and at home. Parents should be sensitized to the importance of preschool education and its vital role in children's lives. Parents should also be made aware about the importance of play way approach in early childhood education. The planners and school personnel should focus on child centered curriculum for the growth and all round development. There should be participation and involvement of parents in early education to improve the

55 performance and the best out of child. There should be proper comprehensive supervision of Aanganwadi workers so that they dedicate more time to preschool educational activities. Emphasis should not be laid only on nutrition and immunization but children should also get adequate educational inputs. The preschool education component should be strengthened by providing training and orientation to Aanganwadi workers. Necessary educational equipment and toys should be available to each centre. There should be greater community participation so that every single person comes to know about ICDS and its widening coverage. People should treat ICDS programme as their own programme so that the impression that everything is to be done by the government only is changed. Understanding the concerns of parents of children with disabilities is an important step to school counsellors as they are the advocates for students with disabilities and their parents. "When schools and families work together, children have a much better chance for success, not just in school, but throughout life" (Henderson & Berla, 1996, p. 1). The benefits for children may look like they are too broad for your thinking about young children because they generalize across a wide age span (BCE to high school).

But if you keep in mind that the patterns for success begin in early childhood, the benefits have much relevance for work with young children. Those benefits of family involvement include: Higher grades and test scores Better attendance and more homework done Fewer placements in special education More positive attitudes and behavior Greater enrolment in postsecondary education 2.6.2 The Importance of Parent Involvement in Early Childhood Education Parents who are

involved in their child's education create a connection between the home and school. Those who participate along with their child are privy to the many aspects of their child's day. At home, they are able to replicate and extend activities that their child experiences in school. An astute parent will pick up where the school left off and have an intuitive sense

56 for what their child may need to work on to increase his competency and confidence. Ideas gleaned from the classroom give the parent inspiration for home activities that coincide with classroom tasks. Involved parents learn the names of various children in their child's class. They have a sense of who their child's friends are, who may be causing them trouble and how their own child is getting along in the group.

57 2.6.3 Framework for Accessible Family Involvement One comprehensive perspective on family involvement in preschool and primary evolved from a review of studies from preschool through high school that included educators and families (Epstein, 2001). Epstein's framework includes six types of involvement: Parenting-home environments that support achievement Communicating-two-way information sharing between school and home Volunteering-helping with planned activities in and outside the classroom Learning at home-parents assisting children in the learning process at home Decision making-parent involvement in school decisions. Collaborating with the community-use of local services and resources to help children learn. 2.7

Implication of Pre-school and Primary Levels for Intervention, Documentation, Record Maintenance and Report writing 2.7.1

Meaning and Importance of Record Keeping Records are the documented information generated, collected or received in the initiation, conduct or completion of an activity and that comprises sufficient content, context and structure to provide proof or evidence of the activity. Specifically, Hrach (2006) defined school record as a unified, comprehensive collection of documentation concerning all services provided to a student which may include intake information, evaluation(s), assessment(s), release of information forms, individual learning plan, all written notes regarding the student, all collateral information regarding the student, etc. Chifwepa (2001) observed that a record is a documented proof of transaction and that information is what a record contains, stores and transmits. Hence, records do not only enable school administrators to have a clear picture of what is available and what is required, they provide justification for certain needs and seem to extend the memory by which persons and/or organizations can pass on their culture and achievement to the future generation. In fact, the content and quality of school record (such as lesson plans, report cards, etc.) can serve as a direct reflection of the amount of work that has been expended on the school enterprise. Also, records help school administrators and parents to keep a concise and accurate timeline of events in the life of the pupils. Individuals may think they will be able to recollect past events, but it is easier to use a written record.

58 2.7.2 Why Do We Record And Document Observations? The typical day of a teacher is filled with multiple tasks, decisions and emotions. At the end of a week it is difficult to remember a comment made by a child on Monday about block building, or a problem solved by two children on Wednesday using their words instead of their hands. So recording is necessary. Teachers may feel recording takes precious time away from the children or necessary classroom tasks. However, when the process of observation and recording is organized systematically, it becomes an invaluable planning and teaching strategy. 2.7.3 Report Writing Writing a Report reflects the partnership among families and service providers and are guided by the families' priorities, questions, and concerns. Reports present a shared vision of the child, convey useful and understandable information, and maintains a balance among consumers' needs unique to each child. This process helps educators (in partnership with children, families and other professionals) to : plan effectively for children's current and future learning/wellbeing communicate about children's learning and progress/wellbeing and development determine the extent to which all children are progressing in their learning outcomes and if not, what might be impeding their progress identify children who may need additional support in order to achieve particular learning outcomes and provide that support. or assist families to access specialist help evaluate the effectiveness of learning opportunities. environments and experiences offered and the approaches taken to enable children's learning/wellbeing reflect on pedagogy that will suit the context and children. 2.8 Let us Sum Up 1. The National Education Association recognizes that a high-quality early childhood program includes five, critical components: Provides a of children curriculum that supports all round of development. Addresses child health, nutrition, and family needs as part of a comprehensive service network

59 Assesses children to learning and identify concerns Employs well-educated and well conversant teachers Provides small class sizes and low teacher-child ratios. 2. Research on human brain shows that the period from birth to the age of 8 is a critical phase for brain development and therefore, the best time for learning. The influence of the external environment is crucial to brain development. If a safe and accepting environment with abundant sensory stimulation is available in early childhood, children will have positive brain development which is beneficial to their future learning. 3. The Right of Children to Free and Compulsory Education (RTE) Act 2010

guarantees children their right to quality elementary education. ECE is not recognized as a compulsory provision by RTE, but RTE urges states to provide free pre-school education for children above three years. The 12th Five Year Plan acknowledges the importance of ECE and improving school preparedness. The Government of India approved the National Early Childhood Care and Education (ECCS) Policy in 2013. The Policy framework also includes the National Curriculum Framework and Quality Standards for Early Childhood Care and Education. 4. Five Essential Elements of School Readiness Early Care and Education Parenting and Family Support Health and Social Services Schools' Readiness for Children/School Capacity Program Infrastructure, Administration and Evaluation 5. Records are the documented information generated, collected or received in the initiation, conduct or completion of an activity and that comprises sufficient content, context and structure to provide proof or evidence of the activity. 2.9 Check Your Progress A.1. Describe about the curricular domains of pre school education. 2. Discuss about record maintenance and documentation. 3. Write about the significance of Early Childhood Education.

60 B. Assignment and Activities Discuss about the importanc of EarlyIntervention. Frame a curriculum for pre school children.

C. Points for Discussion / Clarification After going through the Unit you may like to have further discussions on some points and clarification on other. 1) Points for Discussion

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..... 2) Points for Clarification

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62 Unit 3
Curriculum at Secondary, Pre-vocational and Vocational Level Structure 3.1. Introduction 3.2 Objectives 3.3 Curriculum domains at Secondary level 3.3.1

Meaning and Definition of curriculum 3.3.2 Approaches to curriculum development 3.3.3 Curricular domains at Secondary Level 3.3.4 Functional curriculum for students at Secondary Group 3.4 Curriculum domains at Pre- vocational level 3.4.1 Areas of preparation at Pre vocational Level 3.4.2 Focal Pre Vocational Skills 3.5 Curriculum Domains at Vocational Level 3.5.1 Importance of Vocational Curriculum 3.5.2 Focal curriculum of Vocational Education 3.6 Rehabilitation of PwIDs under National Skill development Scheme (NSDS by MSJ&E) 3.6.1 Background 3.6.2 Vision of the National Policy on Skill Development 3.6.3 Scope of the National Policy on Skill Development 3.7

Implications of placement for inclusion in Community, Documentation, Record Maintenance and Reporting 3.7.1 Implications of placement for inclusion 3.7.2 Meaning and Importance of Record Keeping 63 3.7.3 Why Do We Record And Document Observations? 3.7.4 Report Writing 3.8 Let us Sum Up 3.9 Check your Progress 3.10References 3.1 Introduction

When considering educational curriculum content for students with disabilities, it is important to recognize that the population of students labelled "disabled" is enormously diverse. For example, when a student has a physical disability alone, with no concurrent cognitive disabilities, it is generally accepted that he or she should pursue the full general education curriculum established for students without disabilities. Similarly, students with mild learning disabilities also are generally expected to pursue much, if not all, of the general education curriculum. So, for many students with disabilities, the question is not what these students should learn, but rather how they will access the curriculum and what accommodations will be needed. Decisions about curricular selection become more complex and the curricular content tends to be more individualized when students have more severe disabilities or have combinations of physical, cognitive, sensory, or behavioral disabilities. A quality curriculum for a student with disabilities includes learning outcomes that are at an individually appropriate level and are pursued within typical class activities (e.g., small cooperative groups, unit-based projects). Selecting appropriate learning outcomes has long been, and continues to be, considered a marker of educational quality for all students. Individually determined curricula for students with disabilities should include a small set of family-selected priorities to establish a focus for instruction, as well as a breadth of curricula that allows the student opportunities to explore many options that coincide with state or local standards. Curriculum planning for the intellectually disabled must be forward looking, giving due consideration to the students' current and future needs, sensitive to the environments in which the individuals would ultimately be expected to adapt and function after leaving school.

64 3.2 Objectives
After going through this unit you will be able to

Discuss the different curricular domains in secondary level. Discuss the significance of pre vocational education. Discuss the importance of vocational education. Discuss about the different domains of pre vocational and pre vocational curriculum. 3.3 Curriculum Domains at Secondary Level 3.3.1 Meaning and Definition of Curriculum Curriculum is the base in education on which the teaching learning process is planned and implemented. It is the totality of all the learning to which students are exposed during their study in the school, in the classroom, in the laboratory, in the library, in the workshop, on the farm and the playground. A curriculum planned as a comprehensive design for learning, contributes a basis for the growth of human being and growth of community (Phenix, 1964) The term curriculum has been derived from a Latin word "Currus" meaning a 'chariot' or 'runway'. It resembles closely to the Sanskrit term 'karyakram' and English term 'course'. Basically it is the programme of various activities and experiences of learning conducted by a body/institution for the benefit of the student's present and future life. Curriculum does

not mean only the academic subjects traditionally taught in school, but it includes totality of experiences that a child receives at school. 3.3.2

Approaches to Curriculum Development Unit Approach Unit approach was introduced by Ingram (1935) later popularized by Meyen Centre upon development of life experience units including the six major core areas of arithmetic, communication, health, socialization and vocation. This was recommended for group teaching of children with special needs as each~elected life experience units is carried out by a group which in itself is a learning experience. This approach suggests an in built evaluation system, but requires elaborate planning on the part of the teacher.

65 As children with intellectual disability learn better through experiences, unit approach is found suitable as it has life experience units as the focus. System Approach System approach is defined as deliberately designed synthetic organisms comprised of interrelated and interacting components which are employed to function in as integrated fashion to attain pre determined purpose (Benathy, 1968). The steps include "SOME" system which is briefly explained as S- Survey of the variables including all assessment details. O- Setting Objectives. M- Multi 'M' program variable such as motivation, methods, materials, modality and models of learning. E- Evaluation This approach also takes into account the pupil teacher- learning situation and their interaction with family, community, administrative arrangements, therapeutic supports and legal aspects. Thus this approach provides a unified systematic way for developing curriculum to a special teacher. This approach is in many ways similar to the behavioral approach which is popularly in use in recent years. In this approach the common curricular content is not specified. Based on the assessment of the child, the teacher has to develop suitable content of each child. Child Centered Approach A child is to be prepared for life. But this does not mean that his immediate interest should be sacrificed for the sake of future which is indefinite. As Ryburn (year?) puts, "the best preparation for the life that we can give a child is to help him to live fully and richly his life at that stage at which he is." The child automatically prepares himself for the next stage by living well and truly life at one stage. Smith and Harrison (years?) also observe "Education regards the child as an individual growing by his own activity, living in his own environment, and preparing himself for adult life, not by imitating the adult, by living as fully as possible in the environment of childhood possible. The basis of "Child centered curriculum" is that every individual is unique; each child is different having individual needs. Learning pace and ability depends on the child's ability, interest and aptitude. This approach aims at developing the deficient skills in the child making him achieve the optimum level of functioning. According to the needs and abilities learning experiences are provided. No task or activity is part of the content unless is 66 wanted or needed by the child. The method of teaching and aids for learning also depends on the child's ability, interest and aptitude. Ecology Based Approach The current trend in curriculum development for the children with intellectual disability is the ecology based approach. This approach stress the importance of curricular items based on the environment in which a child lives. Instead of the 'watered down curriculum' of regular education, this approach gives emphasis on the inclusion of those content areas necessary for independent living in his environment. This includes the assessment of not only the abilities of the child, but also his environment, the activities of the 'non handicapped' people in 'that' environment on a daily, weekly and occasional basis. This would lead to the process of decision making on what the child,— Can already do, What can be done by him with training and / or adaptation? What he

is the child's need. When such a clear concept is developed, decision making on curriculum areas to be taught and what is best suited to his community becomes easy. In addition, one can be sure that what is taught will have utility value as it is absolutely functional. Popularized by Ben (1988), this approach is implemented in many countries, especially in developmental countries with varied socio-cultural practices. When the content for the curriculum is decided using this approach, the process recommended for implementing the curriculum is development of activity based IEPs. Instead of focusing on skill areas, the 'activities' cutting across various skill areas of self-help, social, motor, language, academic, vocational and so on are selected and the IEPs are developed to achieve the independence in the given activity. By this, measuring progress becomes easy and as selection of activity is need based and functional it will be performed by the child. In other words, retention of the learnt skill is maximized by regular performance.

Task Analytic Approach This approach described by Hewett (1967) creates an hierarchy of educational tasks ranging from attention level to an achievement level of performance. This hierarchy provides framework for organizing the structure of the class, content, materials and rewards leading to meaningful transaction between the teacher and the student at the child's readiness level. The curricular items thus selected are broken down into tasks and each task is analyzed in a sequential manner for teaching the child. This breaking down of tasks to teach the child has the advantage of analyzing errors and correcting them.

67 Social Learning Approach This is an interaction model of environmental encounters designed to develop 'critical thinking and independent action' among children with intellectual disability (Glodstein, 1969). This approach takes into consideration the child's expanding world from self to home and family, neighborhood and community. The curricular items are selected keeping in mind the required competency of the child to function independently at each level. Psychological, physical and social aspects of the child are identified as need areas for the above environmental components and for each stage the required communication) art and quantitative thinking are incorporated in the curriculum. This approach has many advantages.

3.3.3 Curriculum Domains at Secondary Level This group includes children in the age group of 11-14 years. In this group the students are trained in their basic self-help skills, language, cognitive, academic and co-curricular activities in a more structured form. Music, Dance, Art & Craft, and Yoga form an integral part of their curriculum. Speech therapy, occupational therapy, behavior modification are also provided simultaneously with the main learning schedule of the children.

3.3.4 Functional Curriculum for students in the secondary group Students with intellectual disability in the secondary group need a distinct curriculum; a curriculum geared towards meeting the specific needs of this particular population. Smith and Smith (1978) proposed a curriculum be devised for each special education program that is practical and targets the skills needed for independence of the population within particular programs. Components of a functional or life management curriculum include the functional applications of core subject areas like academics, vocational education, community access, daily living, financial, independent living, transportation, social/relationships, and self-determination (Patton, Cronin, & Jairrels, 1997).

68 A distinct curriculum for students with intellectual disability at secondary level is geared towards their goals is not far from what exists in Western Schools today. In schools and some preparatory secondary schools, students are prepared and taught subjects, knowledge, and skills geared directly towards their post school life; knowledge that will enable them to be successful in the adult world. This same opportunity should be available for students with intellectual disability at secondary level. A separate, unique curriculum is geared towards the different needs of a particular population. For example, functional mathematics does not just refer to basic skills, but also to more everyday computation and problem solving skills, which are embedded into experiences of individuals with mild mental retardation might encounter in life (Butler, Miller, Lee, & Pierce, 2001). Researchers stress the daily use of mathematics, regardless of one's mental capacity. Some degree of math proficiency is required for most jobs and therefore, special educators need to devote attention to teaching functional math skills that are applicable on the job, at home, and in the community (Patton, Cronin, & Bassett, 1997).

3.4 Curriculum Domains at Pre Vocational Level Children with intellectual disabilities may not be able to go through the regular educational system that prepares them for careers and jobs. They may not be able to cope with high school or college.

3.4.1 Areas of Preparation at Pre vocational Level Some of the aspects that are covered in pre vocational training for students with intellectual disabilities are:

Functional Literacy: Children may require training in basic literacy. Sight reading, identifying their name and writing it, identifying and writing their address are some of the tasks.

Functional Math: Children will require training in simple calculations, use of a calculator, counting, sorting, arranging in numerical order etc. Skills in weighing and measuring are also very useful.

Work behaviors: Children will require training in producing neat and quality work, punctuality and regularity, reporting once a task is completed, correct use and maintenance of tools and other materials.

69 They also need to know and learn about the behavior that is expected at the workplace. Social skills: Children need to learn to relate to their supervisor and colleagues, ask and answer questions and build relationships with others. In addition, the child must be taught to accept criticism from the supervisor and to express frustration in an acceptable way. Exposure to different occupations and work tasks: While preparing for employment, the child must be exposed to a variety of work tasks. This will help teachers and family to understand more about the aptitude and skills of the child.

3.4.2 Focal Pre-Vocational Skills 1. Understand and accept 'work times' and 'relax times' of day 2. Sustain attention to tasks (at least 15 minutes) 3. Independently recognize feelings of anxiety, frustration, and anger in self 4. Do non-preferred tasks without complaining/arguing/negotiating 5. Ask for help 6. Follow multi-step directions (out of sight of a prompter) 7. Be comfortable with getting temporarily interrupted 8. Accept suggestions/corrections 9. Read time on a variety of clocks/watches/phones 10. Understand various forms of authority 11. Regularly demonstrate semi-professional social niceties 12. Attend to personal cleanliness/hygiene, including dress code 13. Explore self-awareness: understand/accept diagnosis, learn about accommodations, strengths and challenges. 14. Disclose diagnosis (if desired) 15. Make small decisions independently 16. Demonstrate self-advocacy skills (indicating preferences, not waiting for prompts, making goals, asking for accommodations)

70 17. Demonstrate safety skills in the community (strangers, unwanted advances, emergencies) 3.5 Curriculum Domains at Vocational Level 3.5.1 Importance of Vocational Curriculum Two key legislative acts that address workforce preparation of students are the Carl D. Perkins Vocational Education Act and the Individuals with Disabilities Education Act (IDEA). The purpose of the Perkins Act, is currently in the process of being reauthorized, is to provide technical training and education to students who do not necessarily plan on going to college. The act requires schools to provide parents and students with: Vocational education opportunities, which should be offered to the student by the beginning of ninth grade or one year before the student enters the grade in which vocational education is offered. Eligibility requirements for enrolling in vocational education. In addition, students with disabilities are entitled to receive. An assessment of interests, abilities, and special needs as well as other special services designed to help students enrolled in vocational education transition into post school employment or training . Career assessment, planning, training, and school-to-work transition services. IDEA requires schools to provide services to students with disabilities that will help them make a successful transition from school to post school activities-such as work, continued training or education, and other aspects of community living. By age 14, a student should have a transition plan incorporated into their IEP that specifies what services the student needs to make a successful transition from high school to work and community living, what career activities the student should undertake, and who will be providing the required services. 3.5.2 Focal curriculum of

Vocational Education Vocational training should provide students with a curriculum that prepares them for the job that they intend to enter. Broad-based knowledge and skills are good, but for some

students with disabilities, specific skills are necessary for survival In the workplace and In the community and need to be explicitly taught.

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Academic Skills Reading and writing (e.g., sight-word vocabulary, spelling, handwriting, typing, etc.) Math (e.g., basic computation, money, measurement) Problem solving Listening comprehension Speaking Computer Art or music Communication Skills Following and giving directions accurately Communicating information Understanding and processing information Requesting or offering assistance in

Social and Interpersonal Skills Answering the phone and taking a message Making necessary phone calls to employers and other professionals as a part of a job requirement Displaying appropriate work behavior and etiquette Knowing appropriate topics for discussion in the workplace Learning how to protect them from victimization Learning social problem-solving techniques Occupational and Vocational Skills There are a number of skills and behaviors that most, if not all, jobs require. It is important to help students

who do not possess these skills, to acquire them. Examples of these activities include the following: Using a time card and punch clock Arriving to work on time Calling when sick

72 Requesting vacation time Using the appropriate tone of voice and volume Accepting instructions and corrections Knowing appropriate interaction with co-workers (i.e., getting along; social problem solving; making friends; and recognizing personal, professional,

and sexual boundaries) There are also a number of skills that students should have so that they can be as independent as possible in their future job searches;

these skills include the following: Looking for jobs (advertisements in the newspaper and online, help from neighbours and local resources) Filling in job applications Writing resumes and covering letters Enclosing necessary identification (photo ID, birth certificate) etc. Having for appearing in the interview skills. 3.6 Rehabilitation of PWIDs Under National Skill Development Scheme (NSDS by MSJ&E) 3.6.1

Background The National Policy on Skill Development was first formulated in 2009, and it has provided the framework for skill development activities in the country. Over the past five years, changes in the macro environment, and the experience gained through implementation of various skill development programmes in the country have necessitated changes in the policy. The creation of the Ministry of Skill Development & Entrepreneurship as the nodal Ministry for all skill development activities across the country has led to changes in the Allocation of Business Rules that have further necessitated the process. The new policy reflects the tenets of the-Skill India programme of the Government, which focuses on outcomebased approach in terms of providing meaningful employment in the form of both wage and self-employment. Accordingly, the National Skill Development Policy, 2015 is being formulated, and it will supercede the Policy of 2009.

73 3.6.2 Vision of the National Policy on Skill Development The overall vision of the policy is an integrated outcomes-based skills development eco-system, which would promote economic, and employment growth and social development through a focus on education, skill training and employment services. The Skill India Programme is a commitment to the overall human resource development of the country. The basic tenet of the National Policy on Skill Development would be the development of the individual. The emphasis of the policy is to deliver skill development so that it empowers the youth to attain decent standard of living. However, in order to link these two elements measures that adhere to good quality standards of the skill development programmes should be adopted. There is a need to facilitate a general increase in the skills profile of the population, through accredited high quality education and training linked to the National Skills Qualifications Framework (NSQF), a competency based framework. The NPSD envisages creating a vibrant educational and skill ecosystem which would make our country the "skill capital of the world". It seeks to make skill development an integral part of all development schemes and aims to address the employability issue by initiating a multi-skills development programme in a mission mode with focus on job creation and entrepreneurship, in both rural and urban areas covering all socioeconomic groups of the population. The policy identifies the strategic interventions required to meet the objectives of skilling the youth of the nation as it has become imperative to India's sustained growth and is no longer a matter of choice. The policy recognizes that the need of the hour is to create a skill eco-system with increased investment. The skill policy also envisages harnessing inclusivity and focusing on equity -- both social and gendering equity. There is need for affirmative action in accordance with Constitutional provisions to ensure that persons belonging to the Scheduled Castes, Scheduled Tribes, Minorities, Women, and other disadvantaged groups are provided the opportunity to develop their skills. The skill policy would also focus on training to promote self-employment and focus would also be laid on special training on entrepreneurship. The NPSD would also focus on increasing the relevance with future employment market including promotion of self-employment; soft skills and entrepreneurship skills will be made integral part of skill development.

74 3.6.3 Scope of the National Policy on Skill Development The issues which the National Policy on Skill Development & Entrepreneurship seeks to address include the following: Changing the negative perception associated with vocational education and focusing on mobilization of candidates on the same: A major challenge in the skills arena is the mobilization of candidates, partly because of the socio-cultural attitude towards blue collared jobs. It is also evident that lack of awareness is a major reason for the relatively poor response to skill development opportunities. The skills! policy envisages awareness generation and information dissemination on the part of all the implementing agencies be it the Central Government, state government or the private agencies. A major initiative would be made in creating and raising awareness among the target groups about the benefit of skill development, employment and learning opportunities and also about support schemes that enable them to participate in training. Co-ordination and integration of all skilling efforts in the country: A large number of stakeholders-ranging from central and state Governments, ministries, training providers, assessment agencies, industry bodies, and workers- are involved in the skill development space. Co-ordination amongst these various stakeholders often results in shortfall in implementation. Furthermore, the lacunae in establishing a clear skill supply- demand paradigm also limit positive impact in the resultant employment and productivity of the markets. Hence the NPSD envisages achieving effective coordination mechanisms at various levels. Outcomes approach focusing on both employment and employability: When viewed from the perspective of a trainee, the ultimate goal of any skilling exercise is to ensure socio-economic mobility. Better employment opportunities for the trainees are an effective way to gauge the effectiveness of any skilling initiatives. This can be measured in terms of a trainee's ability to move from the informal sector to the formal sector and/ or a raise in remuneration post, etc. Employability- as demonstrated through skills of an individual- is intrinsically linked to achieving gainful employment. From the perspective of the employer, the prospective trainee/employee must deliver tasks assigned to him/ her efficiently. The ability of an employee to perform tasks effectively rest on his mastery over the job, which may relate to both core and soft skills. Thus, key objective of the policy is to enhance employability so that it reflects on employment of trainees. Improving the capacity and quality of Training Infrastructure, along with geographical and distribution of capacity, sector wise and geography wise: Though the capacity that had been created by the private sector in the country is unknown, it is 75 evident that the infrastructure is skewed in terms of both sector and geography. A survey could be conducted to know the capacity that already exists and how it is being utilized, so that the shortfall in capacity can be gauged and a plan for meeting this shortfall can be formulated and implemented. The objective of enforcing quality and relevance in skill development will also be realized through improving infrastructure, improving quality of trainer and developing National Skill Qualification Framework. Quality assurance and linkages with the NSQF: Ensuring the quality of training is essential for all stakeholders within the skill ecosystem and the resultant certification is a validation and recognition of the same. Irrespective of source of learning, whether through formal or informal or on-the-job learning, the quality assurance against certain benchmarks will facilitate recognition of learning. The NSQF is an important institutional mechanism that ensures consistency of nationally recognised qualifications both for formal and non-formal skills based education and training. It accommodates experiential life-long learning through mechanisms such as recognition of prior learning, improves the alignment of formal and non-formal training programs with industry requirements; and increases options for students by broadening program and progression for learners through horizontal and vertical pathways. Working closely with the private sector and the industry: Industry is an essential partner in skill development, and there is need to encourage greater participation from the private sector. In India the initiative of developing skills has largely been a Government driven exercise. However, as a stakeholder, that will eventually absorb all the skilled manpower, the industry has an equal responsibility to participate in the skilling campaign. Successful models across the globe have indicated that inputs from the private sector should be at multiple levels of the skill value-chain, ranging from inputs to market information, to designing of occupational standards, to investment through apprenticeship and re-skilling to ensure trained manpower. Thus, a greater emphasis will be placed on the industry participation in the new policy. Third party assessments and Certification: For meaningful skill development, there is a need for an independent and good quality third party certification, which would be adopted by institutes imparting skill development programmes as a means to bring accountability and regulation over training and assessments. This would promote professional and personal development of individuals. Apart from the formal sector, a large number of workers in the informal/unorganized sector have acquired skills through experience or other non-formal learning channels that are not able to derive proper market value for their services. The NSQF would facilitate certification to such persons to help them move into the formal sector jobs as long as they are able to perform to the

76 outcome standards. This recognition of prior learning would empower millions of workers through formal recognition of their skills. Address the special needs of difficult areas — NE, Hill States, LWE affected areas: The border, hilly and difficult areas, including the North-Eastern states, J&K, and the hilly forested areas of central and eastern India, face additional challenges arising out of inadequate infrastructure, poor investment and industrial opportunities. Special attention needs to be given to the youth residing in these regions to address their needs for employment and employability. In order to provide more equitable access across the country, special efforts will be mounted to establish training facilities in deficient regions. Technology interventions in terms of LMIS and monitoring of outcomes: There is a strong necessity to design platforms that facilitate information exchange and mitigate information asymmetries. The labour market information system will be dynamic platform that will enable a range of stakeholders to access reliable information. In line with the national policy, it will retain trainees as the focal point of initiatives; however, it will also cover a range of stakeholders such as training providers, industry/employers, Government agency/policy makers, Assessment agencies, Certifying agencies, Funding agencies, International Agencies, Sector Skill Councils, Labour Market tracking agencies, Govt. & Private agencies. The information generated under such a system would be both quantitative and qualitative in nature. Furthermore, the aim of the system will be to accumulate data through varied sources that will be analyzed to suggest corrective measures and forecast trends that will be linked to broad national development strategies, so that new and existing employment prospects and their skills requirements can be identified. International equivalence and mobility of skilled manpower: The objective of the current exercise of skill development is not only to meet the domestic demands but also international markets. In a competitive global economy, trained manpower is an asset for employers, where an individual's skills must be a reflection of quality and competitiveness. The policy seeks to create avenues for greater mobility through quality assurance measures that will be at par with international standards. To this end, recognition and portability of skills abroad is an important outcome of the policy. Create opportunities for all to acquire skills throughout life, and especially for youth, women and disadvantaged groups: High inclusivity is one of the central visions of the NPSD. The NPSD envisages skill development initiatives that will harness inclusivity and reduce divisions such as male/female, rural/urban, organized/unorganized employment and traditional/contemporary workplace. One of its key objectives is to

77 ensure that the skilling needs of the disadvantaged and the marginalized groups like SCs, STs, OBCs, minorities, women and differently abled persons, as well as those living in difficult geographical pockets, are appropriately taken care of. Develop a high-quality skilled workforce/entrepreneur relevant to current and emerging employment market needs 3.7

Implications of Placement for Inclusion in Community, Documentation, Record Maintenance and Report Writing 3.5.1 Implications of placement for inclusion

One of the most important principles of inclusive education is that no two learners are alike, and so inclusive schools place great importance on creating opportunities for students to learn and be assessed in a variety of ways. Teachers in inclusive schools therefore must consider a wide range of learning modalities (visual, auditory, kinesthetic, etc.) in designing instruction. Certainly this enhances the way in which educators provide supports and accommodations for students with disabilities, but it also diversifies the educational experience of all students.

Inclusive

education [or students with disabilities can only be successful when those students feel that they are truly a part of

the school community. In the past, special education often involved the segregation of students with disabilities for the purpose of specialized instruction. Not only does that model of special education in a separate setting deprive students with disabilities of interaction with their peers and full access to the curriculum, it can also involve duplicate systems and resources that are costly for schools to maintain. Inclusive education can make more efficient use of a school's resources by maximizing the availability of staff and materials for all students. The

curricular aim recommended is, 'To provide an education to equip students to live as independent a life as possible by them, in a community which may not always be fully cognisant of their needs.' The objectives to fulfil the desired aim should be: The realisation that sets and quantities are essential to spatial positioning (Maths). The protection and care for the environment around them (Science). The ability to communicate their needs (Language) and be aware that others also have needs to be met.

78 The awareness of being a part of the global family (History). The recognition that everyone is different but that there is a place for everyone (Social Studies). The ability to recognize that to be accepted by society one needs to contribute according to one's potential (Human and Commercial Geography). The primary need for self-care (Hygiene and Biology). The necessity to be selective in their faith in their fellow beings (Values). 3.7.2 Meaning and Importance of Record Keeping Records are the documented information generated, collected or received in the initiation, conduct or completion of an activity and that comprises sufficient content, context and structure to provide proof or evidence of the activity. Specifically, Hrach (2006) defined school record as a unified, comprehensive collection of documentation concerning all services provided to a student which may include intake information, evaluation(s), assessment(s), release of information forms, individual learning plan, all written notes regarding the student, all collateral information regarding the student, etc. Chifwepa (2001) observed that a record is a documented proof of transaction and that information is what a record contains, stores and transmits. Hence, records do not only enable school administrators to have a clear picture of what is available and what is required, they provide justification for certain needs and seem to extend the memory by which persons and/or organizations can pass on their culture and achievement to the future generation. In fact, the content and quality of school record (such as lesson plans, report cards, etc.) can serve as a direct reflection of the amount of work that has been expended on the school enterprise. Also, records help school administrators and parents to keep a concise and accurate timeline of events in the life of the pupils. Individuals may think they will be able to recollect past events, but it is easier to use a written record. 3.7.3 Why Do We Record And Document Observations? The typical day of an early childhood teacher is filled with multiple tasks, decisions and emotions. At the end of a week it is difficult to remember a comment made by a child on Monday about block building, or a problem solved by two children on Wednesday using their words instead of their hands. When the process of observation and recording is organized systematically, it becomes an invaluable planning and teaching strategy.

79 3.7.4 Report Writing Reports in early childhood reflect the partnership among families and providers and are guided by the families' priorities, questions, and concerns. Reports present a shared vision of the child, convey useful and understandable information, and strike a balance among consumers' needs unique to each child. This process helps educators (in partnership with children, families and other professionals) to: plan effectively for children's current and future learning/wellbeing communicate about children's learning and progress/wellbeing and development determine the extent to which all children are progressing in their learning outcomes and if not, what might be impeding their progress identify children who may need additional support in order to achieve particular learning outcomes and provide that support, or assist families to access specialist help evaluate the effectiveness of learning opportunities, environments and experiences offered and the approaches taken to enable children's learning/wellbeing reflect on pedagogy that will suit the context and children. 3.8 Let us Sum Up 1. The term curriculum has been derived from a Latin word "Curru" meaning a 'chariot' or 'runway'. It resembles closely to the Sanskrit term 'karyakram' and English term 'course'. Basically it is the programme of various activities and experiences of learning conducted by a body/institution for the benefit of the student's present and future life.

Curriculum does

not mean only the academic subjects traditionally taught in school, but it includes totality of experiences that a child receives

at school. 2. A

distinct curriculum for students with intellectual disability at secondary level is geared towards their goals is not far from what exists in Western Schools today. In schools and some preparatory secondary schools, students are prepared and taught subjects, knowledge, and skills geared directly towards their life post school; knowledge that will enable them to be successful in the adult world. This same opportunity should be available for students with intellectual disability at secondary level.

80 3.

Vocational training should provide students with a curriculum that prepares them for the job that they intend to enter.

Broad-based knowledge and skills are good, but for

some

students with disabilities, specific skills are necessary for survival in the workplace

and in the community and need to be explicitly taught. 4. The National Policy on Skill Development was first formulated In 2009, and it has provided the framework for skill development activities in the country. Over the past five years, changes in the macro environment, and the experience gained through implementation of various skill development programmes in the country have necessitated changes in the policy. The creation of the Ministry of Skill Development & Entrepreneurship as the nodal Ministry for all skill development activities across the country has led to changes in the Allocation of Business Rules that have further necessitated the process. The new policy reflects the tenets of the Skill India programme of the Government, which focuses on outcomes, based approach in terms of providing meaningful employment in the form of both wage and self-employment. 5. Records are the documented information generated, collected or received in the initiation, conduct or completion of an activity and that comprises sufficient content, context and structure to provide proof or evidence of the activity. 3.9 Check Your Progress A.1. Describe about the curricular domains of pre vocational education. 2. Discuss about record maintenance and documentation. 3. Write about the significance of Vocational Education. B Assignment and Activities Discuss about the importance of planning curriculum for children with intellectual disability. Frame a curriculum for pre vocational education. C Points for Discussion / Clarification After going through the Unit you may like to have further discussions on some points and clarification on other.

81 1) Points for Discussion

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..... 2) Points for Clarification

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84 Unit - 4

Curriculum Adaptations Structure I4.1 Introduction 4.2 Objectives 4.3 Need for Curricular Adaptation, Accomodation and Modification 4.3.1 Modified Instructions for Children with Intellectual Disabilities (ID) 4.3.2 Organizing Adapted Materials 4.3.3 Organizing Adapted Modified Instructional Process 4.3.4 Adaptation of Evaluation Procedure 4.3.5 Curricula with functional Tasks 4.3.6 Functional Curriculum 4.4 Adaptation, Accomodation and Modification for Pre-academic Curriculum 4.4.1 Focus of Curriculum 4.4.2 Basic Considerations 4.4.3 Major Focus at preprimary level 4.5 Adaptation, Accomodation and Modification for Academic Curriculum 4.5.1 Functional Academics 4.5.2 Functional Reading 4.5.3 Funtional Writing 4.5.4 Functional Arithmatic 4.6 Adaptation, Accomodation and Modification for Co-curriculum 4.6.1 Assess Abilities and Needs 4.6.2 Interaction with the child 4.6.3 Choose Activities 4.6.4 Consider Interest 4.6.5 Community Groups 4.6.6 Groups with special Needs 4.6.7 Family Involvement 4.6.8 Co-curricular Activities for children with Intellectual Disability 4.7 Adaptation, Accomodation and Modification for School Subject 4.7.1 Simplified Curriculum 4.7.2 Supplementary Curriculum 4.7.3 Alternative Curriculum 4.7.4 Multilevel Curriculum 4.7.5 Activity Based Curriculum 4.8 Let Us Sum Up 4.9 Check Your Progress 4.10 Reference

4.1 Introduction
The educational provision for students with special needs in India in the recent two and half decades is being focused on regular setting where they get equal educational opportunity as other non-disabilities peers which we call as integration, mainstreaming or inclusion. It has been described as the central issue in education for all. In inclusion, all students must have the opportunity to be enrolled in the regular classroom of the neighborhood school with age-appropriate peers, or to attend the same school as their brothers and sisters. When the children with disabilities are coming together with non-disabilities children in regular classrooms, certain adaptation in environment and curricular activities should be made. Developing curriculum for students with intellectual disability is a challenge. Due to their cognitive deficits each child needs a tailor made curriculum for him/her. When children are grouped together based on certain parameters, there is a need for curricular guidelines so that the curriculum is suitable to the group while taking into account the individual needs. In this unit, you will study about several aspects of curriculum adaptations.

4.2 Objectives After going through this unit, you will be able to

Understand the
Need

for curricular Adaptation, Accommodation and Modification.

86 Narrate the Adaptation, Accommodation and Modification for Pre-academic Curriculum. Narrate the Adaptation, Accommodation and Modification for Academics Curriculum. Narrate the Adaptation, Accommodation and Modification for Co-Curriculum. Narrate the Adaptation, Accommodation and Modification for School Subjects. 4.3

Adaptation, Accommodation and Modification in Curricular Activities

Curriculum adaptation tends to be significant at all grade level, but teachers have to develop their own style of presentation or teaching strategy, which may be related to

how they teach or the availability of instructional materials in schools. Presentations may include combinations of lectures, assignments, or a host of other teaching / learning approaches. Teachers do change their methods through the years, and some teachers may be so open to trying new approaches that they don't give the "old" approach a proper tryout. But it appears that many, perhaps most teachers tend to have established ways to teach the various subjects or skill they are assigned to teach with the consideration of needs of children. These innovative methods are certainly logical if these methods have proved to be effective for them. Before looking at curriculum adaptations for children with intellectual disability, let us understand the status of curriculum for children with other disabilities. It is important to understand the similarities and differences in developing curriculum for children with disabilities in general and for those with intellectual disabilities in particular. Curriculum decisions are founded on the beliefs and values regarding the purpose of education and the benefits of its outcome. Every curriculum aims at realizing the fullest potentials of students and helping them become productive and contributing members of the society. Need for Adaptation, accommodation and modification in curriculum When we look at children with disabilities, their abilities and needs are varied, demanding adaptation in curriculum content and transaction without compromising on the objectives and learning outcomes. As seen earlier, the purpose of education is the same for all human beings. The process

87 might vary based on individual profiles. Therefore, before planning curricular adaptations, we have to consider what can be common as in regular education for non-disabled children and what needs to be adapted. The common focus in schools is to develop competencies in Leading independent lives Developing and maintaining positive relationship with family and community Carrying out day to day activities in an acceptable manner and Being a good citizen Three important areas of consideration when dealing with students with disabilities are: 1)

how the curriculum is presented, 2) how students are required to respond, and 3) how their efforts are evaluated. Modifications in these three areas require advanced planning, and some require a degree of organization. All of these suggested adaptations will permit wider application, which indicates that all curricular areas at all grade levels are subject to some useful modification. Adaptations in instructional strategies are needed, and given much priority, so as to make it possible for the student to achieve goals that are determined by the teacher. As with all other accommodations, it is essential plan ahead special equipment's that are required. Teachers must think ahead on a daily basis - what is needed for all students with special needs. On a weekly, monthly, or unit basis - what additional materials, alternate books, and so on are needed. Specialists must help regular classroom teachers to organize the learning activities through appropriate instructional strategies. 4.3.1

Modified Instructions for children with intellectual disabilities (ID) The training programme for the children with intellectual disability tends towards the development of the adaptive behavior ranging from self help skills to the development of vocational skills.

The lesser the degree of disability the stress is on the development of self help and community living skills. The knowledge and skill regarding the individualize education programme is the basic to any training programme for the children will Intellected Disability. 1. Individualized training programme : The individualized training programme should be based on the assessment with reference to the academics, activities of daily living, social skills, personal skills, vocational skills and community skills. Plan for training is developed with objectives, strengths, and weaknesses. In functional academics, the academics are taught to the student to function independently on

88 with minimum help in his/her society. In functional reading, the person with Intellectual Disability is taught to read labels in grocery shops, names of stations, bus numbers, T.V. programmes, access the telephone directory to get certain phone numbers etc. Functional writing would entail writing ones name, address, telephone number, hand rudimentary banking, e.g., filling in deposit slips etc. Functional mathematics would teach him/her enough number work to make small purchases, handle change, travel independently and the concept of time, calendars and money. 2. Skill

Development: The specific skills to be developed among children with Intellectual Disability based on the extent of Intelligent Quotient (IQ). Sometimes Developmental checklist can be referred to get the profile of the child. A) Children with mild intellectual disability (Focus on academic skills and vocational training) -

The planned adapted educational experiences are given at four different levels. Pre-school level - Focus is mainly on daily living skills. Primary school level - reading, writing and social training (sharing, peer helping etc.) Intermediate classes - along with academic skills this group also needs pre- vocational training and training in independent living skills to live independently in society. Secondary school level - all vocational and social skills, interacting and coping with people at work place and in other settings.

B) Children with moderate intellectual disability - (Focus on development of self- help as well as adequate communication and social skills to allow for semi- independent living.

The planned adapted educational experiences are given in six areas. Self help skills Communication skills Personal social skills Perceptual motor skills Functional academic skills Vocational skills

C) Children with severe intellectual disability - Educational efforts mainly focus on basic communicational skills and self-help skills for children with severe intellectual disability. D) Children with profound intellectual disability - main training should be on their

89 daily living activities because of physical and intellectual limitations. The daily living skills are in the areas of physical development, self-care, language training (including training on Augmentative and Alternative communications) and social behaviours. Challenging Behaviours such as rocking, self-abusive behavior, head banging etc. are managed with the help of behavior modification techniques. 4.3.2 Organizing Adapted Materials The organization of teaching materials is important for all students including children with disabilities. But

students with disabilities may sometimes need materials that are different from those required by normal students. Most of the special teachers prepare learning activities to satisfy the educational needs of children with disabilities so that maximum educational benefit can be derived.

The use of 'Activity schedule' is one of the more common organizational practices in use. The activity schedule should be kept for easy reference. Students should be taught to refer the activity schedule and check instructions. Standard cards might be used that say, "Do THIS FIRST, DO THIS SECOND", and so on. They can be kept in the appropriate folders. Cards with numbers may be used. Picture cards may be used to indicate to do one assignment first, and then second, and so forth. Because some may have difficulty with instructions as to how to proceed, innovative teachers have developed unique symbols that indicate what to do. After the student learns to associate the symbol with a particular concept, this system can prove to be very effective, some students need only very few directional and or orientation skills that they must be taught accordingly. 4.3.3 Organizing Adapted Modified Instructional Process The teacher has to use the combination of instructional strategies to suit the educational needs of learners. i)

The teacher who prefers innovation attempts to elicit sorting, grouping, categorizing, and inductive thinking and promotes attention to goals, objectives, and logical sequential thinking. ii) The teacher who prefers lecturing describes, explains, illustrates, and asks students to recall or apply what was presented. iii) The entertainer - one who regularly digresses from subject matter - is open to student opinions and their self-expression and is not particularly goal oriented. iv) The role-learning teacher - one who provides information, repeats for emphasis, and expects students to attend, practice, and regurgitate.

90 v) The counselor - one who listens, redirects behavior,

and elicits student's feelings, attitudes and values. vi) The story teller - one who narrates, reads, tells that which is to be learned, and encourages sharing and participation in this process.

Most teachers reflect some combination of styles, and special education teacher must recognize these differences and provide assistance that complement existing styles. Planning is a prerequisite to effective teaching and that good planning can "extend the teacher's tolerance for stress, heighten sensitivity to student behaviours, and enhance openness to new techniques". Advance planning takes many shapes and forms, including ordering of new materials and equipment and other "standard" practices known to all organized, experienced teachers. For the special educator, this means that whenever possible, all available information of the students who will be part of the programme should be assembled and organized to provide a basis for determining what materials to be needed. The special teacher should know their academic needs, social/emotional needs, ability to work in a small group, personal interests, procedures that have worked most effectively in the past, and other related information. This information is in addition to information about age, physical characteristics, home/family status, home assignment, previous (standardized) testing date, and the like.

4.3.4 Adaptations in Evaluation Procedures For some teachers it is a matter of professional ethics, and adaptations in evaluation procedures may be viewed as a "lowering of academic standards". In thinking through the ethics of the matter, it may be of value to consider the situation of student with visual impairment who is not asked to complete all work in handwriting and is, for example often permitted to record on tape. If we accept the disability of the student for e.g. who is learning disabled, behaviour disordered or intellectually disabled as real then the same philosophy could apply. There may be nearly endless variations, and the best one to use is the one that is best accepted in a given school system. Tests may be modified as to number of questions asked. Tests may be modified through simplification of the wording of questions. Tests may be given on tape and/or students may be permitted to answer on tape. Test questions may be presented orally. Combinations of 1, 2, 3 and 4 above or other similar ideas.

91 Programme adaptations and modifications may be effective only in that they teach the students that he/she can get by with less effort than other students or the selection of questions may by-pass some of the most critical skills. 4.3.5 Curricula with Functional Tasks Functional tasks for children without disability and persons with disability are required to learn now or in the future. To design a curriculum for particular students, tasks are to be selected. The curriculum for each student is organized and emphasizes the functional nature of each task. For example all three students are of ten years of age. Student one is blind and is capable of passing to the next level of academic study. His/her long term goal is to enter University study. His/her programme is mainly academic. He/she is also being taught a number of functional skills relating to general community. A few skills related to functional at home are also being taught. Student two has a moderate degree of intellectual disability. He/she has not learned many academic skills and will not likely learn many more. His/her long term goals are for sheltered employment and independence in the community and home. He/she will likely to have considerable time for recreation. There are many functional skills in the community and home that he/she needs to learn. His/her programme should focus on teaching functional and recreational skills for the community and home environment. As he/she gets a little older, the amount of emphasis in the vocational area will be increased. Student three has a locomotor disability with mild degree of intellectual disability. He/ she is not strong in academic areas of performance and will likely not achieve a high academic level. He/she is capable of learning some additional practical academic skills to assist him/her in other areas of his/her life. With suitable training he/she will likely be able to gain independent employment. His/her programme will focus on training of vocational skills. He/she will also be taught a number of functional community skills. The programmes for each of these students should be reviewed every year and the relative amount of emphasis in each area of instruction should be adjusted as required. 4.3.6 Functional curriculum Consider the existing standard curriculum used by non-disabled children,.

92 the common aspects found in the three areas are: Students needs and potentials Demands placed on him by the environment Existing standard curricula A curriculum developed thus is called 'functional curriculum'. Learning activities in a functional curriculum are chosen because they will maximize the student's independence, self direction, and enjoyment in every day school, home, community and work environment. 4.4 Adaptation, Accomodation and Modification for Pre academic Curriculum The early childhood years (0 to 6 years) are viewed by many as a critical time for the intellectual and social development of any child. Children in the age range of 0 to 3 years receive training in early learning skills while those children in the age range of 3 to 6 years preprimary education.

The Pre-Primary level programmes and early intervention programmes aim at reducing further damage to the child. The pre-school classes for children with ID emphasize content areas that are commonly referred to as readiness skills, which are prerequisites for later learning.

Pre Primary classes for these children start at an early age and the training may take as long as two or four years.

Depending on the level of disability of the child, primary education can be provided in the regular play school/nursery schools too. As the curricular content will be predominantly language, social, personal and motor skills, there is a possibility that the child with ID will be able to learn with children without disabilities. The pre-school curriculum of regular education is more conducive to inclusive practices because of the following: The content focuses on motor, language and daily living skills that is required for children with mental retardation or developmental delayed ones also. Most of the learning at this age is concrete and activity based. Worries about achieving 'high scores' is not a concern at this age and therefore the child does not face stressful demands from school and family. Children with without disabilities have an opportunity to learn from each other. There is a scope for enhancing social competency due to exposure to natural environment.

93 Non-disabled children develop positive attitudes and learn to appreciate individual differences. 4.4.1 Focus of curriculum - In a regular preschool the curriculum will focus on skills needed at pre operational stages and therefore many of our students with mild developmental delays will benefit from these adaptations & modifications at regular preschools. Readiness skills include the abilities to: Sit and attend to the teacher Discriminate auditory and visual stimuli Follow direction Develop language skills Improve gross and fine motor co-ordination Develop self-help skills Interact with peers in a group situation Suitable mobility skills Pre reading, pre writing and premath skills 4.4.2 Basic Considerations: While preparing

a training curriculum for the pre-school level, the following basic considerations may be made.

Children learn through imitating people around them. This is a first step in organizing information from the external world.

Hence encourage interaction between children and their environment.

Provide children with experiences that stimulate all sense. Multisensory approaches to teaching can facilitate assimilation and accommodations.

Assimilation refers to, use of mental schemata to comprehend new objects in the environments, in older persons it refers to tendencies to see and interpret things according to the pre-existing ideas. Accommodation on the other hand, is an adjustment of schemata to new objects, events

and ideas. Because the child has difficulty in organizing himself, the teacher must give stimulation. Children should have an opportunity to become more aware of their bodies and maintain control over their actions. Programme should be developmental in the most basic areas and should focus on the child's actual functioning level.

Knowledge of the normal sequence of cognitive development can aid the teacher in providing appropriate intervention programme.

94

Teaching strategies should be consistent, structured and controlled. Set goals and plan activities with clear objectives in mind.

Action oriented activities facilitate attainment of the goal Do not waste time to teach the activities that do not have a functional value in the immediate environment and later stages

in life. 4.4.3 Major focus at preprimary level will include Self - Body parts, name, gender, family members, daily living skills Common objects - clothing, food, furniture, toys, dishes, utensils, plants, animals, holidays Action Words - sit, stand, walk, run, clap, jump, hop, top, stop, go, drink. Concept - Shapes, size, color, sound, taste, smell, texture, position, weight, beauty, same and different, laterality, safety. Preacademics - readiness skills for reading and writing and math.

Pre-reading may include activities such as seeing picture books, holding it properly, turning pages and enjoying seeing and naming pictures and talking about it. Pre writing may include activities such as scribbling, colouring pictures, tracing pictures and so on. Pre math skills include concepts such as far-near, up-down, heavy-light, long-short, more-less, full-empty and so on. All of these pre academic skills lead to preparing the child for learning academics later. 4.5 Adaptation, Accomodation and Modification for Academic Curriculum - Academic activities depend to a great degree on the quality and extent of the pre-school programming in individual child

has had. The curriculum mainly consists of components that may be taught independently or together and to relate to long-range goals for academic and social education. It is wise to try using the regular school content simplified and taught so that the concept is understood. If the child tends to fail as the content becomes more abstract, functional curriculum can be considered.

Functional academics are stressed where the child is unable to cope with the regular education curriculum. 4.5.1

Functional Academics - The functional academic refer to the literacy and numeracy skills required to teach the

95 children with ID for leading independent lives in the society. It includes reading, writing and arithmetic. 4.5.2 Functional Reading Functional reading is defined as a student's actions or responses resulting from reading the printed word.

Primary goal is the development of their ability to read for protection- sign boards, labels, directions and so on (concept of survival)

The second goal is reading for information and instruction- newspaper, telephone book, job application and so on. The third goal is reading for pleasure-magazines, comics, story books.

Whole word approach is a widely used method in teaching functional reading. Through the whole word approach, the students learn to recognize and read words and later receive decoding instructions (to spell).

A variety of strategies have been used in teaching sight word vocabulary. Recent attention has been focused on the imagery level of the word to be learnt.

High imagery words are usually concrete and include nouns such as ball, mango, fan and house. Low imagery words include abstract terms such as beautiful, good and have. In some instances, high imagery can be provided for low imagery words by using the word in context. For example, consider the word "sour" "I ate mango. It is sour", becomes more concrete and students can remember better. Pairing of words with concrete objects and / or pictures will facilitate development of a high imagery level in the students. Here, the concrete word mango helps in learning the abstract word 'sour'.

Keeping inclusion in mind, try to follow the primary level text books, simplify the concepts for children with mental retardation and help them read using whole word approach initially and then the parts of the word (spelling). Reading and writing should be planned together to allow for multisensory input. 4.5.3

Functional Writing One of the important modes of communication is written expression. Writing demands eye hand coordination, motor coordination, sense of direction and recognition of symbols (pictures/letters/numbers/punctuations and so on). Some writing tasks demand horizontal writing (left to write as in writing words)

and some demand vertical writing as in arithmetic (addition, subtraction) and some demand a combination of both as in statement sums.

96 Teaching writing involves four stages they are: 1.

Tracing 2. Joint dots (if needed) 3. Copying 4.

Fill in the blanks 5. Writing from memory (including learning spelling) To write sight words, students have to go through six steps using auditory, visual, tactile and kinesthetic inputs. 4.5.4

Functional Arithmetic We are in daily contact situations which require the use of number skills.

For example, when we buy half a dozen bananas from the fruit vendor we glance at the bunch to check whether it contains six bananas or not. We use number skills in various settings such as at home, in community and at work place, for example,

how many plates to place on the table, which bus number to take to reach work place, how much is the bus fare, how long it takes to reach office and so on.

Before beginning with numbers, make sure, the child is aware of pre-math concepts such as more-less, far-near, heavy-light, tall-short-long, left-right

and so on. The following are the points to be considered while planning and teaching arithmetic skills. The content should be arranged in a sequential order for which the task analytic approach is applied. Concrete materials should be used while teaching to provide meaning for the concepts. The selection of materials should be such that they can be used meaningfully both inside and outside the school environment. The programme should be structured in such a way that there is a gradual transition in teaching concepts moving from concrete to semi-concrete and abstract levels.

Instruction must be practical and functional with special emphasis given to social and vocational orientation.

97 Sufficient practice should be given to deal with the concepts in variety of ways to ensure understanding. Additional opportunities should be provided to generalize the skill to a variety of experiences to note similarities and to establish associations and relations among these experiences. Practical experiences and situations should be provided for the application of numerical skills. However, care should be taken in planning the application of number skills to the real life experiences that they should have relevance to the world in terms of the individual child's needs. A programme must be flexible to meet the individual needs of students.

A functional mathematics curriculum should include, time, money, measurements (mass, volume, weight, distance) which are necessary for daily living activities. The content must be graded from easy to difficult distributed from preprimary to prevocational levels.

One of the successful environments for inclusion of children with ID is the class of co- curricular activities. There is scope for natural and spontaneous integration of children with and without disabilities. If well planned, it enhances positive self concept, releases tension and anxiety, develops social skills, sharpens creativity, leads to physical fitness and sense of well being, inculcates discipline and helps the student to learn to use his leisure time well. When a teacher plans for co-curricular activities, she has to keep the above goals in mind and plan carefully.

A competent teacher will, Schedule co-curricular activities with due importance; Avoid combining more than one class to make large groups (unless it is a whole school event)

which would reduce individual attention to children with special needs; Avoid using co-curricular class periods to use children to run errands - moving furniture, clean the class and so on; Avoid deprivation of co-curricular activity class as a punishment; Avoid using the co-curricular time for other curricular activities; Develop a well planned IEP with specific goals and objectives for co-curricular activities including evaluation procedures;

98 Equip the class well with necessary resource material; Update herself with latest trends and developments in co-curricular activities; Use technology wherever appropriate; Be innovative in activities as well as in individual adaptations for the students with specific needs. 4.6 Adaptation, Accommodation and Modification for Co- Curriculum:

Co-curriculum is a structured activity which supports for the curriculum in practical way in education programmes. Any activity organized systematically apart from the syllabi of subjects of classroom is considered as co-curriculum. There is no separate co-curriculum for children with special needs. However, all co-curricular activities cannot be carried out by the children with disabilities due to their limitations, so they need adaptations in their approach, method, and materials. The children with Intellectual disabilities select co-curricular activities based on their abilities, interests, motivation and encouragement. The following are certain aspects we have to keep in mind to select co-curricular activities. 4.6.1 Assess abilities and needs Some co-curricular activities are purely for fun. Others require a certain level of ability. Making a good match between the activity and the child's unique abilities, interests, and needs is the first step. 4.6.2 Interaction with the Child Co-curricular activities should be challenging. They should provide relaxation, satisfaction, and in most cases - socialization. Above all they should be enjoyable. Talk to the child about the kinds of things he/she likes to do. 4.6.3 Choose activities Our society offers lots of choices for free time. The child will not be able to sign up for everything, so you will need to help him/her to select. Beyond interests and special needs you will need to consider some other factors when choosing co-curricular activities. a) Age Consideration: A young child needs some unplanned time to explore the

99 world around him/her. As the child gets older, he/she may be ready to participate in some group activities. Schedules are helpful for children with learning disabilities or autism and those with cognitive delays. Young children need some time to figure out what to do next. b) Realistic Commitments: Children with intellectual disabilities especially need to focus on a reasonable amount of activity. Too many parts to the schedule or too many new situations (and rules) can be overwhelming for them. c) Balance with Schoolwork: Even with modifications and accommodations, schoolwork will take longer time to complete than it does for his/her siblings. Take schoolwork into consideration when signing up for co-curricular activities. 4.6.4 Consider Interests Your child may have ability in areas that are not of high interest to him/her. Co-curricular activities are sometimes recreational, pass time and they should be enjoyable. They are not compulsory insisted schoolwork or jobs. Talk to the child to know about his/her interests. For example : Athletics Art and Music Community service 4.6.5 Community Groups Some activities are not offered through schools. If the child is interested in learning how to train the family dog, for example, he/she will need to look for a community group that focus on animal care. 4.6.6 Groups with Special Needs Grouping is formed based on the conditions of disabilities. For example, if a child in a wheelchair wants to bowl a ball, he/she may sign up for bowling leagues that will use ramps and have volunteers to assist the bowlers. A child who is blind might enjoy outings with sighted peers. In the inclusive schooling, the child with disabilities is fixed with the non-disabled children for all activities including co-curricular activities.

100 Adaptations are to be given to the children with disabilities wherever essential which will help them to have co-curricular activities as that of non-disabled children. 4.6.7 Family involvement The family members are to be oriented about the abilities of the child to participate in co-curricular activities. Naturally the members of the family may have hesitation to provide co-curricular activities because of fear about the child's safety and sometimes not knowing of the child's needs and required adaptations. In this regard, the teacher has to give clear idea about the requirement of the child for co-curricular activities. 4.6.8 Co-curricular activities for children with intellectual disability Special Olympics offers year-round training and competition in 25 Olympic type sports to children and adults with intellectual disability. Participation is open to anyone from ages eight and

above up, and programs are designed to serve all ability levels. Official Summer Sports Aquatics Athletics Basketball Bowling Cycling Equestrian Sports Football (Soccer) Golf Gymnastics (Artistic and Rhythmic)

Power lifting Roller Skating Softball Tennis Volleyball

101 Official Winter Sports Alpine Skiing Cross Country Skilling Figure Skating Floor Hockey Speed Skating National Popular Sports Cricket Football Volleyball Kabadi Badminton Table Tennis Team Handball. 4.7 Adaptation, Accommodation and Modification for school/ subjects A teacher of children with Intellectual Disability has to carefully consider the three types of adaptations for her students, based on their ability level and the type of educational placement (special school, special class in regular school, resource room, home based education). As Janney & Snell (2000) note, knowing whether the student's objective in a particular subject will be supplemented, simplified or altered will help to clarify the relationship between his learning objectives and that of his classmates.

It has to be kept in mind that different subject areas may need different adaptations. For example, for a student, science may be simplified; language may be supplemented while math may need to be altered.

The student's interest and age may also play a role in selection of the type of adaptation.

High interest subject may need fewer adaptations. It may also be that a teacher may use one type of adaptation in curriculum for a student at a particular point of time and may use another type of adaptation at other times. For 102 instance, for a student in math, curricular content of geometry may be simplified while basic four computation skills may be supplemented while algebra may be altered. Teacher should keep in mind that within the context of class room, simplified and supplementary curriculum meet the needs of special education. Alternative curriculum are used in special schools or special class in regular schools. 4.7.1

Simplified Curriculum Simplified curriculum includes fewer concepts and skills rather than the entire scope of the general curriculum. Example: Science: Structure and functions of parts of the eye The text books have detailed description of parts of the eye with difficult terminology and how the eye functions (iris, pupil, cornea, lens, aqueous humor, vitreous humor, optic nerve).

A child with ID can just be taught major parts and functions. The parts that are visible so he comprehends (eye lid, pupil, iris, lens)

and focus on care of eyes, signs of problem with eyes, care of eye glasses and such other information which is more functional and simplified yet taken from regular educational curriculum. 4.7.2 Supplementary curriculum Supplementary curriculum includes basic skills of reading, writing and math and also additional social skills, study skills and learning strategies. This helps children in organizing themselves, improve memory and learning ability. This type of curriculum is most useful to children with learning disabilities and those with emotional/behavior problems. Example: Student attends regular class but performs poorly in exams. In such cases, supplementary classes are provided in test taking, organizing time, noting main points etc. 4.7.3 Alternative Curriculum An alternative curriculum emphasizes skills needed to participate in activities in the community living domain of the curriculum. An alternative curriculum therefore, can be a functional, community referenced curriculum, determined by assessing the student and his environment. Functional academics forms part of the community referenced curriculum. Depending on the severity level of disability, emphasis can be on personal,

103 social, communication skills. Opportunity for partial participation in school activities is recommended for severely disabled children.

For example, if the class curriculum demands gardening activity, a severely disabled child may perhaps participate by holding the hose pipe for watering plant, with the support of a peer. He may receive his individualized interaction which may have minimum common content with his age appropriate regular curriculum. It is an alternative curriculum with the common objective of leading towards independent living. 4.7.4

Multilevel Curriculum Another commonly used form of curricular adaptation is, 'multilevel curriculum'. This involves having objectives at varying levels of difficulty for different students in the same class. Thus in mathematics class one student may do two digit addition with carry over, another without carry over and yet another may be doing single digit addition, all doing curricular content - addition. This is commonly seen in most of the special schools for children with intellectual disability. 4.7.5 Activity Based Curriculum When the students belong to different levels, planning and implementing instructions in difficult. Activity based curriculum is based suited for children with mental retardation as it provides experience based learning. Because of the multi-sensorial input and the experience of carrying out the task, the students are likely to retain the learnt information better. For example, teaching freezing point, boiling point, evaporation and such concepts with black board and text books are too difficult for a child with mental retardation to understand. The same concepts included in their curriculum with the teaching method focusing on demonstration using boiling in a kettle and freezing using a refrigerator - all done by the students under supervision and guidance will be better understood. Demonstration of use of thermometer showing boiling and freezing points on it will be better comprehended by them. Though time consuming and requires a lot of efforts, it is one of the best way to plan and teach students with mental retardation. A good curriculum has inbuilt evaluation procedures. As evaluation provides information on effects and effectiveness of the training it is very essential to structure evaluation carefully and objectively. If the student attends regular education, the examination systems need modification focusing on testing student's learning. A few examples are, simplifying directions in a test paper so that a child with mental retardation understands, providing example if the instruction is difficult to comprehend or allowing to write one

104 word/few word answers if it conveys the correct response. Provide alternatives to exams such as projects, reports, action oriented content and so on. The student may be at different levels Bloom's taxonomy of cognitive domain(1956). This includes knowledge, comprehension, application, analysis, synthesis, and evaluation. See box for an example. Find out at what stage the student is in and suitably plan the instruction for each curricular content area. Example of Bloom's taxonomy of cognitive domain Knowledge Define, list name 1. Name the capital of India 2. How many states are there in India? Comprehension Explain & Summaries 1. What is a Union Territory? in your own words 2. What is a peninsula? Application Dramatize, practice, Make a model of India and apply, compute show the mountains and rivers Analysis Interpret, categorizes, 1. What are similarities and Compare, group, order differences in the festivals celebrated in various parts of India Synthesis Create, formulate, Compose song/write 5 develop, improve, lines to express 'nifty in rearrange diversity' in India. Evaluation Judge, criticize, assess, Report the importance of infer, conclude National language in India. A Child with mental retardation may be at different levels of this taxonomy, identify the levels and suitably develop his evaluation plan. To be successful; Identify strengths and needs Specify instructional objectives Plan curriculum and sequence items to be taught Select activities for each skill domain/subject. Teach in variety of environment Provide opportunities to practice Ensure mastery.

105 4.8 Let us sum up: The educational provision for students with special needs in India in the recent two and half decades is being focused on regular setting where they get equal educational opportunity as other non-disabilities peers which we call as integration, mainstreaming or inclusion.

Curriculum adaptation tends to be significant at all grade level, but teachers have to develop their own style of presentation or teaching strategy, which may be related to how they teach or the availability of instructional materials in schools. Presentations may include combinations of lectures, assignments, or a host of other teaching / learning approaches. Curriculum decisions are founded on the beliefs and values regarding the purpose of education and the benefits of its outcome. Every curriculum aims at realizing the fullest potentials of students and helping them become productive and contributing members of the society. When we look at children with disabilities, their abilities and needs are varied, demanding adaptation in curriculum content and transaction without compromising on the objectives and learning outcomes. The common focus in schools is to develop competencies in Leading independent lives Developing and maintaining positive relationship with family and community Carrying out day to day activities in an acceptable manner and Being a good citizen Adaptations in instructional strategies are needed, and given much priority, so as to make it possible for the student to achieve goals that are determined by the teacher is more important. Basic to any training programme for these children with Intellectual Disability, is the knowledge and skill regarding the individualize education programme. Individualized training programme : The individualized training programme should be based on the assessment with reference to the academics. ADL., social skills, personal skills, vocational skills and community skills and plan for training is developed with objectives, strengths, and weaknesses.

106 Skill Development: The specific skills to be developed among children with Intellectual Disability based on the extent of Intelligent Quotient (IQ). The organization of teaching materials is important for all students including children with disabilities. But

students with disabilities may need materials that are different from those required by normal students. Most of the special teachers prepare learning activities to satisfy the educational needs of children with disabilities so that maximum educational benefit can be derived. The teacher

has to use the combination of instructional strategies to suit the educational needs of learners. Programme adaptations and modifications may be effective only in that they teach the students that he/she can get by with less effort than other students or the selection of questions may by-pass some of the most critical skills Functional tasks for children without disability and persons with disability are required to learn now or in the future. To design a curriculum for particular students, tasks are to be selected. The early childhood years (0 to 6 years) are viewed by many as a critical time for the intellectual and social development of any

child. The pre-school classes for children with ID emphasize content areas that are commonly referred to as readiness skills, which are prerequisites for later learning.

In a regular preschool the curriculum will focus on skills needed at pre operational stages and therefore many of our students with mild developmental delays will benefit from these adaptations & modifications at regular preschools.

Academic activities depend to a great degree on the quality and extent of the pre- school programming in individual child

has had. The curriculum mainly consists of components that may be taught independently or together and to relate to long- range goals for academic and social education.

To cope with the regular education curriculum. Functional Academics - The functional academic refer to the literacy and numeracy skills required to teach the children with ID for leading independent lives in the society. It includes reading, writing and arithmetic.

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Co-curriculum is a structured activity which supports for the curriculum in practical way in education programmes.

Some co-curricular activities are purely for fun. Others require a certain level of ability. Making a good match between the activity and the child's unique abilities, interests, and needs is the first step. Co-curricular activities should be challenging. They should provide relaxation, satisfaction, and in most cases - socialization.

A teacher of children with Intellectual Disability has to carefully consider the three types of adaptations for her students, based on their ability level and the type of educational placement (

special school, special class in regular school, resource room, home based education). Teacher should keep in mind that within the context of class room, simplified and supplementary curriculum meet the needs of special education in general setting while alternative curriculum are used in special schools or special class in regular schools. 4.9 Check your progress: What is Curriculum adaptation? Adaptations in evaluation procedures?

..... What is Functional curriculum? What are the Major focus at preprimary level? Short Note: Co-Curriculum, Simplified curriculum, Supplementary curriculum, Alternative Curriculum, Multilevel Curriculum

108 4.10 References : -

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Unit - 5 Therapeutic Intervention

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Definition of Speech and Language Therapy 5.5.2 Objectives of Speech Therapy 5.5.3 Scope of Speech Therapy 5.5.4 Types of Speech, Hearing and Language Disorder. 5.5.5 Speech and Language Intervention

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165 Occupational therapy, or OT for short, is a treatment therapy that helps people achieves independence in all facets of their lives. If a child has physical disabilities or developmental delays, occupational therapy can improve their cognitive (thinking), physical and major skills as well as address psychological, social, and environmental factors that impact the child's functioning. Physical therapy (PT), or sometimes called physiotherapy, focuses on improving gross and fine motor skills, balance and coordination, and

strength and endurance. The child may be evaluated by a physical therapist to assess muscle and joint function, mobility, strength and endurance, oral motor skills such as feeding and talking, posture and balance, even the status of the heart and lungs. Speech therapy is a clinical program aimed at improving speech and language skills and oral motor abilities. This means talking, using sign language, or using a communication aid. Children who are able to talk may work on making their speech clearer, or on building their language skills by learning new words, learning to speak in sentences, or improving their listening skills. Dance and creative movement provide physical challenges in a structured, supportive environment for sensory integration. The intimate connection with music often makes dance feel less like exercise or physical therapy and more like leisure. Dance/Movement Therapy (DMT) has been used in the United States since World War II. Marian Chace, a dancer, choreographer, and teacher of modern dance in Washington D.C. during the 1930s and 1940s, first developed the mind-body connection as a form of therapy for her dance students. She "questioned why pupils who had no intention of being professional came to take dance classes" and started gearing her classes toward the needs and interests of recreational dancers. In 1942, she was asked to work with returning soldiers from World War II at St. Elizabeth's Hospital in Washington D.C. Dance/movement therapy was seen as promising because it could so easily be a group treatment. Chace developed her methods working with institutionalized, often schizophrenic and psychotic, individuals. Music therapy enhances one's quality of life, involving relationships between a qualified music therapist and individual; between one individual and another; between the individual and his/her family; and between the music and the participants. These relationships are structured and adapted through the elements of music to create a positive environment and set the occasion for successful growth.

166 Music Therapy is a well-established, research-based profession in which music is used to accomplish therapeutic and educational goals. Recreational therapy is based on the idea of increasing a person's independence and ability to function through participation in creative arts, dance, sports, adventure programs and puzzles or logic games. It is a holistic approach to wellness. According to the American Therapeutic Recreation Association, recreational therapy "aims to improve an individual's functioning and keep them as active, healthy and independent as possible in their chosen life pursuits." In most cases, these goals are accomplished by combining a person's speech, fine motor or gross motor goals with community involvement, while engaging in the person's preferred interests. 5.2

Objectives After going through this unit you will be able to ?

Define

the

different therapies like occupational, physio, speech, yoga and play, music, dance and movement. ? Discuss the aims and objectives of the different therapies. ? Narrate the scope and modalities of the therapies. ? Describe the intervention procedures of the therapies. 5.3 Occupational Therapy: Definition, Objectives, Scope, Modalities And Intervention. 5.3.1

Definition of Occupational Therapy Occupational therapy is a method of treatment for which the primary area of concern is the patient's ability to perform functions required in day to day life. This method of treatment is also concerned with the social, psychological and cognitive development of the patient. In the early years, occupational therapy was regarded as a means to keep long term convalescent patients occupied. It derived the name "Occupational therapy" owing to this. Its contribution was limited to the field of chronic illness - mental illness, tuberculosis, leprosy etc.

Occupational therapy is a client-centred health profession concerned with

167 promoting health and well-being through occupation. The primary goal of occupational therapy is to enable people to participate in the activities of everyday life. Occupational therapists achieve this outcome by working with people and communities to enhance their ability to engage in the occupations they want to, need to, or are expected to do, or by modifying the occupation or the environment to better support their occupational engagement. (WFOT 2012) "

Occupational therapy is the art and science of directing man's participation in selected tasks to restore, reinforce and enhance the performance, facilitate learning of those skills and functions essential for adaptation and productivity, to diminish or correct pathology and to promote and maintain health." (Council of Standards, American Occupational Therapy Association, 1972) 5.3.2 Aims of Occupational Therapy A person with intellectual disability is observed to have dysfunction in almost all performance components. The specific aims of occupational therapy for persons with intellectual disability are as follows. (a) To facilitate the development of performance components of the patients. (b) To enhance independence of the patients. (c) To provide sensory stimulation. (d) To improve hand functions. (e) To enhance gross motor functions. (f) To facilitate development of perceptual motor functions. (g) To reinforce social development. (h) To enhance independence skills. (i) To provide vocational training. (j) To correct mal adaptive behaviour. (k) To provide extrinsic adaptations.

168 5.3.3 Objectives of Occupational Therapy Occupational Therapists work with children who have difficulties with the practical and social skills necessary for their everyday life. An Occupational Therapist will aim to enable the child to be as physically, psychologically and socially independent as possible. Occupational Therapists work in close partnership with the child and their family, schools and other healthcare professionals. Together they have a shared responsibility for meeting the child's needs. In schools, for example, they evaluate the child's abilities, recommend and provide therapy, modify classroom equipment, and help the child participate as fully as possible in school programs and activities. A therapist may work with the child individually, lead small groups in the classroom, consult with a teacher to improve the functioning skills of the child etc. Occupational therapy is provided when there is a disruption in function in one or more of the following the areas: Gross Motor Skills: Movement of the large muscles in the arms, and legs. Abilities like rolling, crawling, walking, running, jumping, hopping, skipping etc. Fine Motor Skills: Movement and dexterity of the small muscles in the hands and fingers. Abilities like in-hand manipulation, reaching, carrying, shifting small objects etc. Cognitive Perceptual Skills: Abilities like attention, concentration, memory, comprehending information, thinking, reasoning, problem solving, understanding concept of shape, size and colors etc. Sensory Integration: ability to take in, sort out, and respond to the input received from the world. Sensory processing abilities like vestibular, proprioceptive, tactile, visual, auditory, gustatory and olfactory skills. Visual Motor Skills: A child's movement based on the perception of visual information. Abilities like copying. Motor Planning Skills: Ability to plan, implement, and sequence motor tasks. Oral Motor Skills: Movement of muscles in the mouth, lips, tongue, and jaw, including sucking, biting, chewing, blowing and licking. Play Skills: To develop age appropriate, purposeful play skills Socio-emotional Skills: Ability to interact with peers and others.

169 Activities of daily living: Self-care skills like daily dressing, feeding, grooming and toilet tasks. Also environment manipulation like handling switches, door knobs, phones, TV remote etc. Occupational therapists in schools collaborate with teachers, special educators, other school personnel, and parents to develop and implement individual or group programs, provide counselling, and support classroom activities. Occupational therapists design and develop equipment or techniques for improving existing mode of functioning. 5.3.4 Scope of Occupational Therapy Occupational Therapists work with parents/care givers and others to assess if a child has difficulties with practical and social skills. Occupational Therapists assess the physical, psychological and social functions of the individual identify areas of dysfunction and involves the individual in a structured programme of activity to overcome disability. Following assessment, the Occupational Therapist will design and implement programs with appropriate strategies in order to enable the child to maximize his/her potential. Occupational Therapists provide services to individuals often in conjunction with physicians, social workers, psychologists, and other therapists. Occupational therapists use qualitative and quantitative assessment methods, including standardized tests, as well as devices, to analyze and diagnose the nature and extent of dysfunction. Occupational therapists develop an individualized plan of care, tailored to each patient's needs. 5.3.5 Modalities of Occupational Therapy Occupational Therapy is a form of treatment which directs the patients to practice and master human activities. Thus human activity is indeed the foremost modality of occupational therapy. The modalities of occupational therapy

are as 1. Human Activity. 2. Extrinsic adaptation: Extrinsic adaptation is a adaptation in the physical, natural or non human environment of the person. Here adaptation refers to the structural adjustment or change in factors in the environment.

170 3. Splints and pressure garments. 4. Therapist. 5. Environment 6. Teaching/ Learning Process. 5.3.6 The Intervention Process Occupational therapy intervention for people with intellectual disability is an on-going process that is both gradual and dynamic. Treatment is provided throughout the life cycle in accordance with the client's changing needs, desires and preferences in all areas of occupation. The intervention often requires repeated drills and practice to achieve internalization and learning, and performance in a variety of contexts to enable generalization. As is the case with respect to assessment, the intervention is preferably carried out in the client's various daily environments. This enables and encourages the client's participation in the many contexts of his/her life. Occupational therapy interventions for people with intellectual disabilities are specifically adapted to the client with respect to the degree and type of support needed as well as the context. Interventions may include direct treatment as well as environmental adaptations, guidance, monitoring and counseling (including of the family, the educational staff, the clinical staff, employers and others).
Examples of Occupational Therapy Intervention: Activities of daily living: including activities directed to the person's care of his/her hody needs (ADL) such as personal hygiene, eating, dressing, and instrumental activities of daily life (IADL) such as preparing a meal or managing finances. This area represents a central focus of i rtervention in occupational therapy for this population. For example, with respect to activities related to eating, the intervention can range from adapting the feeding environment, choosing preferred food or bringing the food to one's mouth, to teaching more advanced skills such as organizing shopping, and meal preparation. Learning/Studies: These are activities necessary to be a student and to participate in a learning environment, including academic and non-academic activities. Intervention in this area covers a variety of educational settings such as day care centers for very young children, kindergartens and special education schools (ages 3-21 years), regular school settings and professional training facilities. The intervention is varied and may focus on
171 gaining basic learning-skills, such as understanding cause and effect processes and object permanence, or on more complicated skills, such as preparation for learning and writing, organization in time, in space and with accessories, adaptation to different learning environments, the use of information technologies and computers and gaining learning strategies. In addition, the intervention can include adapting various learning environments. Work: These are productive activities, whether for remuneration or not, that include preparing for work, producing a product and providing services. Intervention in this area covers a variety of work settings including: special educational settings in which students receive training to enter the work force, youth rehabilitation centers, adult sheltered-work facilities, an array of protected supportive community work systems, and placement-services for gaining open market positions. Intervention varies and may include basic work skills training (behavior norms, work routines), developing and practicing basic cognitive abilities, practicing motor skills, exposure to varied work opportunities, support and advice for developing areas of interest, identifying abilities and choosing suitable occupations, analyzing occupations and adapting them as needed, as well as supporting and assisting placement in various work sights in the community. Play: These are activities that are generally internally motivated and provide pleasure, entertainment and learning. Play-intervention, as an occupational therapy goal in this population, is directed towards the most basic experiencing of playas a source of pleasure, as well as providing the client with an opportunity to participate in play activities. The intervention includes drills in basic skills such as the use of equipment, recognizing rules and agreed-upon behavior patterns, or choosing suitable play activities. In addition, play represents a treatment method for learning and practicing a variety of social, motor and functional skills. Leisure: These are non-obligatory activities that are internally motivated and are performed at times that are not devoted to work, studies, self-care or sleep. Research reveals that people within this population have a relatively large amount of time to devote to leisure, whereas their participation in leisure activities is minimal (Buttimer & Teirney, 2005). Therefore, coping with leisure within this population is a central topic. Intervention in this area may focus on exposure to varied leisure opportunities, identification and choice of areas of interest, planning leisure time and participation in activities that lead to a perception of capability, pleasure, control and satisfaction.

172 Social participation: These are activities related to agreed-upon behavior patterns expected of an individual within a given social system (e.g. community, family or with friends). The intervention within occupational therapy encourages the person to gain skills in the various areas or occupation and thus supports and strengthens social participation. For this population, an emphasis is placed upon understanding acceptable social norms and as well as learning and practicing activities that lead to satisfactory social interactions. Accessibility and Environmental Modification: Occupational therapy practice relates to the person, the occupation and the environment. The occupational therapist's broad knowledge base in the areas of function and limitation enables him/her to identify, through performance analysis in the different areas of occupation, environments and/or tasks that should be modified. The various limitations that characterize the population of people with intellectual disabilities require both general and client-specific environmental modifications to ensure accessibility. The characteristic difficulty in problem-solving, initiative and coping with unfamiliar situations, amplifies the need for accessibility modifications for this population. These accessibility modifications include changes in the environment (as in widening passageways, modifying playgrounds or adding symbol signs), in the equipment (such as adapting seating systems or adapting feeding aids), or in the task (such as changing the complexity of instructions or dividing a task into sub-stages). Assistive technology is one of the methods used to adapt the environment and includes modifications of hardware; software and various combinations thereof (such as a virtual keyboard, a touch screen, a motorized wheelchair, switch systems, computer programs and internet sites, adapted content amount, or voice output devices). Thus, for example, a switch can be modified to be activated through the person's head or hand. Other modifications of the switch may include size, colour, texture, or sensitivity (such as speed or pressure response). Assistive technology promotes a variety of functions related to the individual, the occupation and the environment. In addition, it allows for the modification of an individual's environment in the manner in which his/her requires, by relating to his personal abilities, wants, areas of interest and specific limitations and difficulties. Environmental modification is likely to significantly improve a person's ability to participate in all areas of occupation, his or her level of independence and the degree of supports required.

173 In summary, the occupational therapist, as part of a therapeutic, rehabilitative and educational profession plays a central role within the support system available to people with intellectual and developmental disabilities, throughout the life cycle. As such, occupational therapists hold key positions as leaders in this area. Working with people with intellectual and developmental disabilities requires consideration of function, independence and participation in the various areas of occupation, which enables the occupational therapist to utilize all the areas of knowledge and expertise included in the practice of occupational therapy.

5.4 Physiotherapy: Definition, Objective, Scope, Modalities and Intervention 5.4.1 Definition of Physiotherapy It is also called physical therapy. The treatment of physical dysfunction or injury by the use of therapeutic exercise and the application of physical modalities (like heat, light, cold, current, water, sound waves).

Assistive devices are also used as a part of the treatment programme. They are intended to restore or facilitate normal function or development.

5.4.2 Aims and Objectives of Physiotherapy

Physiotherapy in the field of mental retardation is aimed at improving overall motor functions of the child to the maximum extent possible,

so as to make the child independent in walking and carrying out activities of daily living. If it is not possible for the person to walk, and carry out activities independently, then aids and appliances are trained given to the person to use it. (A)

Objectives of physiotherapy in general

1. Reduces or relieves pain, muscle spasm, tenderness of muscles.
2. It helps to reduce or relieve swelling.
3. It helps to reduce or relieve inflammation (means the response of the body in the form of pain, swelling, muscle spasm and tenderness of the muscles etc. in the presence of any foreign body).
4. To improve ventilation of lungs, by giving, deep breathing exercises and postural drainage.

174 5. To encourage correct weight bearing and weight transference on both sides of the body. 6. Re-education of affected or paralysed muscles. 7. It is effective in healing of infected wounds. 8. It helps to check the abnormal growth of bone (bony spurs). 9. Breaking up of adhesion formation (gluing of joint structures by synovial fluid). 10. To keep the person physically fit. 11. To teach relaxation. 12. Stimulation of sensory and motor nerves if sensations are reduced or lost. 13. Post fracture and dislocation, management. (B) Objectives of physiotherapy in relation to Intellectual Disability 1. To facilitate the development of child gross motor and fine motor. 2. To prevent or correct contractures and deformities. 3. Prevent or correct wasting and atrophy of muscle. 4. To normalize muscle tone. 5. To maintain or improve the muscle power. 6. To maintain and improve the joint range of movement. 7. To emphasize the importance of handling and positioning the child. 8. To make the child independent in walking and activities of daily living. 9. Provide aids and appliances and to train the person and parents how to use assistive devices. 10. To improve posture, gait, balance coordination. 11. Inhibition of abnormal reflex activity, abnormal patterns of movement and abnormal muscle tone and facilitation of normal in place of abnormal. 12. To keep the children physically fit. 5.4.3 Scope of Physiotherapy Physiotherapy has scope in treating a wide range of conditions. It play an important

175 role in all the branches of medical sciences, especially Orthopaedics, Paediatrics, Neurology, Cardio thoracic, Surgery, Sport Medicine etc. In set ups like leprosy, paraplegic and poliomyelitis after plastic surgery, burns clinics, spinal cord injury centres and in assistive devices manufacturing units etc. Physiotherapy has three major functions in the management of children with intellectual disability. 1. To facilitate motor development 2. To prevent and correct contractures and deformities. 4. To make the child as independent as possible and functional (locomotor function and activities of daily living). 5.4.4 Modalities of Physiotherapy 1. Hydrotherapy: Hydrotherapy, or water therapy, is the use of water (hot, cold, steam, or ice) to relieve discomfort and promote physical well-being. 2. Electrotherapy: Electrotherapy is the use of electrical energy as a medical treatment. 3. Exercise Therapy: Exercise Therapy is a regimen or plan of physical activities designed and prescribed for specific therapeutic goals. 4. Massage or Manipulation 5. Gait: Gait training is a type of physical therapy. It can help improve your ability to stand and walk. 5.4.5. Intervention of Physiotherapy Role of Physiotherapist in the field of Intellectual Disability ? Diagnostician: Here the physiotherapists assess the client and order for the necessary investigation, on the basis of this therapist arises at diagnosis. According to the diagnosis therapy will be planned. ? Interventionist: Therapist plays a role as interventionist in setting intervention goals, planning and implementation of therapy programme, giving follow - up and

176 regular evaluation of the client, modifying programme as per the clients need. ? Team member: Therapist treated as a team member as the team member in multidisciplinary approach, this is the most commonly seen approach in field of mental retardation. In Trans disciplinary approach therapist plays a role as a team member by gathering information and helps in planning intervention along with other experts of the team. In certain condition therapist become a case manager and given input. ? Providing Information and guidance: As the parents need information guidance regarding the condition of the child and therapy, the therapist gives proper information to parents and also to other professional whenever needed. ? Counsellor: Physiotherapist plays a counsellor role in the field of mental retardation. Parent counselling is in important aspect, which should be included in intervention programme. The parents of the clients may not be aware of the condition of child and the facilities available for their child. They will come to you in a state of confusion and anxiety to know what happening with their child. Before as part of planning and intervention programme therapist should give proper information to the parents regarding the following things: ? Condition of the child. ? Child's needs and abilities. ? How the therapy is going to help the child in improving his functional abilities. ? Proper instructions given to the parents. ? Training is given to the parents how to give therapy at home. ? What are the facilities and services available for the persons with intellectual disability. ? Trainer: Therapist plays a role of trainer, as the therapist will train the parents how to give therapy at home and conducts classes and workshops for parents and other professional, to make them aware of disability and affects of intervention on the clients. ? Researcher: Research is an important aspect in the field of intellectual disability. Therapist also plays a role as a researcher by doing research on different aspects

177 and population study. To innovate new techniques and equipment for making the intervention better and to get better out come results. ? Leader: Therapist plays a role of leader of the team voicing on behalf of the client and by giving guidelines to the former self-help groups by the parents. ? As an administrative officer: Therapist plays a role of administrative officer by heading and organization and establishing a institution or center to serve the people better. ? Provider of referral: Therapist will give referrals to the concern professionals to obtain information of the clients and to related services outside the institute for investigations or for expert opinion.

5.5 Speech Therapy: Definition, Objectives, Scope, Types of Speech, Hearing and Language Disorders and Intervention

5.5.1 Definition of Speech and Language Therapy: Speech and language therapy provides treatment, support and care for children and adults who have difficulties with communication, or with eating, drinking and swallowing. Speech and language therapists (SL Ts) are allied health professionals. They work with parents, carers and other professionals, such as teachers, occupational therapists and doctors.

5.5.2 Objectives of Speech Therapy A speech pathologist's narrow, well-defined objectives work toward achieving broad therapeutic goals. This professional develops an individualized treatment plan for each patient, which often includes time-based objectives. For example, his objectives may include helping a patient correctly say several new sounds by the end of a quarter, marking period or year. Other objectives can include helping a patient to understand and to explain a speaker's gestures, demonstrate newly learned conversation strategies, explain the perception of body language, speak for a period of time without stuttering and improve reading comprehension to a specific level. A speech language pathologist sets broad but specific goals for each of his patients. Specific goals can include helping patients develop clearer speech, learn to use alternate

178 methods of communication, develop better reading and writing skills, and strengthen throat and neck muscles. Goals also may include coordinating treatment programs with other professionals or referring patients for other treatments. For example, a patient with a swallowing disorder may benefit from the collaborative care of a speech language pathologist and a medical doctor.

5.5.3 Scope of Speech therapy Speech Therapy is an Allied Health Science subject. Medical advancement in this field, awareness of the need for early intervention etc has increased the scope of Speech Therapy. A number of Speech Therapy courses are available now in India and abroad. Speech Therapy has its necessity in teaching and training children with intellectual disability.

5.5.4 Types of Speech, Language and Hearing Disorders The most intensive period of speech and language development is during the three of life a period when the brain is developing and maturing. There skills appear to develop best in a world that is rich with sounds, sights, and consistent exposure to the speech and language of others. At the root of this development is the desire to communicate or interact with the world. The beginning sign of communication occur in the first few days of life where in infant learns that a cry will bring food, comfort, and companionship. Research has shown that by 6 months of age, most children recognize the basic sounds of their native language.

5.5.4 (a) Speech and Language Disorders A speech disorder refers to a problem with the actual production of sounds. A language disorder refers to a problem understanding or putting words together to communicate ideas. Speech disorders include:

1. Articulation disorders: difficulties producing sounds in syllables or saying words incorrectly to the point that listeners can't understand what's being said.
3. Fluency disorders: problems such as stuttering, in which the flow of speech is

179 interrupted by abnormal stoppages, partial-word repetitions ("b-b-boy"), or prolonging sounds and syllables (sssssnake).

4. Resonance or voice disorders: problems with the pitch, volume, or quality of the voice that distract listeners from what's being said. These types of disorders may also cause pain or discomfort for a child when speaking.

Language disorders can be either receptive or expressive:

1. Receptive disorders: difficulties understanding or processing language.
2. Expressive disorders: difficulty putting words together, limited vocabulary, or inability to use language in a socially appropriate way.
3. Cognitive-communication disorders: difficulty with communication skills that involve memory, attention, perception, organization, regulation, and problem solving.

5.5.4 (b) Hearing disorders There are four types of hearing loss: ? Auditory Processing Disorders ? Conductive ? Sensorineural ? Mixed.

Auditory Processing Disorders Auditory Processing Disorders occur when the brain has problems processing the information contained in sound, such as understanding speech and working out where sounds are coming from.

Conductive Hearing Loss Conductive Hearing Loss occurs when there is a problem with the Outer or Middle Ear which interferes with the passing sound to the Inner Ear. It can be caused by such things as too much earwax, Ear Infections, a punctured eardrum, a fluid build-up, or abnormal bone growth in the Middle Ear such as Otosclerosis. It is more common in children and indigenous populations. Surgery and some types of hearing technologies can be used to treat Conductive Hearing

180 Loss such as Bone Conduction Hearing Aids, Bone Anchored Hearing Devices and Middle Ear Implants.

Sensorineural Hearing Loss Sensorineural Hearing Loss occurs when the hearing organ, the Cochlea, and/or the auditory nerve is damaged or malfunctions so it is unable to accurately send the electrical information to the brain. Sensorineural Hearing Loss is almost always permanent. It can be genetic or caused by the natural aging process, diseases, accidents or exposure to loud noises such as Noise-induced Hearing Loss and certain kinds of chemicals and medications. Auditory Neuropathy is another form where the nerves that carry sound information to the brain are damaged or malfunction.

Technologies such as Hearing Aids, Cochlear Implants and Hybrid Cochlear Implants can help reduce the effects of having Sensorineural Hearing Loss. **Mixed Hearing Loss** A Mixed Hearing Loss occurs when both Conductive Hearing Loss and Sensorineural Hearing Loss are present. The sensorineural component is permanent, while the conductive component can either be permanent or temporary. For example, a Mixed Hearing Loss can occur when a person with Presbycusis also has an Ear Infection.

5.5.5 Speech and Language Intervention In speech-language therapy, a speech language pathologist will work with a child one- to-one, in a small group, or directly in a classroom to overcome difficulties involved with a specific disorder. Therapists use a variety of strategies, including: **Language intervention activities:** The SLP will interact with a child by playing and talking, using pictures, books, objects, or ongoing events to stimulate language development. The therapist may also model correct vocabulary and grammar and use repetition exercises to build language skills. **Articulation therapy:** Articulation, or sound production, exercises involve having the therapist model correct sounds and syllables in words and sentences for a child, often during play activities. The level of play is age-appropriate and related to the child's specific needs. The SLP will physically show the child how to make certain

181 sounds, such as the "r" sound, and may demonstrate how to move the tongue to produce specific sounds. **Oral-motor/feeding and swallowing therapy:** The SLP may use a variety of oral exercises -including facial massage and various tongue, lip, and jaw exercises - to strengthen the muscles of the mouth for eating, drinking, and swallowing. The SLP may also introduce different food textures and temperatures to increase a child's oral awareness during eating and swallowing.

General guidelines for interventions Selection of Specific goals Organizing all the gathered information Structure the environment Selection of relevant materials Transformation and adaptation of the material Use of object from the environment Maintenance of schedule Principles for therapy Highlighting new or relevant information Pre-organized information Trained rehearsal strategies Using over learning & repetition Training in natural environment Early Intervention Following proper schedule **5.6 Yoga and Play Therapy: Definition, Objectives, Scope and Intervention** **5.6.1 Meaning and Definition of Yoga** The word yoga comes from the Sanskrit root ' Yug' meaning to join on yoke, implying the integration (on joining) of every aspect of human being from the inner most to the external. Yoga is practical philosophy that aims at uniting the body, mind, and spirit for

182 health and fulfilment. The father of modern yogashashtra Patanjali Maharshi defines yoga as 'Yogaschitta Vrutti Nirodhaha' that is yoga is controlling the nature of the mind. The ultimate aim of this philosophy is to strike a balance between mind and body and attain self- enlightenment. To achieve this, yoga uses movement, breath, posture, relaxation and meditation in order to establish a healthy, lively and balanced approach to life. Though the exact origins of Yoga are unknown but Yoga is considered to be the oldest physical discipline in existence. Yoga, thus symbolizes balance in every area of life. Yoga is one of the six schools of ancient Indian Philosophy. It is the practice that enables one to achieve higher levels of performance, bringing out the hidden potentials from within. Systematic Yoga practice will increase the physiological and psychological well being. 5.6.2 Objectives of Yoga Yoga practice reduces tension, stress, anxiety, weakness, helplessness, fear, negative thoughts etc. Which are increasing day by day in this mechanical human life. It treats the prolonged diseases or deficiencies like diabetes, asthma, heart problems, pains, sprains, indigestion etc. and makes the body active and good looking. Yoga practice equips the practitioners with devotion, attention, and concentration and alertness in every activity that he does. He also discharges his responsibilities with dedication thereby get respect and honor at his work. Man can prove his life worth living by developing his self physically and psychologically that contribute for the development of spiritual instinct in him. As soon as one is habituated for yoga practice, there would be number of changes in his routine activities, habits, thoughts, food habits, behaviors etc. Improvement in balance is one of the major benefits of Yoga. Improved balance is referred not only to the sharp physical coordination but also to the balance between the left and right, front and back and high and low aspects of one's body. Along with a host of benefits, Yoga also helps in developing and attaining personal values. Yoga erases a variety of ills in human beings. These may range from feelings of frustration, persecution and insecurity. Yoga greatly helps in the development of personal values. Personal values are those values which an individual develops and lives by all through his life.

183 Yoga and social values are closely related to each other. Social values are a set of philosophy that an individual carries for all his life. Yoga possesses great power to inculcate those values that go a long way in making a man complete. Yoga helps an individual not only to realize his own self but also understand other issues around him/her. Yogic theory and practice lead to increased self-knowledge. Yogic practices like breathing and posture exercises help in attaining and maintaining health, physical and mental, and relaxation. The knowledge gained through Yoga is not simply that of the practical kind relating to techniques, but of a spiritual sort pertaining to grasping something about the nature self and other matters. 5.6.3 Scope of Yoga Therapy Yoga is certainly more than mastering its postures and asanas and increasing the strength and flexibility of body. It indicates towards healing of mind and body and attaining the state of self-enlightenment. It is said that in early periods when Yoga was just introduced, the main purpose was to heal community members and the practitioners act as religious mediators. Needless to say, practicing of Yoga includes the traditional aspects too such as practicing different poses, chanting of mantra, observing breathing habit and controlling thoughts coming to mind with the help of meditation. Today, it has been practiced for fitness, healthy body and mind, strength, flexibility, emotional well-being and much more. The main purpose of practicing Yoga is to taking control over the body, mind and emotional aspects. The cessation of bad thoughts creates a positive vibe around the person and makes him healthy overall. 5.6.4 Yoga Intervention Yoga is an ancient Indian practice which involves moving the body and training the mind to achieve balance and well-being. The purpose of traditional yoga is for each individual to be healthy, both physically and mentally, and able to reach his or her highest potential as a person. Yoga aim is to prepare the body for meditation through breathing and physical exercises. Yoga emphasizes body-mind wellness through postures or asanas which tone and strengthen our muscles and increase our flexibility. The different asanas, particularly the twists and inversions, stimulate internal organs, as well as the nervous system, and promote circulation in all the body's major organs and glands. Importance of yoga for children with intellectual disability 1. Helps to co-ordinate the activities of the mind and body.

184 2. Tends to reduce the distracted state of mind and helping the mind to deal on the present activity. 4. Helps to improve his adaptive behavior to a degree unobtainable before. 5. Actively increase the ability to concentrate on the present activity. 6. Aims at improving general health, concentration, self-reliance and social relationship of the persons with mental retardation. 6. Yoga has been tried as an adjunct in education of children with mental retardation and attention deficit hyperactivity disorder. 5.6.5 Definition of Play Therapy Play Therapy uses a variety of play and creative arts techniques (the 'Play Therapy Tool-Kit (TM)' to alleviate chronic, mild and moderate psychological and emotional conditions in children that are causing behavioural problems and/or are preventing children from realising their potential. The Play Therapist works integratively using a wide range of play and creative arts techniques, mostly responding to the child's wishes. This distinguishes the Play Therapist from more specialised therapists (Art, Music, Drama etc). The greater depth of skills and experience distinguishes a play therapist from those using therapeutic play skills. Play therapy utilizes play, children's natural medium of expression, to help them express their feelings more easily through toys instead of words. Association for Play Therapy (APT) defines play therapy as "the systematic use of a theoretical model to establish an interpersonal process wherein trained play therapists use the therapeutic powers of play to help clients prevent or resolve psychosocial difficulties and achieve optimal growth and development." In the textbook Play Therapy: The Art of the Relationship (2nd ed.), Landreth (2002) defined child-centered play therapy: A dynamic interpersonal relationship between a child (or person of any age) and a therapist trained in play therapy procedures who provides selected play materials and facilitates the development of a safe relationship for the child (or person of any age) to fully express and explore self (feelings, thoughts, experiences, and behaviors) through play, the child's natural medium of communication, for optimal growth and development.

185 5.6.6 Scope of Play Therapy Children are referred for play therapy to resolve their problems (Carmichael; 2006; Schaefer. 1993). Often, children have used up their own problem solving tools, and they misbehave. may act out at home, with friends, and at school (Landreth, 2002). Play therapy allows trained mental health practitioners who specialize in play therapy. to assess and understand children's (pia). Further. play therapy is utilized to help children cope with difficult emotions and find solutions to problems (Moustakas, 1997; Reddy, Files-Hall, & Schaefer, 2005). 13y confronting problems in the clinical Play Therapy setting, children find healthier solutions. Play therapy allows children to change the way they think about, feel toward, and resolve their concerns (Kaugars & Russ, 2001). Even the most troubling problems can be confronted in play therapy and lasting resolutions can be discovered, rehearsed, mastered and adapted into lifelong strategies (Russ, 2004). 5.6.7 Importance of Play therapy It is difficult for most children below age ten to eleven to sit still for sustained periods of time. Play therapy provides for children's need to be physically active. In play, children discharge energy, prepare for life's duties, achieve difficult goals and relieve frustrations. As children play, they are expressing the individuality of their personalities and drawing upon inner resources which can become incorporated into their personality. Virginia M. Axline (1974) who developed the child-centered play therapy asserted that: "A play experience is therapeutic because it provides a secure relationship between the child and the adult, so that the child has the freedom and room to state himself in his own terms, exactly as he is at the moment in his own way and in his own time. " Play therapy helps to actualize the ultimate objectives of elementary schools facilitating the intellectual, emotional, physical and social development of children from the learning opportunities and experiences offered in school.

186 5.6.8 Objectives of play therapy Develop a more positive self-concept Assume greater self-responsibility Become more self-accepting Become more self-directing Become more self-reliant Become more trusting of self Experience a feeling of control Become sensitive to the process of coping Develop an internal source of evaluation Engage in self-determined decision making 5.6.9 Intervention of Playas a therapy results in Developing a more positive self-concept Assume greater self-responsibility Become more self-accepting Become more self-directing Become more self-reliant Become more trusting of self Experience a feeling of control Become sensitive to the process of coping Develop an internal source of evaluation Engage in self-determined decision making 5.7 Therapeutic Intervention: Visual Arts and Performing Arts (Music, Drama, Dance, Movement and Sports) 5.7.1

Visual Arts and Performing Arts :

Art reflects human emotions and human beings spontaneously express their frame of

187 mind through various art forms. Thus the intellectual mind merges with the artistic streak, giving birth to art. The

visual arts are those creations we can look at, such as a drawing or a painting. For example Drawing, painting, sculpture, architecture, photography, film, printmaking. It also includes the decorative arts of: ceramics, furniture and interior design, jewellery making, metal crafting and wood working. The literature available for utilizing art education for exceptional students is generally addressed to art education teachers to use in their classroom. However, expanding the use of art in the education of children with special needs into general and special education is advantageous to these individuals. The art educator can evolve to be a resource and perhaps a liaison between the special and general educator. Thus, to improve the education afforded to students with special needs, art can act as a bridge between general, and art educators to enhance the communication and cooperation between these specialists. Creating a cohesive network between art educators, special and general educators, draws upon the unique perspective that each educator has that can help the others in bolstering special education programs. The visual arts are a powerful teaching tool that can enhance the cognitive, emotional and social development of children. Children in special education programs are particularly in need of the assistance that the arts can provide.

The performing arts range from vocal and instrumental music, dance and theatre to pantomime, sung verse and beyond. They include numerous cultural expressions that reflect human creativity and that are also found, to some extent, in many other intangible cultural heritage domains.

Music is perhaps the most universal of the performing arts and is found in every society, most often as an integral part of other performing art forms and other domains of intangible cultural heritage including rituals, festive events or oral traditions. 5.7.2 Music Therapy Music therapy is a well-established allied health profession similar to occupational and physical therapy. It consists of using music therapeutically to address behavioral, social, psychological, communicative, physical, sensory-motor, and/or cognitive functioning. Because music therapy is a powerful and non-threatening medium, unique outcomes

188 are possible. For individuals with diagnoses on the autism spectrum, music therapy provides a unique variety of music experiences in an intentional and developmentally appropriate manner to effect changes in behavior and facilitate development of skills. Music therapy may include the use of behavioral, biomedical, developmental, educational, humanistic, adaptive music instruction, and/or other models. Music therapy enhances one's quality of life, involving relationships between a qualified music therapist and individual; between one individual and another; between the individual and his / her family; and between the music and the participants. These relationships are structured and adapted through the elements of music to create a positive environment and set the occasion for successful growth. The interventions used in Music Therapy aid in fostering skills across the entire developmental spectrum for children with special needs. Music Therapists encourage a child's sense of exploration and wonder as they focus on the goals targeted in your child's Individualized Education Program (IEP). How Does Music Therapy Make a Difference with Young Children? Music stimulates all of the senses and involves the child at many levels. This "multi-modal approach" facilitates many developmental skills. Quality learning and maximum participation occur when children are permitted to experience the joy of play. The medium of music therapy allows this play to occur naturally and frequently. Music is highly motivating, yet it can also have a calming and relaxing effect. Enjoyable music activities are designed to be success-oriented and make children feel better about themselves. Music therapy can help a child manage pain and stressful situations. Music can encourage socialization, self-expression, communication, and motor development. Because the brain processes music in both hemispheres, music can stimulate cognitive functioning and may be used for remediation of some speech/ language skills.

189 5.7.3 Drama Therapy Drama therapy is the intentional use of drama and/or theater processes to achieve therapeutic goals. Drama therapy is active and experiential. This approach can provide the context for participants to tell their stories, set goals and solve problems, express feelings, or achieve catharsis. Through drama, the depth and breadth of inner experience can be actively explored and interpersonal relationship skills can be enhanced. Participants can expand their repertoire of dramatic roles to find that their own life roles have been strengthened. 5.7.4 Dance / Movement Therapy Dance/movement therapy, a creative arts therapy, is rooted in the expressive nature of dance itself. Dance is the most fundamental of the arts, involving a direct expression and experience of oneself through the body. It is a basic form of authentic communication, and as such it is an especially effective medium for therapy. Based in the belief that the body, the mind and the spirit are interconnected, dance/movement therapy is defined by the American Dance Therapy Association as "the psychotherapeutic use of movement as a process that furthers the emotional, cognitive, social and physical integration of the individual." Benefits of Dance and Movement Therapy: Dance Movement therapy can help children with special needs in varied ways and in all the areas of impairment. The benefits experienced are as follows: It helps in improving attention and concentration and thus helps in furthering education Dance as a way of expression of emotion enables children to express through movements It helps in forming better relation Due to liking towards repetitive movements, a therapist can repeat a movement pattern which the patient needs to learn and when they start imitating the movement vocabulary develops. This helps them in learning different patterns of movements required for daily life activities

190 Group sessions in dance movement therapy enables in developing social skills and communications of autistic person Doing a choreographed dance movement sequence in a series of sessions in a row helps in improving memory and recapitulation skills. Touch therapy helps in developing trust on others as well as helps in reducing sensitivity to physical contact and touch. Dance movement therapy helps in improving body image of an autistic person. Dance/movement therapists work with individuals of all ages, groups and families in a wide variety of settings. They focus on helping their clients improve self-esteem and body image, develop effective communication skills and relationships, expand their movement vocabulary, gain insight into patterns of behavior, as well as create new options for coping with problems. Movement is the primary medium dance/movement therapists use for observation, assessment, research, therapeutic interaction, and interventions. Dance/movement therapists work in settings that include psychiatric and rehabilitation facilities, schools, nursing homes, drug treatment centers, counseling centers, medical facilities, crisis centers, and wellness and alternative health care centers. Dance/movement therapy can be a powerful tool for stress management and the prevention of physical and mental health problems. Dance/movement therapists integrate the dancer's special knowledge of the body, movement, and expression with the skills of psychotherapy, counseling, and rehabilitation to help individuals with a wide array of treatment needs. Social, emotional, cognitive, and/or physical problems can be addressed through DMT via group and individual sessions in many different types of settings from hospitals and clinics to schools. The fact that dance/movement therapists are immersed in the language of the body, rather than focusing solely on the verbal, lends characteristics to their work that set it apart from other types of therapy. 5.7.5 Sports Activities for Children with Special Needs All individuals benefit from regular physical activity and children with special needs especially. Children with special needs are benefitted in the following ways from physical or sports activities. We can see improvements in muscle strength, coordination, and flexibility. Improve exercise endurance, cardiovascular efficiency, and possibly increased life expectancy .

191 Experience better balance, motor skills and body awareness. Will show improvement in behavior, academics, self-confidence and building friendships. Will have positive changes in their health, quality of life and boost to their self-esteem. Gets to experiences a sense of accomplishment and possibly the taste of winning or personal satisfaction. Experience increases in attention span, on-task behavior, and level of correct responding. Will increase appetite and improve quality or sleep. Will see a decrease in secondary health complications like obesity, high blood pressure, low HDL ("good") cholesterol and diabetes. Will find an outlet for their physical energy, will help them cope with stress, anxiety and depression. Sports and activities especially good for special needs children: Swimming Bicycling Soccer Football Handball Gymnastics Bocce (is a ball sport) Weightlifting Sports, especially fundamental and movement education based sports like gymnastics, provide tremendous benefits for children with special needs. Physical education programs can considerably improve the lifestyle of a disabled child and are highly recommended. These programs may help control obesity, promote activeness, increase a child's self- image and social skills, and increase motivation. The physical activity along with support,

192 rewards, and interaction can, among other benefits, be very helpful to these children and their families. Physical Improvements - Children suffering from cognitive disabilities are most likely going to suffer from physical impairments as well. These children have substantial problems with motor skills in areas such as hopping, skipping, and jumping. Involvement in gymnastics can help these individuals develop fundamental motor and physical fitness skills. Self-Esteem - Developing a sense of self-esteem and confidence is an extremely important part of special education. These children need to be involved in environments where they feel that they are contributing successfully to a group. Their abilities in all other skill areas will improve as a result of a positive self-image and confidence. Cognitive Benefits - The hands-on aspect of sports leads to cognitive skill improvement in children with disabilities and allows them to discover and access strengths that cannot be challenged in the traditional classroom setting. The inherent structure of sport, with its organization and rules, can be used as a learning tool for introducing and practicing self regulation and decision making skills. Additionally, children can learn verbal communication and interaction with peers through involvement in sport. Special Olympics The mission of Special Olympics is to provide year-round sports training and athletic competition in a variety of Olympic-type sports for children and adults with intellectual disabilities. This gives them continuing opportunities to develop physical fitness, demonstrate courage, experience joy and participate in a sharing of gifts, skills and friendship with their families, other Special Olympics athletes and the community. The Special Olympics is the only organization authorized by the International Olympic Committee to use the word "Olympics" worldwide. Athletes compete in 32 sports, including snowboarding, judo, cricket, soccer. The Special Olympics program Healthy Athletes offers 1.4 million free health examinations in more than 120 countries to athletes at Special Olympics competitions. Health professionals perform a full exam in the categories of podiatry, physical therapy, audiology, vision, dentistry, physical therapy and more and more. More than 3.1 million athletes from over 175 countries take part in the Special Olympics.

193 Special Olympics athletes are divided to compete in categories based on gender, age, and ability. The Special Olympics athlete oath is "Let me win. But if I cannot win, let me be brave in the attempt." Special Olympics World Games are held every two years, alternating with Summer and Winter Games. 5.8 Let us Sum Up 1. "Occupational therapy is the art and science of directing man's participation in selected tasks to restore, reinforce and enhance the performance, facilitate learning of those skills and functions essential for adaptation and productivity, to diminish or correct pathology and to promote and maintain health." (Council of Standards, American Occupational Therapy Association, 1972). 2. An Occupational Therapist will aim to enable the child to be as physically, psychologically and socially independent as possible. Occupational Therapists work in close partnership with the child and their family, schools and other healthcare professionals. Together they have a shared responsibility for meeting the child's needs. In schools, for example, they evaluate the child's abilities, recommend and provide therapy, modify classroom equipment, and help the child participate as fully as possible in school programs and activities. 3. Occupational therapy interventions for people with intellectual disabilities are specifically adapted to the client with respect to the degree and type of support needed as well as the context. Interventions may include direct treatment as well as environmental adaptations, guidance, monitoring and counseling (including of the family, the educational staff, the clinical staff, employers and others). 4. Physiotherapy has scope in treating a wide range of conditions. It play an important role in all the branches of medical sciences, especially Orthopaedics, Paediatrics, Neurology, Cardio thoracic, Surgery, Sport Medicine etc. In set ups like leprosy, paraplegic and poliomyelitis after plastic surgery, burns clinics, spinal cord injury centres and in assistive devices manufacturing units etc. 5. A speech language pathologist sets broad but specific goals for each of his patients. Specific goals can include helping patients develop clearer speech, learn to use

194 alternate methods of communication, develop better reading and writing skills, and strengthen throat and neck muscles. Goals also may include coordinating treatment programs with other professionals or referring patients for other treatments. For example, a patient with a swallowing disorder may benefit from the collaborative care of a speech language pathologist and a medical doctor. 6. Yoga is one of the six schools of ancient Indian Philosophy. It is the practice that enables one to achieve higher levels of performance, bringing out the hidden potentials from within. Systematic Yoga practice will increase the physiological and psychological well being. 7. Music therapists involve children in singing, listening, moving, playing, and in creative activities that may help them become better learners. Music therapists work on developing a child's self-awareness, confidence, readiness skills, coping skills, and social behavior and may also provide pain management techniques. They explore which styles of music, techniques and instruments are most effective or motivating for each individual child and expand upon the child's natural, spontaneous play in order to address areas of need. 5.9 Check Your Progress A.1. What is the difference between Occupational Therapy and Physiotherapy? 2. Explain the objectives of the different therapies applicable for children with special needs? 3. Discuss about Dance and Movement Therapy. B.1. Discuss about the importance of yoga for children with special needs. 2. Prepare a short note on Therapeutic Application of Drama. C. After going through the Unit you may like to have further discussions on some points and clarification on other.

195 1) Points for Discussion

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..... 2) Points for Clarification

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mission?

Any system of education which ignores Indian conditions, requirements, history and sociology is too unscientific to commend itself to any rational support. — Subhas Chandra Bose C-13 (V.I.) CURRICULUM , ADAPTATION CURRICULUM , ADAPTATION AND STRATEGIES FOR TEACHING AND STRATEGIES FOR TEACHING EXPANDED CURRICULUM EXPANDED CURRICULUM

B. Ed. Spl. Ed. (M.R./H.I./V.I.)-ODL CURRICULUM, ADAPT A TION AND STRA TEGIES FOR TEACHING EXP ANDED CURRICULUM

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C C - 13 (V.I.) : CURRICULUM ADAPTATION AND STRATEGIES FOR TEACHING EXPANDED CURRICULUM

A COLLABORATIVE PROGRAMME OF NETAJI SUBHAS OPEN UNIVERSITY AND REHABILITATION COUNCIL OF INDIA

Chairman Prof. Subha Sankar Sarkar, Vice Chancellor, Netaji Subhas Open University, Kolkata-700 064 Convenor Prof. Atindranath Dey, Director, School of Education, Netaji Subhas Open University, Kolkata-700 064 Course Writers Unit - 1 Mrs. Debduitta Maity Unit - 2 Mrs. Debduitta Maity Unit - 3 Mrs. Debduitta Maity Unit - 4 Mr. Pankaj Sha Unit - 5 Mr. Pankaj Sha Editor Mr. S. B. Pattanayak Processing General and Format Editing Ms. Antara Choudhury & Ms. Swapna Deb In-house Processing In-charge Ms. Swapna Deb The Self Instructional Material (SIM) is prepared keeping conformity with the B.Ed.Spl. Edn.(MR/HI/VI) Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session. AREA - C DISABILITY SPECIALIZATION COURSE CODE - C-13 (V.I) CURRICULUM, ADAPTATION AND STRATEGIES FOR TEACHING EXPANDED CURRICULUM

All rights reserved. No part of this work can be reproduced in any form without the written permission from the NSOU authorities. Mohan Kumar Chattopadhyay Registrar
3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

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References 1.1 Introduction The developmental process of constructing knowledge and experience in such a way that it will increase the ability of the student to grow in spiritual and emotional maturity as well as in academic excellence. The prime aim of education has shifted to totality of experiences from acquisition of knowledge. As education is regarded as a dynamic process so the aim and objectives have changed. In order to justify the aims and objectives of a subject as well as a course it is essential to know what to teach. So vast is the field of sciences that it is no small problem to decide what facts should be taught. It is therefore very essential to develop or prepare or construct or organize curriculum which should meet the requirements of need of the society setting aims and objectives of the course. The curriculum is developed in different countries in different ways. 1.2

Objectives After going through this unit you will able to: 1. Explain the concept and types of curriculum. 2. Know about the various approaches of curriculum related to special education 3.

Describe about the

curriculum planning and the role of special teacher.

11 4. Narrate

core curriculum and expanded core curriculum for children with visual impairment. 1.3 Concept, Meaning and Need for Curriculum 1.3.1

Concept The term curriculum is

often used to describe only the goals, objectives, or plans, something distinct from the "means" of methods, materials, and assessment. Yet since each of these components are essential for effective learning-and since each includes hidden barriers that undermine student efforts to become master learners-curriculum design should consider each of them as a piece. On the other hand, according to secondary education commission curriculum much more than the boundaries by the academic subjects taught traditionally it should include

totality of experiences that a pupil receives

through manifold activities that go on in the school, in the classroom, library, laboratory,

workshop, playgrounds and in

the numerous informal

activities and connection between teachers and

pupil. But these guidelines apply to the general education curriculum which, when universally designed, should meet the educational needs of most students, including those with disabilities and also this document can help guide the design of expectations, content, methods, and outcomes across differing classrooms in each school or system. 1.3.2 Meaning The

term "curriculum" has different interpretations among scholars. According to Kelly (1999), curriculum is negatively viewed as a "syllabus which may limit the planning of teachers

to a consideration of the content or the body of knowledge

they wish to transmit

or a list of the subjects to be taught or both". In other words, simply convey subject knowledge is insufficient to be an effective curriculum. It should offer much more than a statement about the knowledge-content in order to be a productive curriculum. But in the Hong Kong Yearbook published in the year of 2006, curriculum is more positive in nature, which could achieve the objective of motivating learning, enhancing knowledge and abilities and developing positive values or even attitudes. These elements could help achieve whole-person development of students. These two ideas are polarized, yet they are not contradicted with each other in a sense that they just view curriculum in either macro or micro level. For the first one proposed by Kelly (1999), possibly he comments it in micro level. Undoubtedly, curriculum has the possibility of restricting what in-service teachers would like to teach in lessons. If the school tends to stick to the

12 curriculum suggested by the education department, its negative effect will become more explicit. Whereas in the Hong Kong Yearbook published in 2006, the commentator could evaluate the curriculum in macro level. Before 2000, still used traditional curriculum, which put emphasis on knowledge aspect instead of immersing other generic skills in the subjects, as the major guideline for schools except international ones. After 2000, the EDB started curriculum reform by inserting both generic and genetic skills in key learning areas in primary stage. Regarding secondary stage, the department attempts to achieve integrated curriculum. Students have to apply what they have learnt with various skills. In other western countries such as the US, the education department stresses the importance of merging skills to subjects so that students can apply them in authentic situations. With different timeframe and social values, the society will have different comments on the term "curriculum".

1.3.3 Need for Curriculum Curriculum has a broad scope because it is not only about the school, the learners and the teachers. It is also about the development of a society in general. In today's knowledge economy, curriculum plays a vital role in improving the economy of a country. It also provides answers or solutions to the world's pressing conditions and problems, such as environment, politics, socio-economics, and other issues on poverty, climate change and sustainable development. There must be a chain of developmental process to develop a society. The school curriculum particularly in higher education must be developed to preserve the country's national identity and to ensure its economy's growth and stability. For this reason

the need of curriculum as follows- (i) It helps to make the child interested in the process of learning. (ii) It provides enough scope to the child to learn the things at his own speed. (iii) It provides the child various opportunities of working in a group. (iv) It is need oriented. (v) It helps in development of a sound body. (vi) It gives a totality of experiences to the pupil. (vii) It helps to promote a democratic spirit in the child. (viii) It helps to create self-confidence in the child. (ix) It helps the child in making full utilisation of his leisure (

xi)

It sometimes leads to fatigue and boredom.

13 (xii) In groups, it becomes difficult to achieve the aim. Sometimes misunderstanding may lead to jealousy among the participants. In such cases it becomes the duty of the teacher to coordinate the activity and remove the misunderstanding. (xiii) Sometimes an activity may not suit all the members of a group and this leads to lack of interest in some students. (xiv) In the activity curriculum there is always a possibility that the participant may not be able to master anything those he knows something about various parts of the activity. (

xv)

The curriculum should be clearly understood. It specifies

not only the traditional subjects taught in school but it

includes

the

totality of experiences that peoples receive through the manifold activities that go on in the school, in the class room, library, laboratory, work shop, play grounds and in numerous informal contacts between

teacher and the

student. Thus

the whole life of the school becomes curriculum that can touch the life of the students at all points and help in evolution of balanced personality. (

xvi) Curriculum

should have flexibility and variety so that it can be easily adopted for different needs and interests. It will help to keeping away a sense of frustration that generally creeps in the child if any attempt is made to teach him uncongenial subjects. (xvii) The curriculum should be vitally and organically related to community life, interpreting for the child, its salient and significant features and permitting him to come in contact with some of its important activities. (activity curriculum). (xviii)

The curriculum should be such as to help to train the students not only for work but also for leisure. (xix) It should be framed in such a way that there exist as much of inter-relationship between different subjects and also between different topics in the same subject. It means that an attempt be made to keep the contents as "broad field" units so that it is easy to correlate than with life rather than narrow items of information.

But the students who have exceptional ability in health education and physical education, along with students who have a temporary or permanent disability (whether sensory, physical, social, or intellectual), require programmes that extend them, challenge them, and broaden their abilities. These groups of students need programmes adapted and organised to provide access to relevant opportunities, meet their individual needs, and contribute to the development of their awareness of their personal identity and their

14 sense of self-worth. So it must say that curriculum help these students as follows- ●●●● They are identified early ●●●● They have their learning needs addressed from the beginning, through relevant and consistent programmes ●●●● They work at their own pace ●●●● They work towards goals and face challenges that encourage them to develop to their full potential ●●●● They are valued by their peers, their teachers, the school, and the wider community ●●●● They help to plan programmes to meet their particular learning needs ●●●● They are included in regular lessons (and that resources or teaching approaches are adapted, as appropriate, to meet their special needs). Whereas the teachers who identify students with special needs should consult with parents, other teachers, and specialist educators before designing and implementing special learn programmes. Students with disabilities should be provided with means of access to all school facilities. And all the programme will be got success on the depend on

curriculum. 1.4 Curricular Approaches in Special Education- Developmental, Functional, Eclectic and Universal Design for Learning Approach 1.4.1

Meaning of

Curricular Apporaches:

There are varied approaches to development of curriculum. Some are common in both general and special education while some are more suited to

children with special needs. It is the responsibility of the teacher to select a suitable approaches or a combination of more than one approach with the aim to reach the student with the most suited curriculum and instructional process.

1.4.2

Developmental Approach The Developmental Approach Most developmental curriculum models have been derived from the work of Jean Piaget and his colleagues, who described cognitive development in children. Although individual models vary widely in the degree to which they

15 emphasize Piagetian principles, these models share several key concepts: 1. there is a sequence to mental growth. 2. This sequence is invariant. 3. Earlier steps in the sequence prepare for and provide the base for later steps. 4. This sequence is always in the direction of simple to complex and concrete to abstract. Although earlier stages of the sequence are prerequisite to later stages, they are never entirely displaced by them. When the developmental model is used to make curriculum content decisions, such decisions are typically based on the usual sequence by which without handicapped children develop. Thus, particular attention initially is paid to accurate assessment of the developmental level of the student. This is usually accomplished by use of the same standardized assessment tools utilized with general children. Once the student's initial developmental level has been determined, an educational program is designed to move him or her along the developmental continuum. Such a program is designed both to provide a variety of experiences related to a particular concept and to provide activities that are just slightly more advanced than the child's current level of functioning. As the child accommodates and assimilates new information, the activities are altered slightly so that the concepts presented are slightly beyond the comprehension level of the child, creating "disequilibrium" and providing a new challenge. Advantages Developmental theory provides the educator with information about the scope and sequence of normal child development. "While assimilation involves changing incoming information, accommodation involves changing the structures used to assimilate information". Brainerd also says that "perhaps the best way to think of . . . assimilation is as an interpretation of information that is made by the individual". Piaget meticulously documented the activities engaged in by children of various ages, and subsequent empirical studies have confirmed many of his observations. These observations provide the educator with a readily available body of information to use when making decisions about teaching strategies. According to developmental theory, this is important because educational activities "must not be too redundant with previous objects or events nor so novel that the child cannot assimilate them into his or her current cognitive organization. In fact, if objects or events are too different or novel, then the (child) may show distress or fear". Thus, one advantage of using developmental theory as the basis for making curricular content decisions is that the educator can be assured of providing the student with activities that appropriately challenge his or her cognitive and conceptual abilities. In addition, developmental theory holds that the optimal condition for generalization occurs when the discrepancy between a newly acquired skill and the existing skill repertoire creates a "just tolerable (conceptual) disequilibrium". This disequilibrium serves to maintain the student's interest by providing

16 a challenge, and at the same time it allows the student to compare new experiences with similar experiences already in his or her repertoire. Some authors have suggested that the generalization problems experienced by students with autism and other severe handicaps might be minimized if curricular content decisions were based on normal developmental sequences that ensure the appropriate degree of disequilibrium. Disadvantages although the developmental model makes the content debate: This is due in large part to the complexity of Piaget's writings, which are predominantly descriptive and theoretical in nature. The typical educator who attempts to make an applied "translation" of Piagetian theory into curricular content, therefore, faces a formidable task. One unfortunate strategy that has been used to translate Piagetian information into the classroom involves extracting items from developmental assessment tools and using them as the content basis for daily instruction. For example, many assessment tools contain tasks that require the child to find an item hidden under a cup as an indication of the child's acquisition of the concept of object permanence. Similarly, mean sends concept formation might be assessed by asking the child to pull on one end of a blanket in order to obtain a favourite toy placed on the other end. Unfortunately, educational programs often suggest that such activities should be included in the curriculum and taught to students who have "failed" these assessment items. This inappropriate use of developmental assessment information results in the teaching of isolated skills that are quite useless to students in the context of everyday life. Another problem in the use of developmental sequences is the misapplication of the principle that earlier stages are necessary prerequisites to later stages of development. The curricular sequences derived from this principle usually begin with skills acquired by very young nonhandicapped children and progress to more advanced skills that are typically acquired later. Unfortunately, this approach often means that students with autism are taught tasks appropriate only for young children, since they are "not ready" for more sophisticated tasks. This "slavish adherence to a developmental framework" has resulted in the production of hundreds of "pre-" curriculum programs (e.g., those labelled prevocational, preacademic, prehome, prelanguage, etc.).

Development cannot be forced or ignored. If we try and work more than one level of development beyond where the child is at it will just sound like nonsense and

they won't understand. If we try to push them to the next level they will keep returning to the previous one whenever they are stressed.

So we say

this model proposes that development of typical and atypical children progresses in a predictable sequence and that this sequence should be taught to students with disabilities. Several weaknesses are inherent in this approach for students with severe disabilities. First, time can be wasted working on skills which

17 may never be mastered. Second, not all behaviors in the sequence are necessary for independent functioning nor are they age appropriate as the child

grows well beyond the age that development skills are typically mastered. Finally,

the child is viewed as "developmentally young". Consequently, the activities and materials used for intervention continue to be less than age appropriate which leads to negative perceptions and low expectations for children with severe disabilities.

Unfortunately, the ultimate result is often that adults with autism, having never advanced past the "pre-" skills, have no alternative but to live in "prehomes" (institutions) and to work in "prejobs" (sheltered workshops).

A developmental approach to teaching and learning is simply put catering to the needs of the individual learner through an individualised program that works with their development long a range of measures: Cognitive - their brain readiness for mastery of existing concepts and introduction to new Curriculum challenges Physical - the physical gross and fine motor skills needed for a range of learning and social skills Moral Development - developing empathy and compassion Ego Development - understanding of the self in the world (e.g. time, space, self- reflection) Faith Development - belief in how their world is controlled (Ghosts and

monsters or logical reasoning)

Emotional and Social Development - self- awareness and self -management of emotions and working with others Self

Direction - understanding of learning needs and ways of working (learning styles and organisational skills) 1.4.3

Functional Approach The functional approach is considered to be the second paradigm of psychology. The idea focuses on the function of the mental processes which involves consciousness's. This approach was developed by William

James. What to give and how to give are two important questions which are to be answered before providing education to learner. The concept of curriculum has undergone changes in its meaning from time to time. The education

commission held the following view: functional

curriculum does not mean only the academicsubjects traditionally taught in the school, but it includes the

18

sum total of experiences that the child receives at school. At a given time period sometimes emphasis was given on character building, religious and moral values while at another times its objective was to make person a soldier, hence to

make a person physically capable for showing patriotism. In modern period more emphasis is given on earning bread

and butter. Due to this changing scenario one can find variety in the different basis of functional approach in curriculum development depending on the need of at that moment. On the other hand in second language acquisition functional

approaches are of similarities with Chomsky's Universal Grammar. Focus is on the of language in real

situations(performance) as well as knowledge(competence).A different writers have defined functional curricula or what is sometimes referred to as we skill instruction while there is a common theme imbedded in these and other perspectives

described in the literature, there is still a possibility of miscommunication when the term functional is used. The basic notion of functionality implies the usefulness of something for the user. Give that, it is clear that what is functional for

one person is not necessarily functional for another person or what is a functional use for an object in one situation may be functional in another situation. Functional curriculum must have a specific context and focus for children with

disability. A functional curriculum approach is a way of delivering instructional content that focuses on the concepts and skills needed by all the students with disabilities in the areas of personal, social, daily living and occupational adjustment.

What is considered a functional curriculum for any one student would be the content included in that student's curriculum or course of study that targets his or her current and future needs. These needs are based on a non-

discriminatory functional assessment approach. As we see

the philosophy of this approach is that students with severe disabilities need to acquire age appropriate and functional skills (

i.e., skills necessary for functioning independently). The major advantage of the functional approach to curriculum development

is that it reflects higher expectations for students with severe disabilities and promotes opportunities to acquire age-appropriate skills. The main weakness of this approach is that there are not established criteria for determining what is functional and relevant for an individual student.

The advantages of functional approaches are as follows: 1. Improve functional competence of children day-to-day living 2. Develops an independent level of functioning in all areas 3. Academic skills are incorporated when the children have ability to learn in them in the area of

functional reading, writing, arithmetic, time, money and other related skills.

19 4. Transfer of classroom learning to application of skills in natural environment is an important aspect of this curriculum. 5.

The teacher will choose practical training techniques and material used in daily living according to the task and functions he wants to teach the child in order to develop their functional competence in daily life children will participate fully in the learning experiences in or out of their classroom. 1.4.4 Eclectic Approach Philosophy of education can refer to either the academic field of applied philosophy or to any of educational philosophies that promote a specific type or vision of education, and/or which examine the definition, goals and meaning of education. Education and philosophy are closely inter-related. If philosophy is love of knowledge then education is acquisition of knowledge. For a long time education was regarded as a disciplinary process and learning by attempt was important for student. After that child-centered education laid an emphasis on presenting education according to the child's interest. Today these two contradictory forms come to a compromise. Interest has been admitted as the fundamental truth for attraction of the child, and once interest is created; even attempt would not be uninteresting to him. But neither is complete in itself; hence, co-ordination between two is necessary. The study of educational philosophy helps an educationalist to critically evaluate his own practices and make necessary changes in his practice. Philosophy has the potential for provoking revolutionary changes, revises and rejects some of our beliefs, develops analytical and logical skills and reasoning. Educational philosophy clarifies concept and analyses propositions, beliefs and theories of education. A philosophy vision is essential to understand the new trends in the educational systems especially the contemporary educational movement. Eclecticism has been derived from the verb root "elect". To elect means to choose and pick up. The good ideas, concept and principles from various schools of thought have been chosen, picked up and blended together to make a complete philosophy. Thus eclecticism is a philosophy of choice. Eclecticism is nothing but fusion of knowledge from all sources. It is a peculiar type of educational philosophy which combines all good ideas and principles from various philosophies.

Eclecticism is a conceptual approach that does not hold rigidly to a single paradigm or set of assumptions, but instead draws upon multiple theories, styles, or ideas to gain complementary insights into a subject, or applies different theories in particular cases. It can sometimes seem inelegant or lacking in simplicity, and eclectics are sometimes criticized for lack of consistency in their

20 thinking. It is, however, common in many fields of study.

We live in such an era when dogmatic adherence to a particular philosophy is foolish and is quite harmful. The world is changing very fast. Values are changing rapidly. We require a dynamic outlook and mental flexibility to have an all-round adjustment and optimal development. No philosophy contributes to all aspects of education. Idealism based on spirituality. Naturalism based on materialism. Pragmatism is between the two. While idealism is famous for its high and lofty aims of education, pragmatism is famous for its brilliant principles and curriculum, naturalism for its method of education. No philosophy is full-fledged to provide all things. But we want an integral education for complete living. If we synthesis all good ideas and principles with the best materials of all these philosophies we have to adopt an eclectic approach by harmonizing the conflicting ideologies and blend them together. We have to find unity in diversities through eclectic approach. Due to eclectic tendency, we find in modern education the influence of all the philosophies and tendencies of education. According to his doctrine of naturalism, Rousseau emphasized child-centered education. In modern education also child is developed according to his nature. Pestalozzi has stated that education is the development of the inherent capacities of a child and as such education should develop to the fullest extent the physical, mental and moral capacities of a child. After Pestalozzi, Herbart declared moral character as an aim of education and emphasizing curriculum construction advocated five formal steps of teaching. The third protagonist of psychological tendency, Froebel, insisted that educational process should follow the laws of Nature and considering the child's nature as good emphasized that education should allow complete development of the child through self activity. He argued for a free and unfettered environment for the development of the child and inculcation of sociability. After the advent of psychological tendency, the stage was occupied by scientific tendency. Herbert Spencer insisted that for complete living scientific subjects should occupy a prominent place in the curriculum. He tried to correlate education with actual life and uphold the importance of individualism. But we see that sociological tendency in education developed out of scientific tendency. According to sociological tendency, education is required to create such socially citizens who do not prove parasite on others but lead a life of self-reliance. For this purpose emphasis for vocational, technical and universal education began to given. Eclectic tendency has also exercised its influence in the solution of those problems which seemed, at one time, very complex and insoluble. This tendency has brought about a synthesis between the individual and social aims. Both the aims are not contradictory but complimentary and mutually contributory. Another problem to be tackled in the field of education has been of 'interests' and 'efforts'. In ancient times,

21 there ruled the disciplinary concept of education which upheld the use of 'efforts' in utter disregard of the child's interests. Hence, subjects were given importance with a view to their difficulty and efforts of children to learn them. Due to eclectic tendency both the factors, interests and efforts, are brought together to form a harmonious synthesis of the two to emphasize that a child needs the use of both, the interests as well as efforts, for his fullest development. The third problem is of 'freedom' and 'discipline'. The burning question had been how much freedom and how much discipline, should be provided and enforced. Eclectic tendency has solved this problem quite satisfactorily. Today freedom and discipline, stand integrated as one concept, as two sides of the same coin. Today the hard, rigid and expressionistic concept of discipline stands discredited and through impressionistic and sublimation processes, self-reliance, obedience, self-confidence, self-planning and managing are inculcated in children. This leads to self-discipline. Today freedom means all conducive opportunities for self-development and allowing the same opportunities to other as well. This is possible when each individual adheres to self-discipline and allows others the same rights for self-development through self-efforts, self-experiences and self investigation of new truths. Modern progressive education contains all the essential merits of all the philosophies and tendencies of education. The credit of this synthesis and unified integration goes to eclectic tendency. Philosophy of life has a powerful impact on education. Because eclectic tendency is gaining wider appreciation and acceptance in the life of an individual today, therefore the influence of this tendency on this education is natural. It reflects a harmonious synthesis of all those dynamic ideals and principles. Under the influence of eclectic tendency, all the previous ideologies and tendencies are influencing the following aspects of education. The question has always been arising whether the aim of education is to educate the child for society or for individual progress. The aim of modern education has become individual progress and development and social service. We have seen in the philosophy of Nunn that there is no difference between individual and universal progress. Here comes the role of eclectic tendency. If we look into Prof. Horne's definition this tendency becomes quite evident. According to him, education is a high adjustment of a physically and intellectually developed conscious individual to his intellectual, emotional and volitional environment. In this definition perfect fusion of psychological, scientific and sociological tendencies. Teaching material is no more an important matter, the earning of which should be compulsory for the students, as it is a truth or combination of truths. Modern teaching material is a brief form of civilization and a record of the standards of progress and values of civilization. The civilization of one period cannot be suitable to

22 another period; therefore, it would have to be changed on the basis of needs and changes. Teaching material is helping student to familiarize themselves with life as teaching is the preparation for life. Therefore, the process of knowing life would also remain changing. Method of teaching is used in order to experiment this material of civilization on the child and to bring desirable changes. This method should be used naturally by the teacher. The knowledge of children, knowledge of modern interests and problems, suppressing the rigid method of teaching and taking the broader meaning of teaching method-all these are symbolical of the teacher's ability. Therefore, a teacher should have knowledge of every method. The burden of the modern teacher has increased because he has to apply new methods with a view to the children's knowledge for the changing age, and the progress of the society. Regarding the method of teaching the kernel of all philosophy is 'method' according to 'circumstances', taking in view the interest of the child. Their emphasis is on motivating instruction, which is the result of the curriculum growing out of the present experiences of children. They have assigned a place for drill and concede the supreme importance of freedom both as an end and as a means to achieve the end. Among method they have a special advocacy for problem solving, which they believe, is on consonance with life's demands. Importance of direct experience is recognized by lending their support to 'play-way' and 'learning by doing'. The above mentioned eclectic tendency is visible not only in the field of education but in every field of education. This tendency is carrying us to a good age where we would be able to establish new ideals, values and standards over narrow and corrupt feelings. With regard to discipline none of the schools of the philosophies supports 'pressionism'. Freedom or free-discipline is their keyword. All the philosophers wish the mature children to play their part in making decisions about the affairs of the schools. They should not be pushed around against their consent. Discipline through knowledge and knowledge through experience is the under-current of all educational philosophies. The teacher's role as a friend, guide, and philosopher, the director of the class, arranger of the experiences to the child, etc. is prominent in modern educational scene. Under the influence of eclectic tendency more and more teacher-training institutions are being opened to provide training to teachers for various grades and levels of education. In ancient and medieval times, provision of education was made by religious institutions. But, under the influence of eclectic tendency, modern education has broken off from religious bonds and has become material and worldly. Under the influence of sociological tendency, the function of school is to prepare dynamic citizens to participate in the social activities successfully. As such, school is now regarded as a miniature society to develop dynamic, enterprising and resourceful citizens. Above discussion makes it

23 crystal clear that modern education has drawn from all the tendencies namely- psychological, scientific and sociological to a very great extent and this process of synthesizing and gainfully imbibing is known as eclectic tendency. It is the nature of man that he likes change. He wants new and novel ways in every field of work. The same is the case with learning process. Learners always like something new and exciting. This approach is broad and may include every kind of learning activity and saves learner from monotony. It is more appropriate

for Pre School learning but not less beneficial in the class rooms. It is helpful in all kinds of skills in stimulating a creative environment and gives confidence

to the learners. In this approach children discovers and in still

good ways of learning. Above all this approach gives a chance to our common sense to mould and shape our method according to the circumstances and available materials of teaching aids.

There may be gaps in learning, if you are frequently switching curriculum. This approach can lack disciplined learning and allow for laziness. Without grabbing to one approach, curriculum choices and overall directions can be confusing and overwhelming. The conception of education today is very broad and that our educational thinking in its totality has been affected not by one single philosophical thought or tendency but by the cumulative experience of past generations in the field of education. Our educational ideals and practices may consequently be traced to various sources all of which have been harmoniously blended to determine the present-day educational principles and practices.

Eclectic approach is a method of language education that combines various approaches and methodologies to teach language depending on the aims of the lesson and the abilities

of the learners. Different teaching methods are borrowed and adapted to suit the requirement of the learners. It breaks the monotony of the class.

The teacher has more flexibility. No aspect of language skill is ignored. There is variety in the classroom. Classroom atmosphere is dynamic.

In eclectic approach, the teacher can choose from these different methods and approaches: ●●●● Grammar-translation Method: It is a method of teaching languages by which students learn grammatical rules and then apply those rules by translating between the target language and the native language. ●●●● Direct Method: In this method the teacher refrains from using the students' native language. The target language is directly used for teaching all the four skills- listening, speaking, reading and writing. ●●●● Structural-situational Approach: In this approach, the teacher teaches language through a careful selection, gradation and presentation of vocabulary items and structures through situation based activities.

24 ●●●● Audio-lingual/Audio-visual Method: In this style of teaching students are taught through a system of reinforcement. Here new words and grammar are directly taught without using the students' native language. However, unlike direct method, audio-lingual method does not focus on vocabulary. Instead, the teacher focuses on grammar through drill and practice. ●●●● Bilingual Method: The word 'bilingual' means two languages. In bilingual method, the teacher teaches the language by giving mother tongue equivalents of the words or sentences. ●●●● Communicative Language Teaching: This approach lays emphasis on oral method of teaching. It aims to develop communicative competence in students. ●●●● Total-Physical Response: It is based on the theory that memory is enhanced through association with physical response. ●●●● The Silent Way: In this method the teacher uses a combination of silence and gestures to focus students' attention. 1.4.5

Universal Design for Learning Approach

Universal Design for Learning is

an educational framework based on research in the learning sciences, including cognitive neuroscience that guides the development of flexible learning environments that can accommodate individual learning differences.

Recognizing that the way individuals learn can be unique, the universal design for learning framework, first defined by David H. Rose, in the 1990s, calls for creating curriculum from the outset that provides: multiple means of representation to give learners various ways of acquiring information and knowledge, multiple means of expression to provide learners alternatives for demonstrating what they know, and multiple means of engagement to tap into learners' interests, challenge them appropriately, and motivate them to learn. Curriculum, as defined in the universal design for learning literature, has four parts: instructional goals, methods, materials, and assessments.

Universal design for learning

is intended to increase access to learning by reducing physical, cognitive, intellectual, and organizational barriers to learning, as well as other obstacles.

Universal designs for learning

principles also lend themselves to implementing inclusionary practices in the classroom. Universal Design for Learning is referred to by name in the Higher Education Opportunity Act of 2008 (Public Law 110-315). It is also mentioned in the 2004 reauthorization of the Individuals with

25 Disabilities Education Act (IDEA),

which in

turn refers to a legal definition of the term in the Assistive Technology Act of 1998. The emphasis being placed on equal access to curriculum by all students and the accountability required by IDEA 2004 and No Child Left Behind legislation has presented a need for a practice that will accommodate all learners.

The concept and language of Universal Design for Learning was inspired by the universal design movement in architecture and product development, originally formulated by Ronald at North

Carolina State University. Universal design calls for "

the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design". Universal design

for learning

applies this general idea to learning: that curriculum should from the outset be designed to accommodate all kinds of learners. Educators have to be deliberate in the teaching and learning process in the classroom (Preparing class learning profiles for each student). This will enable grouping by interest. Those students that have challenges will be given special assistance. This will enable specific multimedia to meet the needs of all students. However, recognizing that the UD principles created to guide the design of things (e.g., buildings, products) are not adequate for the design of social interactions (e.g., human learning environments), researchers at CAST looked to the neurosciences and theories of progressive education in developing the universal design for learning principles. In particular, the work of Lev Vygotsky and, less directly, Benjamin Bloom informed the three-part universal design for learning framework. Some educational initiatives, such as Universal Design for Instruction (UDI) and Universal Instructional Design (UID), adapt the Mace principles for products and environments to learning environments, primarily at the postsecondary level. While these initiatives are similar to universal design for learning and have, in some cases, compatible goals, they are not equivalent to universal design for learning and the terms are not interchangeable; they refer to distinct frameworks. Despite the popularity of universal design for learning among educators and disability support professionals, little research has been conducted to evaluate its effectiveness as a model of good pedagogy. However, a number of studies have appeared in recent years, providing preliminary data in support of this instructional model. For example, a recent study at Colorado State University found "recognizable changes in instructor behaviour" from only a few hours of training in universal design for learning principles and teaching practices. The same study described the creation of a research questionnaire for students and instructors, based on universal design for learning's three principles. Universal design for learning can be used in the support of students with disabilities and as well as learning differences. In actual case studies conducted by Elizabeth McAra-

26 Craford applying Universal Design principles expands the ability of students to access needed supports in post-secondary settings. Universal design for learning presents information in ways that adapt to the learner, instead of asking the learner to adapt to the information. This is good for kids with learning and attention issues because it gives them more than one way to interact with material. Universal design for learning can make it easier for kids to use their strengths to work on their weaknesses. To understand what Universal Design for Learning is, it helps to understand what it's not. The word "universal" may throw you off. It may sound as though universal design for learning is about finding one way to teach all kids. But universal design for learning actually takes the opposite approach. The goal of universal design for learning is to use a variety of teaching methods to remove any barriers to learning and give all students equal opportunities to succeed. Universal design for learning doesn't specifically target kids with learning and attention issues. It's about building in flexibility that can be adjusted forever student's strengths and needs. Even if you're not familiar with the phrase "universal design," you've most likely encountered many examples of it in your everyday life. Closed captions, automatic doors and accessibility features on smartphones are all examples of universal design. These design elements help people with disabilities. But people who don't have disabilities may also want to use them. Universal design for learning provides that same kind of flexibility in the classroom. The goal of universal design for learning is to present school subjects so that all learners can access the information, and to give learners different ways to demonstrate their knowledge. Universal design for learning is based on three main principles: ●●●● Representation: universal design for learning offers information in more than one format. For example, textbooks are primarily visual. But providing text, audio, video and hands-on learning gives all kids a chance to access the material in whichever way is best suited to their learning. ●●●● Action and expression: universal design for learning

gives kids

more than one way to interact with the material and to show what they've learned. For example, teachers can assess students using pencil-and-paper

tests, oral presentations or group projects. ●●●● Engagement:

universal design for learning

looks for different ways to motivate students. Letting kids make choices and giving them assignments that feel relevant to their lives are some examples of how teachers

can

sustain students' interest. Other common strategies include making

skill building

feel like a game and creating opportunities for students to get up and move around

the classroom.

27 1.5

Types of Curriculum- Need Based, Knowledge Based, Activity Based, Skill Based and Hidden Curriculum 1.5.1

Meaning for Types of Curriculum

Since curriculum reflects the models of instructional delivery chosen and used, some might indicate that curriculum could be categorized according to the common psychological classifications of the four families of learning theories "Social, Information Processing, Personalist, and Behavioural." Longstreet and Shane have dubbed divisions in curricular orientations as: child-centered, society-centered, knowledge-centered, or eclectic. Common philosophical orientations of curriculum parallel those beliefs espoused by different philosophical orientations - Idealism, Realism, Perennialism, Essentialism, Experimentalism, Existentialism, Constructivism, Reconstructivism and the like. Whatever classification one gravitates to, the fact remains that at one time or another curriculum in the United States has, at some level, been impacted by all of the above. In essence, American curriculum is hard to pin down because it is multi-layered and highly eclectic.

Anything and everything that teaches a lesson, planned or otherwise. Humans are born learning, thus the learned curriculum actually encompasses a combination of all of the following - the hidden, null, written, political and societal etc. Since students learn all the time through exposure and modelled behaviors, this means that they learn important social and emotional lessons from everyone who inhabits a school -

from the janitorial staff, the secretary, the cafeteria workers, their peers, as well as from the department, conduct and attitudes expressed and modelled by their teachers.

Many educators are unaware of the strong lessons imparted to youth by these everyday contacts. 1.5.2

Need Based Curriculum Curriculum is the most challenging field of study, since after one century of its formal existence as a scientific field of study, there is not, yet, any agreement among the specialists and experts about the elements and dimensions and even the concept of curriculum. Curriculum needs assessment as a part of curriculum, has, also, the same problem and there is not, yet, any stable conception of this definition, in spite of its extensive application, its utilization for justification of importance and necessities of curriculum and changing needs assessment into a principle for distribution of facilities and sources in connection with different projects. Ambiguity in needs definition led many bias - accepted studies to fail in presentation a comprehensive conception of needs. Some of

28 the specialists like Mattimor and Knudson can use some alternative definition such as "situation assessment", and "situation Analysis" and also, some other specialists like Kliaton believed that the term "needs" must be deleted from the literature of education. This reveals that how challenging needs conception may be. We can introduce, however, the most important needs - definition as following: 1. "Needs" as a want or preference: In the first conception, some people may believe that "needs" is the equivalent of one's want or one's preference. This definition of "needs" which is sometimes called "democratic conception," respects the views of majority of people about a specific subject. None the less; this conception has been criticized because of three reasons first of all, because the people's views are considered to be subjective, secondly, people are not awarded of their real needs and thirdly since the needs concept is not the same as want concept. 2. "Needs" as a deficit or as a problem: In this regard, need is a kind of deficit or a kind of problem in a particular field which is innately harmful. Shriren advocates this definition which is referred as problem - approach. In this view, 'need' implies the situation in which minimum satisfactory level is not attained. The concept of minimum satisfactory level is ambiguous and arguable, since this term is used in some fields such as biology and medicine but there is no evidence in education for it. 3. "Needs" as a gap or as a discrepancy: In the third and the most acceptable conception "needs" is considered as the discrepancy between the present situation and the ideal situation, for instance Kaufman defines needs as a gap between current outcomes and expected outcomes and in this kind of definition, there is a distinction between 'needs' and 'semi needs'. Needs are in relation to outcomes. Whereas, semi needs are in connection with the means of achieving needs and only after determining needs, one may identify the means of achieving them. As a conclusion, each of the above definitions looks at the needs and needs assessment through a particular point of view. I believe that each of the definitions, depending on the situation, has effective application and one should use situational approach in connection with their application. To have an easier study, the development of curriculum needs assessment will be discussed in both formal and in informal periods. Informal period is any time of studying curriculum in which needs assessment is not a particular domain and in some extent is not distinct from other curriculum discussions. Formal period of curriculum is the time through which curriculum specialists can specify and identify the limitations of needs assessment compared with other domains. A general historical study of education shows that in an informal period needs studying is closely related to the development of objectives and information sources. As Tanner mentioned, the emerging curriculum field was being buffeted by conflict and disputation between the traditional subject-centered approaches, based upon about adult demands and child-centered approaches in curriculum making decisions. Because of considerable social changes, another group called, social behaviourists were added to the previous battling groups. They were the pioneers of paying attention to the society and its basic needs and they, also, emphasised on the curriculum effectiveness as a means of solving life problems. This conflict which were at the maximum point in 1910s, made such a history of curriculum in which every other time one of the battling views was dominant. The first systematic study of curriculum was published in 1902 under the title of "the child and the curriculum" by Dewey and he identified three basic learning factors such as learner (the immature, undeveloped being), society (values and adult's objectives) and subject matter as the main factors of educational process. Bobbitt in 1918 wrote the book "the curriculum" considered needs studies and proposed a model under the title of "activity analysis". Because Bobbitt believed education should prepare children to be productive adults, he focused on adult life as the source of curriculum needs assessment. Based on such analysis, he produced a list of over 900 objectives, some of which were to be the starting point for the school curriculum. After these views, from 1933 to 1944, a study entitled eight years study was conducted. Researchers in this study developed a model based upon the following three fundamental resources; 1) the social demand approach, 2) the adolescent - needs approach, and 3) the specialized subject matter approach. The necessity of considering psychological needs, gradually, was expected in curriculum. This procedure was started with Sigmund Freud and continued with the views of William Featherstone (1950), Abraham Maslow (1954), Danial Prescott (1963), and Erikson. They were the advocates of considering psychological needs in curriculum (unruh and unruh, 1998). Psychological needs were added to the curriculum in 1950s and, therefore, curriculum needs assessment got very complicated. The publication of "Basic Principle of Curriculum and Instruction" by Ralph Tyler in which he presents his rational model of curriculum, brought about a new prospective for curriculum. Besides emphasizing on triple data sources (society, learner and subject matter), he makes a

30 distinction between psychological needs and educational needs. He believes that psychological needs are not in the domain of curriculum. In the psychological needs conception, "needs" means not having equilibrium whereas, the task of curriculumist is considering 'needs' as a gap, or discrepancy, on educational needs. As it is stated up to this stage of curriculum history, though there has been many efforts in curriculum needs assessment studies, these efforts didn't consider needs assessment as an independent domain of curriculum field. Hilda Taba the popular curriculum specialist, extended the Tyler's rational and consequently, introduced needs assessment as an independent stage in curriculum process. She emphasized on seven stages of curriculum and called the first stage, "Diagnosis of needs" Making a distinction between educational needs and psychological needs, in spite of Tyler's view, She believed that one should almost consider psychological needs, and at least, psychological problems must not be considered in curriculum deeply, though the primary objective of curriculum is considering educational needs. Feuerstein, also, for conceptualizing of curriculum stages, has discussed eleven stages that begin with the related diagnosis of needs. From now on, in the literature of curriculum in relation to needs assessment, some independent studies were begun and some models were proposed for it. For instance, discussed two different models which show the position of needs assessment in curriculum. In one conception, curriculum is started with needs assessment and, then, is followed by developing general goals and in another model "needs study" is postponed to a stage after developing general goals which are needs, mission, statement, specific objectives, learning activities, Evaluation and mentoring. Studying the development of needs assessment curriculum, one can conclude the followings: ●●●● There is no agreement on the position of needs assessment in curriculum, particularly; the question that whether needs assessment is the first step of curriculum or it is an approach that takes place after developing the objectives. ●●●● All the proposed models share needs assessment at the stage of curriculum development. All the above mentioned models, accompanied with basic variables of data sources are to drive objectives and develop other elements based on such policies. However, some recent studies, also, prescribe considering needs assessment at the stage of implementing curriculum. For instance, those models that reject linear sequences, avoid any Preparation for curriculum, and made curriculum decision through student-teacher participation process in the classroom

31 and through student interests, all advocate this theory. For instance, Macdonald view, depending on Emergent curriculum advocates the necessity of studying curriculum problems including needs assessment at the implementing stage. As a consequence, one can consider the procedure and historical development of curriculum as a static phenomenon and considers need assessment at the developing stage. However; this situation questions the dynamic state of this scientific domain and, therefore, it is necessary to consider needs assessment at the implementation stage. ●●●● History of curriculum shows numerous ideological conflicts in connection with basic data sources and each of the sources has particular advocates, whereas the Tyler's rational (assembling sources in curriculum studies), is dominant in curriculum. It seems one should follow more innovative approach in using data sources and it is not enough to value, equally all the three data sources originating from different ideological conceptions. ●●●● The distinction between psychological needs and educational needs, also, brings about a sort of ambiguity, however, some specialists put emphasis on psychological needs whereas some others emphasize on the educational needs. Furthermore; needs assessment participants, needs assessment mechanisms and methods, the way of utilizing needs assessment outcomes and some other things are not, yet, obviously stated.

1.5.3 Knowledge Based Curriculum

Knowledge based learning on the other hand

aims to build upon the knowledge that the pupil already has. There are clear learning objectives set out which link to the activity undertaken; helping the child to see how their existing knowledge will help them to complete the task. Clear guidelines will be set at the beginning of the task which helps the learner to see a clear path to the finish. Along the way they can apply the knowledge they already have, whilst also learning new things. This linear structure helps the pupil to see how they are progressing and can help to highlight where, if any, the gaps are in their knowledge. Using this method, regular feedback is given to help the children know where they have gone wrong and where they are correct. This means that their learning is assessed along the way ensuring that they are making progress. Learning a lot of facts at once can be confusing for children, especially when they have a range of subjects to learn, so it is

important to use the knowledge based technique as it means

32 you can easily pin-point where more focus is needed. By drawing on the knowledge a child already has it boosts their confidence as it proves to them that they already have some, if not all, the information they need to complete the required task.

And even if they don't, they know where they need to put more focus. For teachers this can mean having more one to one time with pupils to talk through how they are ending the task/ subject and giving any additional help they may need. This can seem time consuming but it will ensure that all pupils are engaged and learning during the lessons, and that they will all succeed.

The National Council for Accreditation of Teacher Education (NCATE) has established standards designed to ensure that teacher education programs maintain high academic standards and that program graduates are of a high quality. To achieve these goals the organization has developed a process whereby professional expectations are developed and promulgated through published standards and monitored by peer review. An examination of NCATE standards provides insights into areas of teacher education perceived to be in need of attention from a national perspective. The 1987 standards reflect an effort to improve professional education by encouraging experimentation and innovation in institutional planning. Current standards focus upon the inclusion of broad knowledge bases that are developed from sound theories and scholarly inquiry. By mandating that each accredited unit develop a teacher education program founded upon broad knowledge bases, NCATE is effectively requiring some teacher education programs to alter current curricula and practices. Historically, some teacher education programs have been experience based. Rather than focusing instruction upon pedagogical theories and research, these programs tend to transmit folkways from one generation to the next through faculties' stories and clichés. Current NCATE standards, however, require that accredited teacher education programs be "based on essential knowledge, established and current research findings, and sound professional practices" NCATE standards further mandate that each program be coherent from an explicitly stated philosophy through the measurements of program outcomes. This coherency must be achieved through faculty collaboration and be reflected in: "curricular design and planning; course syllabi; instructional design, practice, and evaluation; students' work; use of major journals in the field by faculty and students; and faculty and students' (especially graduate students) participation in research and synthesis,". The faculty of each teacher education unit must collaborate to develop a coherent curriculum that is founded upon a defensible knowledge base in order to receive accreditation. While the

33 standards clearly indicate the NCATE expectation, procedures used to achieve these must be developed and implemented by each teacher education unit. Prior to developing a process of identifying and implementing a teacher education program that will meet the spirit and intent of NCATE standards, a workable operational definition for knowledge base must be devised. A definition is noticeably absent from the NCATE (1986) glossary of terms. Wisniewski (1989) describes the knowledge base as the intellectual heritage of practitioners which is used to validate or challenge one's scholarship in professional endeavors. To meet NCATE standards each unit must develop an orderly process in institutional planning which identifies the knowledge, skills and attitudes that are needed by professional teachers. Additionally, the process must include provisions for faculty members to collaborate in developing a coherent and defensible knowledge- based curriculum. Any disagreement will necessitate a reconsideration of both elements of the model, philosophy, and goals. Both elements are tentative. When coherence between philosophy and goals is established, the process can continue. As courses are identified in the professional education sequence, care must be taken to ensure that each program goal has been assigned to a particular course and that no goal has been unnecessarily duplicated. This can best be accomplished by developing a matrix. Course Objective Proposed After the goals for each professional education course has been ascertained, faculty members will propose tentative objectives for each goal assigned to their respective courses. At this point in the process, the program content is becoming quite specific and the knowledge base must be continually monitored to ensure program viability. The knowledge base is a set of rigid principles that determines the scope and sequence of an undergraduate teacher education program. Rather, it is a best- yet product derived from a continuous process of scholarly inquiry. In reality, the process used in determining the knowledge base for beginning teachers is as important as the product. New knowledge is continuously being produced as teachers and teacher educators practice philosophical reflection, develop new theories, find new answers using research, or make observation as they observe educational practices. While these processes yield new knowledge, not all of the knowledge can or should be included in the undergraduate teacher education program. To judge the knowledge that should be included in an undergraduate teacher education program, several questions need to be asked. The first criterion by which the knowledge should be judged is utility. Knowledge included in the undergraduate teacher education program should be useful.

34 The knowledge should be useful in guiding practices, in assisting teachers, in understanding the behaviour of children, or in assisting teachers to better understand the dynamics of the teaching and learning process. The second criterion by which knowledge included in the teacher education program should be judged is its comprehensiveness. An effective teacher education program must present alternative points of view to allow future teachers to evaluate the worth of competing theory bases and practices before making professional decisions. Third, the knowledge base that promotes understanding and perspective among students should be presented. The content, skills and attitudes presented, practiced, and encouraged should be structured in ways to ensure that students do not view the knowledge base as a set of rigidly prescribed steps to be followed, but rather as principles that may have application in a given situation. Beginning teachers must realize that an effective teacher education program helps prepare them to make professional decisions in accord with the conditions of a given situation. A fourth criterion is that knowledge should be included in the undergraduate teacher education program that assists students in developing more comprehensive theoretical bases. Specific elements of knowledge which fit into a larger theoretical base should be considered more valuable than a bit of knowledge that is unrelated to other knowledge. Fifth, knowledge should be included in the teacher education curriculum that is based upon and supported by research. Students should be taught that knowledge based upon experience is thinking an experience has value, but many errors can be made using experience as a primary determinant of professional behaviour. Students should be warned that experience-based decisions tend to lead to stimulus generalizations in which one experience principle will be used in times and situations that are totally out of context with the experience that precipitated its creation. Those objectives that can meet one of the five criteria can then be included in the appropriate professional education course on a tentative basis. This objective must further be found to be acceptable during the process of course development. Content derived from objectives that are included in a particular professional education course must be scrutinized from several perspectives. This examination is designed to ensure that the content taught is based upon a sound knowledge base and is not a way that students gain mastery on various experiences. Such type of projects should be completed under a problematic situation in a natural setting.

35 1.5.4

Skill Based Curriculum The drive for a skills based curriculum is more and more prevalent. How to deliver such curriculum remains a challenge for a number of schools. The key to success is not logistics. Two main structures support such drive. In one structure, the skill based curriculum is about mapping where the fundamental skills are delivered. It is a hidden skill based curriculum. This is the way to deliver the least changes in the 'traditional' curriculum. The key to success here is always whether this brand of curriculum is driven by the teachers (Cross curriculum work anyone?) or by a manager in his/ her office. You can guess which one is more successful. The other more honest structure represents the traditional 'circle within a circle approach'. The Welsh Bac and International Bac both use this structure to explain their curriculum. Put the core skills in the middle, surround those by the curriculum and you are done. It will work with the IB because they make sure it will. It will work with the Welsh Bac as it is integrated in the assessment structure. It does not always work when this circle is mirrored elsewhere. The key to success here is always a management issue. Does the management give itself the means to implement their skill based curriculum? When it represents just a fad or a marketing ploy, the skills which are supposedly at the heart of the curriculum are in fact peripheral to it. It is a traditional curriculum with added 'bits'. Whilst the departments (in secondary education) are mostly run as tight ships, the skills area is run by whoever is unlucky enough to be volunteered and delivered by whoever is available. It is a 'left over' approach. Surprisingly this has little impact on results (because it does not really improve any skill). If you are not in the market for the IB or Welsh Bac, you could do a lot worse than considering the EPQ as a cornerstone of your skill based curriculum post 16. The experience you will gain there will easily be transferable to KS3 and 4 later on. The project approach can be tailored to your curriculum needs and the support it requires can be integrated within the pastoral support. It can easily be the central component of your curriculum around which organise themselves the different curriculum areas. This will easily evolve in line with what your school requires, but at least you start from a solid base. You get your circle within a circle curriculum and the skills are clearly at the core

Skills based learning

centres around developing and applying specific skills that can then be used to obtain the required knowledge. The classroom environment will encourage independence, as well as combining active-learning and collaboration to help the children retain the knowledge. This process allows the pupils to 'access, process and then express' the knowledge they have learnt rather than simply writing

it
down.Tasks
36 can include working together to assess one another's knowledge and to help each other to progress and learn. This form of learning is effective for helping children improve their self-confidence, which in turn will help them to do well. It also means that they will be more receptive to other, possibly harder, subjects as they will feel they have the skills and ability to tackle the problems in front of them. It not only helps children to learn what they need to succeed in education, develop life skills that can help the child to grow and progress as a person as well. The main skills this way of learning will help are interaction and teamwork, as the children work together to solve problems and help each other to achieve the aims. From a teacher's point of view, it changes the way lesson planning is done. Whereas before the focus would have been on how they could teach the class about a certain topic, skills based learning means that the

focus is on how that topic can help the children to develop and learn certain skills. 1.5.5

Hidden Curriculum

Nowadays the term "Hidden Curriculum" is very popular but what does it really mean in school practice? Here are some of the most significant and meaningful definitions. "Hidden curriculum is a broad category that includes all of the unrecognized and sometimes unintended knowledge, values, and beliefs that are part of the learning process in schools and classrooms."¹ According to the Blackwell dictionary of sociology, "Hidden curriculum is a concept used to describe the often unarticulated and unacknowledged things that students are taught in school."² Moreover, the hidden curriculum generally refers to the "subtle or not-so subtle messages that are not part of the intended curriculum"³. In short, the term is used to "describe the unwritten, informal code of conduct to which children are expected to conform in the classroom". In other words, hidden curriculum refers to the unintended or implicit values cultivated in the practices exercised in the classroom and educational institutions through the application of the curriculum. For example, "Children are said to be rewarded not only for learning their subject curriculum but appearing to do so with enthusiasm, alertness, and deference to and respect for authority. In this way education imparts not only formal knowledge but an understanding of how to act 'properly' in wider society."⁴ Also, this can be associated with the instructional practices exercised in the classroom by teachers to cope with the demands of organizational structures over which they have little control as the "set of values, attitudes, knowledge frames, which are embodied in the organization and processes of schooling and which are implicitly conveyed to pupils"⁵. Finally, in education, "the hidden curriculum refers to the way in which cultural values and attitudes (such as obedience to authority, punctuality, and delayed gratification) are transmitted, through the structure of teaching and the organization of schools."⁶ There are numerous such messages conveyed indirectly. For example, that reading and mathematics are the most important elementary school subjects is clearly if implicitly communicated by scheduling more time for these subjects than for others, such as science and social studies, scheduling them in morning prime time rather than in the afternoon, and testing them more often than other subjects or skills. Thus, a major purpose of the hidden curriculum of public schools has been cultural transmission or teaching students the routines for getting along in school and the larger society. In other words, hidden curriculum usually serves to maintain the status quo, specifically the dominant culture and prevailing socioeconomic hierarchy. Hidden Curriculum appears in every school whether public or private, secondary school, high school or University. It is in the way we teach our students to become good citizens and follow the norms of society. Hidden curriculum is acknowledged as the socialization process of schooling. In some ways it can be argued that this so-called hidden curriculum is more important than the regular curriculum. Some will say that this hidden curriculum has not always been acknowledged. The norms of schools will prepare pupils to involve in the life of public sphere. These norms are for example independence, achievement, universalism, and specificity and that these norms are required to teach them in order to collaborate with modern industrial society.

A hidden curriculum is a side effect of an education, which are learned but not openly intended such as the transmission of norms, values, and beliefs conveyed in the classroom

38 and the social environment. Any learning experience may teach unintended lessons. Hidden curriculum

often refers to knowledge gained in primary and secondary school settings, usually with a negative connotation where the school strives for equal intellectual development (as a positive aim). In this sense, a hidden curriculum reinforces existing social inequalities by educating students according to their class and social status. The unequal distribution of cultural capital in a society mirrors a corresponding distribution of knowledge among its students. Early workers in the field of education were influenced by the notion that the preservation of the social privileges, interests, and knowledge of one group within the population was worth the exploitation of less powerful groups. Over time this theory has become less blatant, yet its underlying tones remain a contributing factor to the issue of the hidden curriculum. Several educational theories have been developed to help give meaning and structure to the hidden curriculum and to illustrate the role that schools play in socialization. Three of these theories, as cited by Henry Giroux and Anthony Penna, are a structural functional view of schooling, a phenomenological view related to the "new" sociology of education, and a radical critical view corresponding to the neo Marxist analysis of the theory and practice of education. The structural functional view focuses on how norms and values are conveyed within schools and how their necessities for the functioning of society become indisputably accepted. The phenomenological view suggests that meaning is created through situational encounters and interactions, and it implies that knowledge is somewhat objective. The radical critical view recognizes the relationship between economic and cultural reproduction and stresses the relationships among the theory, ideology, and social practice of learning. Although the first two theories have contributed to the analysis of the hidden curriculum, the radical critical view of schooling provides the most insight. Most importantly it acknowledges the perpetuated economic and social aspects of education that are clearly illustrated by the hidden curriculum.

Various aspects of learning contribute to the success of the hidden curriculum, including practices, procedures, rules, relationships, and structures. Many school specific sources, some of which may be included in these aspects of learning, give rise to important elements of the hidden curriculum. These sources may include, but are not limited to, the social structures of the classroom, the teacher's exercise of authority, rules governing the relationship between teachers and students, standard learning activities, the teacher's use of language, textbooks, audio visual aids, furnishings, architecture, disciplinary measures, timetables, tracking systems, and

39 curricular priorities. Variations among these sources promote the disparities found when comparing the hidden curricula corresponding to various class and social statuses.

Every school is both an expression of a political situation and a teacher of politics.

While the actual material that students absorb through the hidden curriculum is of utmost importance, the personnel who convey it elicit special investigation. This particularly applies to the social and moral lessons conveyed by the hidden curriculum, for the moral characteristics and ideologies of teachers and other authority figures are translated into their lessons, albeit not necessarily with intention. Yet these unintended learning experiences can result from interactions with not only instructors, but also with peers. Like interactions with authority figures, interactions amongst peers can promote moral and social ideals but also foster the exchange of information and are thus important sources of knowledge contributing to the success

of the hidden curriculum. Although the hidden curriculum conveys a great deal of knowledge to its students, the inequality promoted through its disparities among classes and social statuses often invoke a negative connotation.

For example, Pierre Bourdieu asserts that education related capital must be accessible to promote academic achievement.

The effectiveness of schools becomes limited when these forms of capital are unequally distributed. Since the hidden curriculum is considered to be a form of education related capital, it promotes this ineffectiveness of schools as a result of its unequal distribution. As a means of social control, the hidden curriculum promotes the acceptance of a social destiny without promoting rational and reflective consideration. According to Elizabeth Vallance, the functions of hidden curriculum include "the inculcation of values, political socialization, training in obedience and docility, the perpetuation of traditional class structure functions that may be characterized generally as social control." Hidden curriculum can also be associated with the reinforcement of social inequality, as evidenced by the development of different relationships to capital based on the types of work and work related activities assigned to students varying by social class. Although the hidden curriculum has negative connotations, it is not inherently negative, and the tacit factors that are involved can potentially exert a positive developmental force on students. Some educational approaches, such as democratic education, actively seek to minimize, make explicit, and/ or reorient the hidden curriculum in such a way that it has a positive developmental impact on students. Similarly, in the fields of environmental education and education for sustainable development, there has been some advocacy for making school environments more natural and sustainable, such that the tacit developmental forces

40 that these physical factors exert on students can become positive factors in their development as environmental citizens. While studies on the hidden curriculum mostly focus on fundamental primary and secondary education, higher education also feels the effects of this latent knowledge. For example, gender biases become present in specific fields of study? the quality of and experiences associated with prior education become more significant? and class, gender, and race become more evident at higher levels of education. One additional aspect of hidden curriculum that plays a major part in the development of students and their fates is tracking. This method of imposing educational and career paths upon students at young ages relies on various factors such as class and status to reinforce socioeconomic differences. Children tend to be placed on tracks guiding them towards socioeconomic occupations similar to that of their parents, without real considerations for their strengths and weaknesses. As students advance through the educational system, they follow along their tracks by completing the predetermined courses.

Hidden

curriculum refers to the unwritten, unofficial, and often unintended lessons, values, and perspectives that students learn in school. While the "formal" curriculum consists of the courses, lessons, and learning activities students participate in, as well as the knowledge and skills educators intentionally teach to students, the hidden curriculum consists of the

unspoken or implicit academic, social, and cultural messages that are communicated to students while they are in school.

The hidden curriculum concept is based on the recognition that students absorb lessons in school that may or may not be part of the formal course of study- for example, how they should interact with peers, teachers, and other adults? how they

should perceive different races, groups, or classes of people? or what ideas and behaviors are considered acceptable or unacceptable. The hidden curriculum is described as "hidden" because it is usually unacknowledged or unexamined by students, educators, and the wider community. And because the values and lessons reinforced by the hidden curriculum are often the accepted status quo, it may be assumed that these "hidden" practices and messages don't need to change- even if they are contributing to undesirable behaviors and results, whether it's bullying, conflicts, or low graduation and college enrolment rates, for example.

It should be noted that a hidden curriculum can reinforce the lessons of the formal curriculum, or it can contradict the formal curriculum, revealing hypocrisies or inconsistencies between a school's stated mission, values, and convictions and what students actually experience and learn while they are in school. For example, a school may publicly claim that it's committed to ensuring that all students succeed academically, but a review of its performance data may reveal significant racial or socioeconomic discrepancies when it

41 comes to test scores, graduation rates, and other measures of success. And because what is not taught in school can sometimes be as influential or formative as what is taught, the hidden curriculum also extends to subject areas, values, and messages that are omitted from the formal curriculum and ignored, overlooked, or disparaged by educators. While the hidden curriculum in any given school encompasses an enormous variety of potential intellectual, social, cultural, and environmental factors—far too many to extensively catalogue here—the following examples will help to illustrate the concept and how it might play out in schools:

Cultural expectations: The academic, social, and behavioural expectations established by schools and educators communicate messages to students. For example, one teacher may give tough assignments and expect all students to do well on those assignments, while another teacher may give comparatively easy assignments and habitually award all students passing grades even when their work quality is low. In the high expectations class, students may learn much more and experience a greater sense of accomplishment, whereas students in the low expectations class may do just enough work to get by and be comparatively uninterested in the lessons they are being taught. Similarly, schools may unconsciously hold students from different cultural backgrounds—for example, minorities, recently arrived immigrant students, or students with disabilities—to lower academic expectations, which may have unintended or negative effects on their academic achievement, educational aspirations, or feelings of self-worth.

Cultural values: The values promoted by schools, educators, and peer groups, such as cliques, may also convey hidden messages. For example, some schools may expect and reward conformity while punishing nonconformity, whereas other schools might celebrate and even encourage nonconformity. In one school, students may learn that behaviors such as following the rules, acting in expected ways, and not questioning adults are rewarded, while in other schools students learn that personal expression, taking initiative, or questioning authority are valued and rewarded behaviors. Similarly, if biased or prejudicial behaviors and statements are tolerated in a school, students may embrace the values that are accepted or modelled—either explicitly or implicitly—by adults and other students.

Cultural perspectives: How schools recognize, integrate, or honour diversity and multicultural perspectives may convey both intentional and unintended messages. For example, some schools may expect recently arrived immigrant students and their families to “assimilate” into American culture—for example, by requiring the students to speak English in school at all times or by not providing

42 translated informational materials or other specialized assistance. Other schools, however, may actively integrate or celebrate the multicultural diversity of the student body by inviting students and parents to share stories about their home country, for example, or by posting and publishing informational materials in multiple languages. Generally speaking, the concept of a hidden curriculum in schools has become more widely recognized, discussed, and addressed by school leaders and educators in recent decades. Ideas such as “white privilege, equity, and multicultural education to name just a few—have arguably led to greater tolerance, understanding, and even celebration of racial, cultural, physical, and cognitive differences in public schools. In addition, school communities, educators, and students are more likely than in past decades to actively and openly reflect on or question their own assumptions, biases, and tendencies, either individually or as a part of a formal school policy, program, or instructional activity. For example, topics such as bullying and diversity are now regularly discussed in public schools, and academic lessons, assignments, readings, and materials are now more likely to include multicultural perspectives, topics, and examples. Political and social pressures, including factors such as the increased scrutiny that has resulted from online media and social networking, may also contribute to greater awareness of unintended lessons and messages in schools. There are, therefore, a host of obligations that the child is required to shoulder. Together they constitute the discipline of the school. It is through the practice of school discipline that we can inculcate the spirit of discipline in the child”. The hidden curriculum as a socialization of schooling can be identified by the social interactions within an environment. Thus, it is in process at all times, and serves to transmit tacit messages to students about values, attitudes and principles. Hidden curriculum can reveal through an evaluation of the environment and the unexpected, unintentional interactions between teachers and students which revealed critical pedagogy.

Also, many of them claim that the demands of upper and middle class are dominant throughout schooling. Particularly, the concept of hegemony and resistance are significant in the evaluation of hidden curriculum. 1.6

Curriculum Planning, Implementation and Evaluation. Role of Special Teachers of the Visually Impaired 1.6.1 Curriculum

Planning

Curriculum planning is the decision- making process about the content and the

43 organization of learning for which the school is responsible. Different groups of people decide on the variety of topics and issues concerned with the educational needs of pupils.

Building an effective Curriculum is a process developed to help schools and centres review and revise their curriculum structures. Involving the school community Building curriculum is a collaborative process which can be used to involve and engage pupils, parents and other partners. Identifying your priorities for change Staff need to identify and examine together the challenges and opportunities posed by their own school or centre. Tools to support you in reviewing your curriculum structure, including a strategic curriculum planner. A resource to help primary schools evaluate and develop different aspects of their curriculum. A clear and concise 'toolkit' to help secondary schools evaluate their curriculum across the broad general education. Talking Heads implementing Curriculum for Excellence in the senior phase seven head teachers talk about building and developing the curriculum in secondary schools, while parents discuss how the results would affect their children. Putting the learner at the centre through consulting pupils on how learning should be planned. Schools share 'works in progress' illustrating how they are focusing on particular aspects of their curriculum design. The final step in the building curriculum process is to create own curriculum plan. An outline of the framework's role as a technical document for curriculum planners. This template can be used to bring structure to curriculum planning. Materials to help schools and centres agree next steps as they begin to construct a strategic curriculum plan. Involving the school community identifying your priorities for change sharing practice curriculum planning. Religious observance is an essential part of the totality of the learning experience for every young person and supports whole school planning. Good curriculum planning in schools often requires overcoming many obstacles. With very few exceptions, even small scale curriculum planning requires that participants engage in extensive deliberations. Therefore, finding appropriate times for participants to meet is often crucial to the success of a project. Another difficulty is that participants may not be aware that curriculum planning rarely proceeds smoothly along the lines originally envisaged for it, arriving at the one inevitable proposal for curriculum change. In the process of curriculum planning, new ideas surface and new directions are explored. How a planned curriculum is implemented as the enacted curriculum in any school is a complex process that can vary enormously from school to school. The personnel of some schools may prefer to make few changes in the original plan (as in fidelity of use),

44 the personnel of other schools may choose to make many changes (as in mutual adaptation), or -as is often the case there may be considerable differences of opinion among the personnel of any school. The only certainty about curriculum implementation is that there is no one right way of going about it for all teachers in all schools. Curriculum planning can be done through three levels. These are as follows: the planning of policies, the planning of programs, and the planning of lessons. We will focus on how planning by teachers actually proceeds in individual schools, and in so doing, we examine in detail the contributions made to curriculum planning by people often referred to as "key stakeholders." Key stakeholders include teachers, principals, parents, students and external facilitators all the people who for personal or professional reasons ordinarily have the strongest interests in planning. Either their lives are touched directly by the curriculum (as in the case of teachers, parents, and students), or their professional roles include some direct responsibility for the curriculum (as in the case of teachers, principals, and external facilitators). We will look at what happens when a planned or written curriculum is enacted in a classroom. We will consider why the enacted curriculum may differ considerably from the planned curriculum and under what circumstances the differences that occur are desirable or undesirable. In addition we will critically review recent thinking on the process of curriculum implementation, describing both strategies and tactics that seem to work well and what about the process of implementation remains problematic and puzzling to researchers. Ø Objectives: To differentiate among three levels at which curriculum planning occurs in schools: policy, programs and lessons. To reflect on the backgrounds, priorities, and skills ordinarily brought to curriculum planning by key stakeholders, especially teachers, principals, parents, students and external facilitators. To become familiar with the major problems involved in curriculum implementation. To understand the implications of the ideas of fidelity of curriculum implementation and adaptation in curriculum implementation. To critically reflect on the basic ideas that underlies research on curriculum implementation. To critically reflect on some common approaches that has been used in schools to support the process of curriculum implementation. The various players in the curriculum process are teachers, principals, parents, students and external facilitators as you look at the list of players in the curriculum process, you probably identify with many of these

45 roles. You wear many different hats in your professional lives. You are all students. Some of you have administrative duties while others of you will play that role sometime in the future. Many of you are parents. All of you are teachers. Some of you have worked as a consultant or have functioned as an external facilitator for a period of time in one educational setting or another. If there are any of these hats you have not worn, you are well acquainted with people who do wear those hats. Ø Problem to Solve: Marsh and Willis identify three levels of curriculum planning: the planning of policies, the planning of programs, and the planning of lessons. They also point out the role "key stakeholders" such as students, teachers, parents, principals and external facilitators play in the process of curriculum planning. The member of a curriculum planning/problem solving group two distinguished external facilitators have agreed to work with you in small groups. Each facilitator has a pressing problem your group needs to help solve. Elementary School who are wrestling with the challenges of program accountability as Teachers in Need of Assistance (TINA). Ø Curriculum Process: Each external facilitator will "call" their respective group together by posting an initial message to the group. Email addresses are listed on the committee roster above. This initial posting should establish the setting for the problem. Each committee member should respond to their committee's curriculum problem from the perspective of their assigned role. Each committee member must weigh in on questions related to their issue as found on the description linked as well as any additional information provided by the curriculum facilitator. The deliberation activity of the committee will constitute the group discussion for the week minimum of three postings. By the end of the week each facilitator will post to the listserv the recommendations of their Curriculum Planning/Problem Solving Committee. These will be available for review by both curriculum groups. Any member of either curriculum group will then be welcome to comment on the outcome of each committee's curriculum work.

1.6.2 Implementation After the preparation of learning materials or activities which all come under curriculum, the next step is the implementation of curriculum in the classroom. This is the stage of 46 actual teaching- learning or transaction of curriculum. Teachers, principals, supervisors and members of school management are given training in the proper implementation of curriculum. The following factors leading to the efficient implementation of the curriculum: ●●●● Adequate preparation of the teachers by the boards and State Departments of Education for meeting the changed requirements of the new curriculum. ●●●● Sufficient supply of the teaching aids and equipment needed for the implementation of the curriculum. ●●●● Receptivity of the community to the new curriculum ●●●● Adequate preparedness of the students to accept the new curriculum with its additional requirements of energy, money and time ●●●● Adequate supervisory and guidance facilities for teachers needed for effective implementation of the curriculum. The term "implementation" includes to activities, the first that relates to preparatory activities that need to be completed once curriculum has been developed and made public. The second relates to transaction .Implementation is that which works to relate the identification of those activities that need to be completed well before transaction this activities can be three categories: 1. Activities to be completed before implementation 2. Activities to be completed during implementation 3. Activities to be completed after implementation The first to activities listed above are important as they influence curriculum transaction. The last one is important as it is key to curriculum review and revision. Thus a provision needs to be provided in curriculum planning that after development of curriculum, a comprehensive road map will be developed to ensure that all necessary preparatory activities are pre-planned. By way of illustration listed below some activities that must be completed before and after implementation face.

47 Road map for curriculum implementation 1.6.3 Evaluation In relation to curriculum, evaluation is the process of making value judgements about the merit or worth of a part or the whole of a curriculum.

The nature of a curriculum evaluation often depends on its audience and purpose. The potential audiences include: Policy makers and other stakeholders (administrators, teachers, students, parents, communities) - to inform future action. (Donors - to attract funding or to report on the utilization of funds. Researchers - for international comparison and identification of effective practices.) Evaluation of curricula is typically concerned with the: Impact of 48 the curriculum: on individual students, their needs, their level of engagement and their performance? On society, including the appropriateness of values communicated and attitudes fostered, and the level of public satisfaction? on the economy including labour markets as an indicator of economic development? Process through which the curriculum was developed? Content and design of the curriculum compared with: recent social, technological, economic or scientific changes? Recent advances in educational research and educational paradigms? Possible future directions for curriculum change. So it may be say that curriculum evaluation refers to evaluation of the different components of curriculum.

Meaning

of Curriculum Evaluation essentially is the provision of information for the sake of facilitating decision making at various stages of curriculum development. This information may pertain to the program as a complete entity or only to some of its components. Evaluation also implies the selection of criteria, collection and analysis of data. It includes obtaining information for use in judging the worth of a programme and procedure. It is a comprehensive term and transcends standardized tests covering all means of ascertaining the results of construction. Evaluation of curriculum is an integral and essential part of the whole process of curriculum development. It is a continuous activity and not a "tail- end-process". Evaluation and planning are complementary processes which occur almost simultaneously and continuously. Planning is made on the basis of evaluation and vice versa. However, as a separate state evaluation has its own entity.

The importance of curriculum evaluation is to determine the value of the curriculum itself is the curriculum appropriate for the particular group of students with whom it is being used? Are the instructional methods selected, the best choices in the light of the objectives sought? Is the content the best that could be selected? Are the materials recommended for instructional purpose appropriate and the best available for the purpose envisaged? ●●●●

Objectives of Curriculum Evaluation

1. To determine the outcomes of a programme. 2. To help in deciding whether to accept or reject a programme. 3. To ascertain the need for the revision of the course content.

4. To help in future development of the curriculum material for continuous improvement. 5. To improve methods of teaching and instructional techniques. ●●●●

Types of Curriculum Evaluation

According to Scriven, following are the 3 main types

1. Formative Evaluation. It occurs during the course of curriculum development. Its purpose is to contribute to the improvement of the educational programme. The merits of a programme are evaluated during the process of its development. The evaluation results provide information to the programme developers and enable them to correct flaws detected in the programme. 2. Summative Evaluation. In summative evaluation, the final effects of a curriculum are evaluated on the basis of its stated objectives. It takes place after the curriculum has been fully developed and put into operations. 3. Diagnostic Evaluation. Diagnostic evaluation is directed towards two purposes either

for

placement of students properly at the outset of an instructional level (such as secondary school), or to discover the underlying cause of deviancies in student learning in any field of study. 1.6.4

Role of

Special Teachers of the Visually Impaired

A Teacher of Students with Visual Impairments (also called a Teacher of the Visually Impaired, a vision specialist, VI teacher, vision itinerant teacher, etc.) is typically a licensed special education teacher who has received certification and specialized training, in meeting the educational needs of students who are blind or have visual impairments ages birth through 21 (states vary on the criteria for certification as a Teacher of Students with Visual Impairments). This is an instructional position, as opposed to a related service or vision therapy.

The role of the Teacher of Students with Visual Impairments (TVI)

is to provide direct and/or consultative special education services specific to vision loss. The TVI provides support to students, teachers, and parents and acts as a liaison with community services. The TVI works with the educational team by advising the team about ways of enhancing the student's learning by adapting activities and materials to the student's abilities.

Although the TVI is not an academic tutor, they may spend some time ensuring that the student understands concepts introduced in academic

courses. The TVI may help choose appropriate educational materials, and may brainstorm with teachers and therapists about effective adaptations. By working together, classroom teachers, therapists, and the TVI can create a classroom environment that encourages independence, academic success, and prepare the student to be the most productive member of society they can be.

The teacher of students with visual impairments

is the central figure on the educational team for a visual impairment. This is the professional who has expertise in how visual impairment affect child's development and learning, as well as the strategies and tools that can help child learn about the world, perform everyday activities, and participate in the general curriculum and other activities in school. Therefore, child is likely to be working with the teacher of students with visual impairments on a day to day basis. He or she will probably serve as the coordinator of the educational team and as a resource for the other team members, including their parents. It may sometimes hear this teacher referred to as a "vision teacher" or by the abbreviation "TVI." The specific responsibilities of the teacher of students with visual impairments may vary, depending on child's age and needs, the goals his educational team sets for him, the type of educational program child participates in, and the policies of the particular school district. The role of the teacher of students with visual impairment may include some or all the following: teaching the specific skills that child needs to learn because of his visual impairment. Generally these are adapted ways of doing everyday activities and methods of participating in the school curriculum, such as reading and writing in braille, using a low vision device, or independent living skills. These skills are often known as the expanded core curriculum.

Conducting various assessments of the child to determine his abilities and needs working with other family members in various ways, such as helping to learn skills which need to teach such as helping them to learn skills that need to teach the child or suggesting ways to arrange their home or do household chores that will make it easier for the child to participate in family life making referrals for additional services which child may need, such as for orientation and mobility (O&M) instruction or a clinical low vision evaluation from a low vision specialist meeting with family members, the child's regular education teacher, and other members of the educational team to discuss his progress and make suggestions for strategies to make his school work accessible and to include him to the greatest extent possible in all school, classroom, and extracurricular activities

preparing or obtaining learning materials, textbooks, and examinations in the appropriate accessible format for the child (such as braille, large print, audio, or electronic format) analysing the classroom and other environments for access and safety related to a student's

51 visual impairment or blindness, and advising other members of the team about how best to organize the classroom and materials providing consultation and training for teachers, Para educators, and other school personnel on effective strategies for teaching students with visual impairments directing the Para educator, if one has been assigned to the child or his class, in providing support to the child. Teachers of students with visual impairments often work as "itinerant" teachers, which mean that they travel from school to school within a particular area or school district to work with the students to whom they've been assigned. At the school, there are different ways in which the teacher of students with visual impairments might work with the child.

For example, they may work together in the child's regular classroom to help with the on-going lesson, in an empty classroom, or in a designated resource room, alone or with a group of students. The teacher of students with visual impairments might also meet with the child before or after school. Or, he or she might only observe the child occasionally in order to consult with the regular education teacher about your child's progress. How often they meet depends on the services designated by your child's Individualized Education Program (IEP) (or Individualized Family Service Plan (IFSP) if he is younger than 3 years old). Because the teacher of students with visual impairments has an on-going role with a child in teaching the expanded core curriculum, it's important to understand that he or she is not responsible for teaching the general education curriculum that all students learn in school. That role belongs to the classroom teacher. The responsibilities of the classroom teacher with regard to the child might be summarized as follows: teaching academic and social curricula, assigning grades, and maintaining discipline for all students in the class, including the child who is visually impaired providing textbooks and instructional materials to the teacher of visually impaired students in a timely manner so that the material can be prepared in alternate formats that the child needs communicating and meeting regularly with the teacher of visually impaired students to discuss the child's progress and plans for meeting his future educational and social needs creating a classroom climate that is comfortable for all students The teacher of students with visual impairments' contribution to the general education classroom is to consult with the classroom teacher on ways of making the general curriculum accessible to the child be responsible for preparing classroom materials in formats that are accessible to the child. The teacher of students with visual impairments

may also teach some of the concepts that the child needs to learn in preparation for a particular lesson. For example, to prepare the child for a science lesson about eclipses, the teacher of students with visual impairments may use hands on materials to teach concepts about

52 the sun, moon, and earth and the rotation and revolution of the planets that might be taught to the rest of the class using pictures. Since

both the teacher of students with visual impairments and the

regular classroom teacher play such a central role in your child's education, it's important for these two professionals to remain in close contact about the best ways of meeting child's needs.

The Teacher of Students with Visual Impairments (TVI) has the following roles and responsibilities: ●●●● Has primary responsibility for specialized instruction and services required meeting the unique educational needs of her visually impaired students? ●●●●

Possesses the skills and abilities necessary to provide and coordinate this specialized instruction. ●●●● Assists the student, parents, special and regular education personnel, and the student's sighted peers in understanding the unique educational needs and learning characteristics of visually impaired students, becoming aware of services and support available from local programs for

visually impaired students, acquiring

information regarding local, state, and national resources

for the education of

visually impaired students, and interpreting the visually impaired

student's specific eye condition, the educational implications of the visual impairment, and the results of functional vision and learning media assessments. ●●●●

Consults regularly with the classroom teacher, other regular and special education personnel, parents, and others to coordinate programs and services for

the visually impaired student. ●●●●

Assists the site administrator and teachers in making environmental adjustments for the student in the school. ●●●●

Shares responsibility

with classroom teachers in the identification of instructional areas in which the student requires assistance. ●●●●

Assures that large-type or braille texts, supplementary materials, educational aids, and equipment needed by the visually impaired student, and the classroom teacher, are provided in a timely manner

to ensure the student's maximum participation in all classroom activities (appropriate educational materials may be prepared or adapted by the VI teacher, or they may be obtained from educational, clerical, or transcribe services.)

53 ●●●●

Provides instruction

in the development and maintenance of skills to meet the student's unique educational needs in the following areas, as indicated in the IEP: ✓✓✓✓✓ low vision & visual efficiency skills, ✓✓✓✓✓ concept development & academic skills,

✓✓✓✓✓

daily living skills, ✓✓✓✓✓ career & vocational education skills, ✓✓✓✓✓ communication skills (these skills include braille reading and writing as appropriate), ✓✓✓✓✓ Social/emotional skills and abilities, & sensory motor skills. ✓✓✓✓✓

Prepares

sequential and meaningful instruction geared to the student's assessed needs, IEP goals and objectives, functioning, and motivational

levels. This instruction should be reflected in

weekly or monthly lesson plans, as appropriate. ✓✓✓✓✓

Provides assistance to

the classroom teacher in academic subjects and activities of the classroom that, as a direct result of the student's visual impairment, require adaptation for the student. ●●●●

Provides initial and on-going assessment: consults with assessment team to determine appropriate testing materials and modifications needed, assists with assessments when needed, interprets assessment results when needed. ●●●●

Conducts functional vision/learning media assessments and produces written reports. ●●●● Attends ARD and IEP meetings for students with visual impairments. ●●●●

Schedules time efficiently for assessment, instruction, planning, preparation of materials, travel, and conferences with relevant school and other key individuals. ●●●●

Maintains on-going

contact with parents to assist them in the development of a realistic understanding of their child's abilities, progress, and future goals. ●●●● Provides in-service training programs for school personnel and students and education for parents regarding the needs of visually impaired students

and adaptations, programs, and services for these students. ●●●● Makes available

pamphlets, films, and other public information materials that may be useful in developing realistic and unprejudiced attitudes toward

visually impaired students.

54 ●●●● Coordinates

with

other personnel, such as transcribers, readers, counsellors, O&M specialists, career/vocational education staff, and rehabilitation

counsellors. ●●●● Maintains a

current reference library of professional materials and resources. ●●●● Acquires information and training about current research, development, and technology. ●●●●

The Classroom Teacher (regular, special class, or resource specialist has the following roles and responsibilities: ●●●●

Provides instruction

in appropriate academic and non-academic content areas to the visually impaired student in the classroom. ●●●●

Works cooperatively with the teacher of students with visual impairments to identify the student's areas of educational need, including unique education needs, coordinate instruction and services to meet these needs,

provide, in a timely manner,

classroom materials that need to be reproduced in another medium, determine mutually convenient times during the school day for scheduling

the teacher of students with visual impairments to work with the student,

modify classroom procedures and environment to meet the specific needs of the visually impaired student for

participation in classroom activities,

and exchange information concerning the visually impaired student with parents and other individuals on a regular basis.

The Orientation and Mobility Specialist has the following roles and responsibilities ●●●● Instructs the visually impaired student

in the development of skills and knowledge that enables him or her to travel independently,

based on assessed needs and ability. ●●●● Teaches the visually impaired student

to travel with proficiency, safety, and confidence in familiar and unfamiliar environments. ●●●●

Consults regularly with

sighted peers, parents,

classroom teachers, physical education teachers, and/or other special education personnel to assist in home and classroom environmental modifications, adaptations, and considerations and to ensure reinforcement of appropriate

O&M skills that will encourage the visually impaired student to travel independently in these settings. ●●●● Works with the teacher of students with visual impairments to conduct the functional vision assessment as it relates to independent

travel. ●●●●

Conducts assessments that focus on both long and short-term needs of the student.

55 ●●●● Includes in the assessment report the needs and strengths of the student and an estimate of the length and frequency of service necessary to meet identified needs. ●●●● Prepares

sequential and meaningful instruction geared to the student's assessed needs, IEP goals and objectives, functioning, and motivational

levels. This instruction should be reflected in

weekly or monthly lesson plans, as appropriate. ●●●●

Prepares

and uses equipment and materials, for example, tactile maps, models, distance low vision devices, and long canes,

for the development of

O&M skills. ●●●● Transports the student with parent permission

to various community locations, as necessary, to provide meaningful instruction in realistic learning environments. ●●●● Is responsible for

the student's safety

at all times and in all teaching environments while fostering maximum independence. ●●●●

Evaluates the student's progress on an ongoing basis with progress reports each 6/9 weeks as required. ●●●●

Keeps progress notes on each student. ●●●● Participates in necessary parent conferences and meetings. ●●●● Provides in-service training to regular and special education personnel, sighted peers, and parents concerning the O&M needs of the student and appropriate methods and procedures for interacting with the visually impaired person that will foster maximum independence and safety. ●●●●

Provide O&M instruction, where appropriate, in a number of specific

areas: ✓✓✓✓ body imagery, ✓✓✓✓ laterality, ✓✓✓✓ environmental concepts, ✓✓✓✓ gross and fine motor skills related to independent travel, ✓✓✓✓ sensory awareness, stimulation, and training, ✓✓✓✓ spatial concepts, ✓✓✓✓ compass direction concepts, ✓✓✓✓

sighted guide procedures ✓✓✓✓ basic protective and information-gathering techniques

56 ✓✓✓✓

orientation skills ✓✓✓✓ map skills ✓✓✓✓ cane skills, ✓✓✓✓ use of residual vision ✓✓✓✓ low vision devices related to travel skills ✓✓✓✓

urban, suburban, and rural travel, ✓✓✓✓ travel in business districts, ✓✓✓✓ procedures for crossing streets including how to deal with traffic control signals, ✓✓✓✓ use

of public transportation systems, ✓✓✓✓ procedures for use of the telephone for information gathering and for emergencies, ✓✓✓✓

procedures

for interacting with the public ✓✓✓✓ knowledge and application of community address systems, ✓✓✓✓ procedures for travel and independent functioning in places of public accommodation, ✓✓✓✓ skills of daily living, ✓✓✓✓ sensory/motor skills in coordination with the physical or occupational therapist and teacher of ✓✓✓✓ students with visual impairments,

and ✓✓✓✓ Skills for independent living.

What to expect from the Teacher of Students with Visual Impairments: ●●●● Interpret Medical Reports As part of determining a student's eligibility and the impact of the visual impairment, the Teacher of Students with Visual Impairments will need to have the skills and training to read and interpret medical eye reports. The TVI will determine the implication thereof for educational and home environments. ●●●● Conduct Specialized Assessments and Make Recommendations The TVI will conduct Functional Vision Assessments to determine how much usable vision a student has to perform visual tasks. This assessment is initially conducted to

57 determine the need for services from a teacher of students with visual impairments and to determine appropriate goals and level of support needed. This evaluation is updated at a minimum, every three years to determine on-going eligibility and need for school based vision services. The TVI may also recommend appropriate specialized evaluations as needed, particularly in low vision, orientation and mobility, and adaptive physical education. This evaluation is conducted even if the student has no usable vision. ●●●● Actively Participate in the Individualized Education Program (IEP) The TVI will need to communicate with the team members on how the student's performance may affect their school performance by providing information on the student's

learning style, utilization of visual information, and other strengths unique to individual

students who are visually impaired. The TVI will identify any

goals and objectives in specialized areas related to the visual needs of the student.

The TVI will also

identify instructional methods and materials for meeting goals and objectives.

Finally, the TVI will recommend appropriate service delivery options, including class placement, physical education, related services,

specialized equipment (/assistive- technology.html),

adaptations in testing procedures, and time frames for implementation. Consideration will be taken as to the current and future reading and writing media for the student with a visual impairment based on reading distance, reading rates and accuracy, portability of reading skills, visual fatigue, and tactual sensitivity. •••• Recommend Educational & Instructional Strategies The TVI will assist in determining and procuring classroom equipment and materials necessary for the student with visual impairments to learn (braille, low vision devices, assistive technology, computer) including ensuring necessary room modifications and lighting changes. The TVI will provide the classroom teacher with information regarding the specialized strategies needed to teach a student who is blind or visually impaired. The TVI will also assist in obtaining specialized materials, including procuring materials from the American Printing House for the Blind (APH), providing braille, recorded/ enlarged materials, and other needed materials. •••• On-going Observations The TVI conducts on-going observations of the student in a variety of familiar situations performing routine tasks or activities to assess how the student is using their vision. In doing this, the TVI can and out what motivates the student to look. The TVI will then use objects and activities similar to those that have been motivating in the past. It is also

58 beneficial to get an understanding of how the student spends their time. What does the student do? How does the student play and with what? Where do they go? Who do they play or interact with? This is a process to identify the student's existing (and desired) activity setting. These observations will assist the TVI in ensuring the goals and accommodations as well as level of service

in ensuring the goals and accommodations as well as level of service continue to be appropriate. •••• Use of Natural Environments to Address Goals

Teaching techniques to enhance vision should not be taught in isolation. It is important to look at what the needs and activities of the student are in school and in their everyday life that are a?acted

by their visual performance, and teach to those tasks. If the family/ teachers are interested in obtaining other objects for the student to play with, then the TVI can assist the family and/or teacher in obtaining such items. The responsibility of the TVI is to support the student with what he/she has everyday access to, where he/she is, and sharing information that matches the student's/families/classroom priorities (watching television, playing on the computer, playing with toys or games). These activities provide multiple learning opportunities. It is easy to take in a bag of toys, but more challenging and appropriate to explore existing toys that the student will have daily access to, for continued exposure/practice.

Learning takes place at all times, so it is best to use what is available/accessible to give the student more practice in using existing skills and developing new abilities. "Toy bag treatment sessions" typically do not promote functional skill use and learning in natural settings. Some skills are best addressed outside of the regular classroom to avoid visual and auditory distractions. The goal should be to learn the skills and then begin to transfer those skills during classroom activities. ••••

Communication with Caregivers and Classroom Teachers The TVI will want to have on-going communication with the caregivers and classroom teachers in order to try to develop a better understanding of the student. An itinerant teacher will not have the same rapport with the student as they do not spend as much time with them. For that reason, it is helpful to talk with parents and classroom teachers who do have this rapport about how they feel the student is doing, if they are addressing the goals and how the student is functioning. The TVI may ask to observe the teacher working with the student to observe how the student is functioning within the normal routine and with familiar adults. •••• Direct Instruction in the Expanded Core Curriculum

59 The TVI will determine which areas of the Expanded Core Curriculum (ECC), a unique curriculum that addresses needs a student who is blind or visually impaired may have that are not addressed within the standard curriculum.

Although not all students will have needs in all areas of the ECC, the areas of the ECC include: Compensatory, Functional and Communication Skills; Sensory Efficiency; Orientation & Mobility; Social; Independent Living; Recreation & Leisure; Use of Technology; Career & vocational; and Self Determination. 1.7

Core Curriculum and Expanded Core Curriculum- Meaning, Need and Components 1.7.1
meaning

of core curriculum: The core curriculum relies on structuring. It attempts to develop integration to serve the needs of students and to promote active learning and significant relationship between life and learning. Organization of curriculum is based on different point of views. Many educationist have considered the curriculum and its content in different manner, some considered psychological aspects and others have taken philosophical dimensions. There can be some components which may be included and there are others which need not be included in the curriculum. A student can choose the components as per their requirements. Still there are some components which are essential for every student irrespective of their specific requirements. These essential components are termed as core curriculum. Educators define 'core curriculum' as knowledge and skills expected to be learned by a student by high school graduation.

Generally, the core curriculum consists of knowledge and skills related to academic subjects. Mastery of the core curriculum is

what both parents and teachers stress as essential for academic demands of the core curriculum. 1.7.2 need of core curriculum: Generally many words like fixed, essential, centered etc. are being used synonymously for core which means compulsory. The term 'core' refers to the educational concept, which was used in 1940's for the first time. The intention of this concept is to make the component of curriculum more meaningful to all students. According to Oliver 1965, the core concept has two basic components: time and philosophy. Time is usually

60 administered through a block time concept. For example, two or more concepts are joined together in order to study a wide range of related topics. Whereas the philosophy of 'core' involves the breaking down the strict boundaries between two difference concepts. Manning and Oliver have mentioned that students may study a topic from literacy, historical, mathematical, educational, sociological, psychological and artistic, viewpoints concurrently rather than study them in an isolated manner. But according to Dewey's philosophy of experimentalism is the basis for the core curriculum. Dewey viewed learning as continuous reconstruction of experiences and problem solving as an important part of learning. Cultural facts have contribution towards the nature of core proposals. On the other hand according to cognitive theories of learning dynamic and organic process are the components of core curriculum. The core curriculum's primary focus is on academic content. In any educational setup the core curriculum is deemed central and usually mandatory for all students of a school

system. According to the report on the core curriculum the core curriculum referred to intellectual experiences and skills that are required for all students. Educationists have defined core curriculum as curriculum is which a few subjects are essential and others are elective. The core subjects have to be studied by each student whereas elective subjects can be opted on the basis of individual interest and abilities through which child can get the experiences of the problems related to self and society and thus to improve his future life. The main purpose of core curriculum is to develop a human being and human society as well. So the needs of core curriculum are as follows- ●●●● Learning experience and process from the backbone of core, not mastery of factual knowledge subject serves as a mean or tool for engaging common social and personal needs, not as an end in itself. ●●●● Core curriculum emphasizes problem solving by the group across fields and discipline textbooks and teachers do not control the agenda. ●●●● More time is required for core curriculum than the standard framework. ●●●● Core curriculum becomes the organizing scheme for the entire school experiences, non core curriculum are activities, supplement core curriculum activities. ●●●● Teachers guide students inside and outside the classroom, option, working with the same pupils for few years.

61 ●●●● The basic needs and learning experiences of student take precedence over subject matter. The basic needs can be addressed in various manners. The learning experiences must engage the students to move forward towards freedom held out by liberal education. ●●●● The contents in core curriculum integrated through various disciplines, themes, content, skills, ways of knowing, modes of teaching-learning process and combination of all these. In other words, integration in core curriculum is basically a cross-disciplinary approach. ●●●● The contents of core curriculum emphasis on problem solving and discussion. In core curriculum teacher act as integrators, agenda, settlers, modules of interpretive discovers, partners in conversation and mentors rather than as authoritative distributors of knowledge. ●●●● In core curriculum learning is not restricted to the walls of classrooms. Most of the components of core curriculum include the informal activities outside the classroom. For example common meals at mess, lectures, films, field trips, etc. in core curriculum one to one instruction is possible even out- side of the classroom. ●●●● In core curriculum the contents can be provided to the students through original to be the students through original materials like film, art, music, drama, or any other original source it is not necessary to use book in curriculum transaction through core curriculum. ●●●● Subject matter is considered as crucial as they are applied to original sources core curriculum is also able to pressure or interpret the knowledge. ●●●● The contents of core curriculum have a common benefit of the students. It is the most essential characteristic of which state its essentiality to all beneficiaries. The core curriculum also involves a special programme for faculty development. ●●●● Core curriculum is flexible in nature. There is provision of including the specific needs and interest of the students. ●●●● All activities of core curriculum is designed and prepared by the collective efforts of teacher and the students as well. It is common belief that through such step the students can be well versed with every step of core curriculum. A teacher can play a crucial role as a specialist and leader of a group.

62 ●●●● The areas of core curriculum are essential for all students. Core curriculum is designed through equal experiences. It is believed about these experiences that these are essential for every segment of society and its members irrespective of their ability, social status and vocational plans. 1.7.3 Components of Core Curriculum Components of core curriculum depend on various objectives. These are as follows- ●●●● Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information. ●●●● Communication Skills - to include effective development, interpretation and expression of ideas through written, oral and visual communication. ●●●● Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions ●●●● Teamwork - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal ●●●● Personal Responsibility - to include the ability to connect choices, actions and consequences to ethical decision-making ●●●● Social Responsibility: to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

By the use of these objectives the core curriculum follows various components, which are very helpful for making a person being a human. Here the components of core curriculum are discuss underline- 1. Communication Courses in this category help in understanding, and building the skills needed to communicate persuasively. Course involve the command of oral, aural, written, and visual literacy skills that enable people to exchange messages appropriate to the subject, occasion, and audience
Fundamental to academic and professional success is the ability to communicate ideas clearly, accurately, and in an engaging way. The Core writing component enhances students' capacity to organize, to analyse, to interpret, and to argue persuasively and ethically. The writing component enables students to produce work of increasing complexity for multiple audiences.

Courses included in the communication component of the core curriculum are designed to enable the student to communicate 63 effectively in a style appropriate to the subject, occasion, and audience.
Courses listed in this area of the core must be designed to help students develop the Student Competencies listed below. Student Competencies 1. To understand and demonstrate effective written, oral and visual communication processes through invention, organization, drafting, revision, editing, and presentation. 2. To

choose a method of communication appropriate to a specified purpose and audience. 3. To weigh alternative viewpoints and work collaboratively with others in producing or analysing effective communication messages. 4. To organize ideas logically around a central theme in paragraphs, sections, and entire works using appropriate grammar, syntax, punctuation, and spelling. 5. To develop claims or hypotheses through analysis, drawing appropriate conclusions, and using well-reasoned arguments and supporting evidence while identifying logical flaws and fallacies and weighing alternative viewpoints. 6. To describe the ethical consequences and implications of one's messages on audiences. 7. Students will be able to think, read, and write analytically, critically, and creatively. 8. They will be able to express ideas coherently, to work with a variety of research methods, and to construct effective arguments using appropriate evidence.

2. Language, Philosophy

and Culture - Courses in this category focus on how ideas, values, beliefs, and other aspects of culture express and affect human experience. Courses involve the exploration of ideas that foster aesthetic and intellectual creation in order to understand the human condition across cultures 2.1

Modern and Classical Languages The Modern and Classical Language component provides students with a level of proficiency in a second language sufficient to insure successful communication in the cultural environment of the chosen language. Integral to the acquisition of communicative competency is the development of cultural sensitivity to different patterns of thought

64 and values. Study of a second language enhances analytical skills, broadens one's vision of the global dimensions of knowledge, and helps foster respect for the value and diversity of human life. The language component can enhance the major field of study and cross disciplinary inquiry by providing access to information and ideas otherwise unavailable.

Student Competencies 1. Students choosing a modern language will demonstrate the ability to handle communicative tasks and to express personal meaning in the second language at a level equivalent to "Intermediate" as described in the language proficiency guidelines of the Council of Teachers of Foreign Language. 2. Students will also show an understanding and an awareness of cultural differences. Students opting for a classical language will demonstrate an ability to understand texts of intermediate difficulty in the chosen language. 2.2 Philosophy A key element in Catholic and Jesuit education, philosophy provides a rational and critical way of examining fundamental, enduring questions about the human condition. These questions include the relationship of self and society and the foundations of sciences, aesthetics, and religion, especially the existence and nature of the divine. Philosophy assists students to examine critically their ethical convictions by exploring the best rational justifications for ethics given in Western philosophy. Thus, Core philosophy courses prepare students to approach critically and rationally the problems of the self, society, God, and ethical life. Student Competencies 1. Students will acquire a basic understanding of some of the foundational texts in philosophical thought. 2. They should be able to think independently and creatively about questions relating to humanity, to evaluate and to formulate philosophical arguments, and to understand the possible rational justifications for their beliefs. 2.3

Cultural Diversity The Core Curriculum Cultural Diversity component is addressed by two courses: one in "Cultural Diversity in the country" and one in "Global Citizenship." For the Purpose and Student Outcomes of each of these courses, please consult the following :

65 1.

Theological Studies Growth in theological understanding is rooted in the mission of Saint Louis University as a Catholic, Jesuit institution. The Theological Studies component promotes this growth in three phases: (

a) Discovery: Students are introduced to the Hebrew and Christian scriptures from historical and literary perspectives, to fundamental theological concepts, and to the early history of Christianity. (b) Insight: Phase 2 focuses on comparative theology (the search for truth and meaning in the major world religions) and broadens understanding of universal as well as specific theological concepts. (

c) Integration: Students learn to apply essential religious and theological insights to specific social and cultural contexts, moral choices, professional and personal lifestyles, and global realities.

Courses included in the humanities component of the core curriculum are designed to expand students' knowledge and understanding of the human condition and human cultures through the critical study of works of human imagination and thought. Courses listed in this area of the core must be designed to help students develop the following Student Competencies. Student Competencies 1. To critically analyse and interpret works and their impact on human life and society in a discipline such as literature. 2. To articulate an informed response to those works that demonstrates an awareness and appreciation of their content, scope, and variety 3. To describe the role of those works as expressions of individual or shared human values within a historical and social context. 4.

Students will acquire the capacity for critical, informed, and creative theological inquiry as a means of deepening their understanding of theological concepts and the human condition. 5. Their study of theology will lead them to examine their own religious experience and to apply theological thought to their personal and professional lives in the service of humanity. 2. World History In an increasingly interconnected society, it is important for students to understand the range of human history in all areas of the world.

Courses in this category focus on the consideration of past events and ideas relative to the States, with the option of including History for a portion of this component area. Courses involve the interaction among 66 individuals, communities, states, and nation, and the world, considering how these interactions have contributed to the development of the United States and its global role

The History component of the Core provides students with an introduction to the political, religious, cultural, economic, and social forces that have shaped the modern world from the origins of humanity to the present. These classes help students develop an understanding of historical causation and expose them to the accomplishments of both Western and non- Western civilizations. By encouraging better appreciation of the factors that created our present society, the History component of the Core enables students to be more effective world citizens.

Courses included in the history category focus on the consideration of past events and ideas relative to the country's, with the option of including history for a portion of this component area. These courses involve the study of the interaction among individuals, communities, states, the nation, and the world, considering how these interactions have contributed to the development of the country and its global role. Courses listed in this area of the core must be designed to help students develop the Student Competencies listed below. Student Competencies 1. To evaluate sources, methodologies, and interpretive strategies historians use to investigate and narrate the past. 2. To articulate and analyse how institutions, cultures, concepts, or relationships change over time. 3. To interpret events, texts, and arguments within their political, economic, cultural, and/or social historical context and as expressions of individual beliefs, values, and decisions. 4.

Students will develop an understanding of the historical factors that created and continue to shape the modern world. 5. They will also come to appreciate the world's many diverse cultures and important contributions they have made. Students should be able to understand how seemingly discrete events are linked over time, and they should learn to read carefully and analyse critically. 3.

Literature The study of literature is a key element in understanding the imagination and the different ways reality can be perceived. The literature component of the Core promotes an 67 appreciation of the text as a creative act and an expression of the human search for meaning. Students are introduced to various methods of interpreting texts that can also enhance inquiry in other fields. Student Competencies 1. Students will attain an understanding of the power of language to shape ideas, values, and the ways men and women are defined. 2. Using critical methods and theories of interpretation, students will be able to analyse and evaluate different cultural, ethical, and aesthetic dimensions of writing and literature. 6. Fine Arts The arts reflect and engage the world around us. They feed the imagination and provide a unique opportunity to study humanity, aesthetics, and cultural values. Courses in

this category focus on the appreciation and analysis of creative artifacts and works of the human imagination. Courses involve the synthesis and interpretation of artistic expression and enable critical, creative, and innovative communication about works of art.

Through courses in art history, studio art, music, or theater, students learn to observe critically, to think creatively, and to appreciate different modes of self-expression and cultural expression.

Courses included in the visual & performing arts component of the core curriculum are designed to help students develop engagement with and aesthetic appreciation of the visual and performing arts; understand works of visual and performing art in their historical, cultural, and social contexts; and/or apply themselves to

creative process or interpretive performance and experience the physical and intellectual demands required of the visual or performing artist.

All courses in the visual and performing arts area of the core curriculum must be designed to help students develop all of the following Student Competencies. Only courses of three hours or more may be included. Student Competencies 1. To demonstrate awareness of the range of works in some area of the visual or performing arts, as well as articulate an aesthetic appreciation of and informed critical response to such works through inquiry, and analysis, evaluation and synthesis of information. 2. To convey interpretative and/or creative responses to artworks by means of effective development, interpretation and expression of ideas through written, oral and visual communication.

68 3.

To evaluate different points of view and to work effectively with others to support a shared interpretative or creative purpose or goal. 4. To analyse how the works being studied and/or created are expressions of individual or broader human values within a historical, cultural or social context, as well as the importance of visual or performing arts in defining or exploring a culture or community. 5.

Students will be able to identify creative expression and to recognize how art reflects and challenges cultural values. 6.

They will demonstrate the ability to evaluate artistic accomplishments. 5. Mathematics

Courses in this category focus on quantitative literacy in logic, patterns, and relationships. Courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience.

The mathematics Core component promotes proficiency in methods of thought that are inherent to mathematics. These methods include pattern recognition, symbolic abstraction and manipulation, logical and critical analysis, and synthesis.

This component helps students develop an appreciation for mathematical modes of thought, a notion of what mathematical skills entail, the development of some of these skills, and a sense of how mathematical methods can be brought to bear in other fields of study.

Courses included in the mathematics component of the core curriculum are designed to enable the student to competently use mathematical strategies to understand and solve problems. Courses listed in this area of the core must be designed to help students develop the Student Competencies listed below. Student Competencies 1. To accurately manipulate and analyse numerical data using mathematical strategies. 2. To apply appropriate mathematical strategies to solve a given problem and assess the reasonableness of the results. 3. To effectively express and communicate the results of problem-solving using appropriate mathematical language and symbolism. 4.

Students will begin to achieve an understanding of mathematics not simply as a collection of memorized formulas and techniques, but also as a logically developed structure whose abstract methods of problem solving have real-life applications.

69 5. Students will be able to solve mathematical problems and comprehend the logic underlying the solutions 8.

Physical/ natural and Life/ social Sciences - Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences. 6. 1

Natural Sciences Scientific inquiry provides a unique way of exploring, knowing, and creating. Courses in science encourage students to think critically about how they can better understand the world around them. These courses help students attain conceptual tools and methodologies to gather, analyse, interpret, understand, and present an array of data. Through the science component of the Core, students develop an understanding of how science benefits and impacts society, empowering them to become active participants in an increasingly complex world.

The Natural Science & Technology component of the core curriculum serves to give students an appreciation of the current state of knowledge in two or more areas of natural science and technology. Courses included in this component of the core curriculum are designed to help students understand the methods, approaches and theories that scientists use to answer questions about the natural world. A total of nine hours is required to complete the core Natural Science & Technology component, including a depth requirement and a breadth requirement. The depth requirement, consisting of six hours of coursework in a single field of study, is intended to introduce students to the most fundamental and important concepts in the natural sciences. The breadth requirement consists of three additional hours of coursework in a second field of study. To satisfy the depth requirement, students must select from the recommended sets of courses listed in the catalogue in the Natural Science & Technology Part I core list. The course selected to satisfy the breadth requirement may come from either the Natural Science & Technology Part I list or the Part II list. Courses listed in this area of the core must be designed to help students develop all Student Competencies listed below. Student Competencies 1. To effectively communicate what scientific theories and methods tell us. 2. To work effectively with others when approaching a scientific problem.

70 3. To identify, analyse, and synthesize the information needed to solve a scientific problem. 4. To accurately apply quantitative methods when solving scientific problems. 5.

Students will be able to understand and engage in the process of scientific inquiry. 6. They will become familiar with methodological approaches that enable natural scientists to evaluate and solve problems effectively. 7. Students will also appreciate how the scientific process combines technical and creative aspects and depends on the cooperation and interaction of scientists with each other. 6.2 Social Sciences

Courses in this category focus on the application of empirical and scientific methods that contribute to the understanding of what makes us human. Courses involve the exploration of behaviour and interactions among individuals, groups, institutions, and events, examining their impact on the individual, society, and culture. Courses included in the social or behavioural sciences component area of the core curriculum are designed to help students understand the methods, approaches, and theories that social scientists have developed to understand societies and the relationship of individuals to societies. :

As future leaders in a complex and inter-related society, students need to understand the human and social world around them. Social science courses promote this understanding by providing knowledge and methodologies that help students examine the foundations of human behaviour and the origins and consequences of social institutions. Tools of systematic social inquiry introduced in these classes enable students to construct and critically assess claims about social life and to become more effective and ethical problem solvers. Social science courses help students appreciate how their personal and professional actions can accommodate the world's diversity and promote a more peaceful and just society at all levels of citizenship.

All courses in this area of the core curriculum must be designed to help students meet the following Student Competencies. Student Competencies 1. To demonstrate an understanding of empirical methods, approaches, technologies that social and behavioural scientists use to investigate the human condition, as well as the resulting data, and to communicate these understandings effectively.

71 2.

To examine social institutions and processes across a range of historical periods, social structures, and cultures. 3. To analyse the effects of historical and social forces on regional, national, and global communities. 4.

Students will acquire conceptual tools and methodologies to analyse and understand their social world. With these tools, they will be able to act in their world more effectively and become forces for positive change. 5. They will gain a better understanding of human diversity. Students will be able to think and write critically about human behaviour and community. 6. They will become aware of the various methodological approaches used by social scientists. 7.

Political Science Courses in this category focus on consideration of the Constitution of the States and the constitutions of the states, with special emphasis on that which want to teach. Courses involve the analysis of governmental institutions, political behaviour, civic engagement, and their political and philosophical foundations. Courses included in the core component area must focus on consideration of the Constitution of the States and the constitutions of the states. These courses involve the analysis of governmental institutions, political behaviour, civic engagement, and their political and philosophical foundations. A total of six hours is required to complete this component area and must include at least one course with special emphasis on the constitution. Courses listed in this area of the core must be designed to help students develop Student Competencies one through four. Courses listed in this area of the core, which include a special emphasis on five competency of the students . Student Competencies 1. To demonstrate a broad understanding of political behaviour and institutions in the States, including detailed knowledge of the Constitution of the States and its origins. 2. To apply basic social science concepts and theories to develop and evaluate social science data. 3. To organize and express ideas in a clear and logical fashion through written, oral, or visual communicative messages.

72 4. To analyse the role of civic duties, personal and social responsibility, and ethical decision-making as they relate to political behaviour. 5. To demonstrate a broad understanding of political behaviour and institutions, including detailed knowledge of the constitution and its origins. Foundations Explorations Integrations •••• Critical thinking and •••• Ethics •••• Experiential learning writing 1 •••• Civic engagement for social justice •••• Critical thinking and •••• Diversity and perspectives •••• Advanced writing writing 2 •••• Arts •••• A cluster of courses •••• Cultures and ideas 1 •••• Natural sciences with a shared theme •••• Cultures and ideas 2 •••• Social sciences •••• Second language •••• Religion, theology and •••• Mathematics culture 2 •••• Religion, theology •••• Cultures and ideas3 and culture1 •••• Science technology •••• Religion, theology and society and culture3 1.7.4 Meaning of

Expanded Core

Curriculum The term

expanded core curriculum (ECC) is used to define concepts and skills that often require specialized instruction with students who are blind or visually impaired in order to compensate for decreased opportunities to instruction with students who are blind or visually impaired in order to compensate for decreased opportunities to learn incidentally by observing others.

In addition to the general education core curriculum that all students are taught, students with visual impairments, starting at birth, also need instruction in the ECC. The ECC areas include (A)

needs

that result from the visual impairment that enable the student "to be involved in and make progress in the general education curriculum?"

and (

B)

other educational needs that result from the child's disability"

as required by IDEA

require the flexibility of

school districts to make

73 arrangements for services to occur "beyond regular school hours to ensure the student learns the skills and receives the instruction" in the ECC.

The

Expanded Core Curriculum

compensatory or functional academic skills, including communication modes

orientation and mobility social interaction skills independent living skills recreation and leisure skills career education

use of assistive technology

sensory efficiency skills

Self-determination The Expanded Core Curriculum

Nine Unique Educational Needs for

Students with Visual Impairments

The Expanded Core Curriculum (ECC) is the body of knowledge and skills that are needed by students with visual impairments due to their unique disability specific needs.

Students

with visual impairments need the expanded core curriculum in addition to the core academic curriculum of general education.

The ECC should be used as a framework for assessing students, planning individual goals and providing instruction. The expanded core curriculum is a set of skill areas developed to augment the traditional core curriculum. The expanded core curriculum includes areas of instruction specific to students with visual impairments. Intervention from a teacher for students with specific to students with visual impairments. Intervention from a teacher for students with visual impairments is necessary to provide direct instruction in the expanded core. What does IDEA say about the expanded core curriculum (ECC)? •••• Each disability requires that a broad set of disability-specific skills and abilities be addressed. For students with visual impairments, the disability-specific skills are within nine domains and collectively known as the "expanded core curriculum" (ECC). When the domains in the ECC are systematically and intentionally addressed by all members of the instructional team, the student's independence and readiness for the post-school environment are dramatically improved. A visual impairment can affect all areas of functioning, well beyond the classroom. The ECC extends beyond reading, writing, and calculation. It includes those skills necessary to benefit from instruction in the core curriculum and to achieve functional independence. ••••

The

ECC stems from the following IDEA requirements for evaluations: For children who are blind or visually impaired, evaluations to document the present level of academic and functional performance for the development of the individualized education program (IEP) are required by the federal Individuals with Disabilities Education Act 74 ••••

And specially designed instruction:

Specially designed instruction means adapting, as appropriate to the needs of an eligible child under this part, the content, methodology, or delivery of instruction to address the unique needs of the child that result from the child's disability. •••• Assumptions: While the concepts and skills affiliated with the expanded core curriculum (ECC) have been described for many years as those needed for students with visual impairments, the term "expanded core curriculum" (or "ECC") may be new to administrators, and possibly to VI professionals. Assessment and instruction for students with visual impairments in the ECC domains may be completed by the VI professional, or other members of the educational team, including family members. Districts

that

have not been active in ensuring that each student has been assessed in all of the ECC'

The two things I use every day of my life are social skills and orientation and mobility skills. . . . Those were the lowest priorities for my teachers when I was in school.' (K. Carley, an adult with a visual impairment in a speech to the International Council for Education of People with Visual Impairments.)

Every parent wants their child to have meaningful social relationships. For parents, this is not an "optional" activity. It is critical to a satisfying life and success in a job. The ECC Districts

who have not been active in ensuring that each student has been assessed in all of the ECC domains, may develop a plan to identify priority domains and timelines for completion of the assessments. While all students should be periodically assessed in all of the ECC domains, not all students will require instruction in every domain every year. Due to the non-traditional, but required nature of the ECC domains and the requirement in IDEA that instruction takes place in the home, school, and community, districts may need.

As per IDEA: Specially designed instruction means adapting, as appropriate to the needs of an eligible child under this part, the content, methodology, or delivery of instruction to address the unique needs of the child that result from the child's disability.

From

IDEA regarding evaluations: For children who are blind or visually impaired, evaluations to document the present level of academic and functional performance for the development of the individualized education program (IEP) are required by the federal Individuals with Disabilities Education Act. From IDEA regarding specially designed instruction:

Specially

designed instruction means adapting, as appropriate to the needs of an eligible child under this part, the content, methodology, or delivery of instruction

75 to address the unique needs of the child that result from the child's disability. "Specially designed instruction" for students with visual impairments, and based on assessment, specially designed instruction

is the expanded core curriculum (ECC). The "expanded core curriculum" refers to the knowledge, concepts, and skills typically learned incidentally by sighted students that must be sequentially presented to the student who is blind or has low vision. The expanded core curriculum

areas include: 1.

Needs

that result from the visual impairment to enable the student "to be involved in and make progress in the general education curriculum?"

And 2. Other educational needs that result from the child's disability"

as required by IDEA.

The presence of a visual impairment requires that these skills be thoroughly evaluated and systematically taught to these students by teachers with specialized expertise. Without specialized instruction, children with vision loss may not be aware of the activities of their peers or acquire other critical information about their surroundings. 1.7.5

Need of Expanded Core Curriculum: Every student is expected to leave high school with a strong grasp of "core" subjects like math, language arts, science, and history.

But in order to master these subjects, and to eventually live and work independently, students who are blind or visually impaired must learn an additional set of skills known as the "expanded core curriculum."

Essential life skills including social interaction, independent living, career education, and communication modes such as braille, must be taught alongside basic academics.

For a student who is blind, learning about world geography from books is not enough. That student must also learn orientation and mobility skills and practice using a white cane for safe, independent travel.

The expanded core curriculum empowers students with disabilities to access their education and make their own choices throughout life.

Whether they are socializing and learning to handle money in the student store, finding their own way to classrooms across campus, or playing adapted sports in gym class, students are building a foundation for success in life at Perkins and beyond. "If students do not have these skills in place, they cannot become productive, independent adults," Teaching students with visual impairments in public schools while sighted children use visual experiences throughout their lives to learn concepts casually or incidentally, students who are visually impaired with or without additional disabilities cannot rely on sensory observations.

The foundational skills they need for daily life in school, at home, and in the community, must be strategically taught and integrated into all aspects of their

76 education.

The

ECC areas include: compensatory skills, including communication modes (adaptations needed for students to access core subjects such as braille, sign language, or tactile symbols);

orientation and mobility; social interaction skills; independent living skills; recreation and leisure skills; career education; assistive technology;

sensory efficiency skills;

and self-determination.

To prepare lunch, students must plan the meal, shop for ingredients, and help out in the kitchen with everything from chopping carrots to cleaning dishes. The assignment requires students to practice orientation and mobility, independent living skills including handling money and cooking, reading recipes in braille, social interaction, and self-determination. "It takes a lot of practice for students to integrate these skills into their bodies and minds," parents to work closely with teachers of the visually impaired to ensure ECC skills such as the use of assistive technology, career education, and independent living, are well incorporated into their child's individual education plan (IEP).

In short, systematically addressing the expanded core curriculum (ECC) makes a dramatic difference on how prepared students are for their next environment.

Consider: Students with visual impairments attend postsecondary institutions at a rate that is comparable to students without disabilities. 29.4% of students with visual impairments are competitively employed versus 69% youths in general. 46.4% of students with visual impairments live independently versus 60% youths in general. "Vocational skills training for youths with visual impairments needs to incorporate the use of compensatory skills." Having ECC skills makes "the difference between life and a successful life." "Students who receive high-quality instruction in the ECC have a 'richer quality of life' than do those who do not".

Education director about changing to an ECC-based program. What is the role as an administrator? As an administrator, have the unique role of ensuring that the ECC will be implemented in own district. Implementation will include issues related to staffing, service provision, and professional development.

Let's get started! Role of VI professionals in the ECC and staffing issues

Teachers certified in visual impairments (TVIs) and orientation and mobility specialists (COMS/O&Ms) certainly play a large role in providing assessment and instruction in the ECC. VI professionals are not the only key players. They provide: assessment and evaluation, direct instruction, consultation, collaboration, and facilitation with community and state wide resources. However, the scope of the competencies in the ECC and the need for instruction in the home, school, and community will require increased participation and creativity. VI professionals and others may require periodic changes in work shifts, collaboration with non-traditional partners, and various types of transportation support. Solid 77 supervisory/administrative support also includes ensuring that there is: evidence of ECC assessments in evaluation reports, evidence of IEP goals based on ECC evaluations, and evidence of ECC instruction during staff observations, including the performance evaluation.

There are innumerable ways to support this change to an ECC-based VI program. Here are just a few examples: Support training for VI/O&M staff on addressing ECC needs through conferences, regional service centres, and other professional development activities. Provide resources for on-going

data collection to VI/O&M staff to complete ECC checklists/evaluations as part of FVE/LMA and O&M evaluations.

Provide strong support and time for collaborative team discussions on multidisciplinary approaches to addressing student ECC needs. Collaboration requires time? Without it, meetings collapse or become non-productive. Encourage creativity to meet the ECC instructional options. Consider time outside of the regular school day to accomplish ECC instruction Flexible schedules before and after school. Summer instruction Facilitate transportation Facilitate community exploration and experiences

Student information needed to support either a caseload analysis or the ECC is very similar. Each will support the other. Starting with assessment as in other programmatic areas, a VI program based on the ECC requires plans for assessment and instruction. Many districts find that they have not completed assessments in all areas of the ECC. The VI professional or other team member may say "She/He can do that," but not have data to show whether target behaviour is age appropriate or generalizes to other settings or environments. For example, the classroom social skills may not be the skills most desired on the playground, at church, or in a social gathering.

The hardest part is just getting started. However, armed with a plan and a timeline, completing assessments in all required areas can be accomplished. ❖❖❖❖❖ Evaluate student needs Review the existing documentation about the students. Look for the following documents: ●●●● Eye examination report ●●●● Referral and parental permission ●●●● Functional vision evaluation and learning media assessment ●●●● Additional evaluations, such as an O&M evaluation, assistive technology, adapted P.E. evaluation, clinical low-vision evaluation, and others, depending on individual students. ●●●● Data-driven evaluations in all areas of the ECC. Multiple formal and informal evaluations and checklists exist. Two excellent resources are Evals: Evaluating

78 Visually Impaired Students from TSBVI and ECC checklists, including those developed by Education Service Centre. ❖❖❖❖❖ Prioritize domains for additional assessment. It isn't always possible to address all areas that may arise from your review at once. Gather feedback from students, parents, general and special educators, and support staff. Then determine a plan to address areas of concern as you build capacity ensuring that in the future all students are fully assessed. For example, set goals for the next round of assessments, including: Domains that are especially sparse will be an early focus. ❖❖❖❖❖ Develop an assessment plan Gather your resources It all starts with a plan. It doesn't have to happen all at once.

Access to the ECC has provided the vehicle for transforming students with visual impairments' independence and opportunity for enhanced postsecondary outcomes. Special Education director about changing to an ECC-based program.

Once your priorities are set, determine how you will address the additional evaluations needed.

Resources like Evals: Evaluating Visually Impaired Students (TSBVI) can be invaluable. Evals provides a detailed listing of specific areas addressed in school curricula.

While the names and

organizations will differ from state to state, the knowledge and skills will be equivalent. Evals has thousands of specific skills that can use to form checklists to meet your specific needs. The ECC Checklists from the Region 10 Education Service Centre bring all of the Evals data into a single document. The checklists can also be used to track progress over a period of years.

An

important consideration when using multiple assessment partners, especially when using checklists, is having a common understanding of the criteria for completion. This can be a common problem when one person thinks a student's skill is "good enough" and another thinks it is still "emerging." This can be due to expectations or issues in generalizations across environments. Regardless, consistency in scoring is a key factor to viable assessments. One way to ensure consistency in scoring criteria is to have a common scoring tool used across as many assessments as is reasonable. One tool could be the scoring criteria developed by Functional Resources, Inc. for the Functional Skills Screening Inventory. There is a basic one and variations for different environment and employment situations. Determine who will complete which necessary assessments. Some skills can be assessed in special education classes, including early childhood and life-skills type classes. General educators, including vocational and physical education specialists, are valuable assessment partners. Parents can assist with assessments in the home and community. Students may attend special events, such as workshops or camps, where the assessments take place. The assessment

79 partners may need training on how to use specific assessment instruments. It may be as little as helping them understand the criteria for "independent" on a checklist, or it may be more extensive. If more extensive help is needed, professional development should be part of the implementation plan and the schedule should be adjusted as appropriate.

Depending on plan to develop comprehensive evaluations for the ECC, schedule for assessments may be part of the re-evaluation process. Or the assessments may be scheduled to happen during the year in accordance with other academic and non-academic events. It could also take place during the summer, or while on field trips. The important thing is to have a schedule, one that is well known and viable for all team members. Embarking on a direct and high-quality program to support instruction in the expanded core curriculum (ECC) requires commitment and knowledge.

The ECC has also made it easier for collaboration and co-treat models in for O&M, as well as speech, OT and AT. Special Education director about changing to an ECC-based program.

Ø Commit to the change.

With a clear understanding of the expanded core curriculum, you are ready to guide your program to the next step in excellence. As a team, you and the VI professionals in your district will develop the resources and skills to implement this proactive change. The commitment to move to ECC-based programming may be a significant change and may affect many areas of the program, ranging from how educators and support staff spend their time, how professionals develop plans and approaches, to how educational teams interact. However, the result will be students who are better able to (a) benefit from the core curriculum, (b) transition to and function in their next environment, and (c) engage in a variety of social and career options with safety and confidence.

Ø

Once the information is gathered from checklists, screenings, or other evaluations, the next step is to determine priorities, both for individual students and the program as a whole. It is possible that a review of all (or a sample of) the summary checklists indicates that many of your students have limited understanding in one or more areas. If so, then a plan to address the professional development and the acquisition of necessary resources will be needed.

Ø The challenge is to think outside of the box and find more focused means of meeting the ECC program goals? to develop and use new collaborative relationships and use available time in more varied ways. Ø Ensure that VI professionals focus and teach only in expanded core domains. Other educators have the expertise and are available to teach core topics.

Eliminate

80 tutoring from the VI professional's day. If a student is having trouble in a core area, is it because she or he doesn't know how to use the tools needed to access the information? Or is the reason more content-driven? For example, if a student is having trouble with spelling, the TVI will help if she can't use her magnifier to read the spelling words, but if she is having trouble remembering how to spell, someone else is better suited. Ø Examine strengths and weakness in VI professionals. When a TVI or O&M specialist is unsure or unskilled and is responsible to working in a domain, the instruction will be less efficient, less effective, and will require more time. Help VI professionals in your district access the needed professional development and ensure that the new skills get implemented into daily routines. Develop appropriate and shared responsibilities of all team members. This may require new relationships, or changes in existing partnerships. Ø Given the scope of the ECC and the range of caseloads, it is expected that some level of professional development will be needed. In addition to what neighbouring, regional, and state educational organizations and agencies provide, an increasing

Social skills and assistive technology are particular areas I note intense student growth. Special Education director about changing to an ECC based program.

Amount of targeted professional development options are available. More and more organizations are offering training via distance learning options, either through webinars, compressed video networks (interactive television systems), or any combination of like approaches. Also, since many distance learning training options are either free or have a single cost attached, more members of the student's educational team may attend, thereby incorporating the new information into a variety of learning environments.

Ø

For some districts, incorporating the ECC will be a big change. It may be part of a 2-3-year plan to move toward excellence. Also, given the scope of the expanded core curriculum, it may require considerations in instructional and staffing arrangements. Below is brief listing of various options for your consideration as you and your VI professionals map out this new programmatic approach to visual impairments.

Direct instruction with the VI professional(s) This may or may not be different from how instruction is currently delivered. The focus of the instruction may shift. Rather than providing tutoring services, the VI professional may instead increase instruction in how to access the general curriculum using, for example,

81 low-vision devices. Or instruction may occur more often out of the classroom, off the campus and into the community for vocational programming. Ø Collaboration with other team members, including parents and community organizations

Collaboration, or collaborative consultation, is an active process that takes place in the student's learning environment -whether home, school, or community. The VI professional may be present in classrooms and learning environments not visited previously, such as the home economics class, work programs, or home. Collaboration may also happen with community programs, such as Girl Scouts or various hobby-related groups, such as horseback riding or sports programs. Regional and state wide events can also provide experience and instruction in the expanded core curriculum domains.

Ø Many states have access to summer and holiday programs through a variety of sources. These may include camps, such as those sponsored by: Lion's Clubs, short-term programs at residential schools rehabilitation organizations Lighthouse for the Blind independent living centre's regional education service centre's adult mentoring can also be a very powerful tool. When students are connected with an adult with a visual impairment, they (and their parents) can get a better understanding of what will be expected of them once they leave the school system. Ø For many districts, moving to an ECC-based program may be a big change and may require more than 1 year to complete. Here are a few tips for supporting this change: Remember options for addressing the ECC. Provide strong support and ample time for collaborative team discussions on multidisciplinary approaches to addressing students' ECC needs.

Provide resources for on-going data collection to VI/O&M staff to complete ECC checklists/evaluations as part of functional vision evaluations/learning media assessments and O&M evaluations. Expect data collection and assessments to be part of standard instructional practices. Support training for VI-related team members on addressing ECC needs through conferences, regional service centres, TSBVI Outreach, and the like. Ø When using multiple people to assess students and collect data, ensure that there is a common understanding of criteria and ratings. Work with VI professionals to find solutions for addressing ECC goals. Consider using time outside of the regular school day, including the use of exchange and/or comp time, instruction before and/or after the school day, and summer instruction. Provide support for transportation and community exploration and experiences.

82 1.7.6 Components of Expanded Core Curriculum: The Nine Components or domains of the Expanded Core Curriculum are as follows: ●●●● Compensatory or functional skills:

Compensatory or functional skills needed to access the general curriculum. Literacy- related areas, such as braille, handwriting skills, low-vision devices and tactual or object symbols.

Compensatory and functional academic skills, including communication modes.

Communication, including alternative communication systems, such as tactile or object- oriented systems.

Compensatory skills involve the adaptations necessary for accessing the core curriculum, which can include: braille, tactile symbols, sign language, and recorded materials. On the other hand it may be say that Compensatory or Functional Academic Skills, Including Communication Modes (Note: for this area of

the expanded core curriculum for blind and visually impaired students, a distinction must be made between compensatory skills and functional skills.

Compensatory skills are those needed by blind and visually impaired students in order to access all areas of core curriculum.

Mastery of compensatory skills will usually mean that the visually impaired student has access to learning in a manner equal to that of sighted peers. Functional skills refer to the skills that students with multiple disabilities learn that provide them with the opportunity to work, play, socialize, and take care of personal needs to the highest level possible.).

in many cases it find that

Compensatory and functional skills include such learning experiences as concept development, spatial understanding, study and organizational skills, speaking and listening skills, and adaptations necessary for accessing all areas of the existing core curriculum. Communication needs

will vary, depending on degree of functional vision, effects of additional disabilities, and the task to be done. Children may use braille, large print, print with

the use of optical devices, regular print, tactile symbols, a calendar system, sign language, and/or recorded materials to communicate.

Regardless, each student will need instruction from a teacher with professional preparation to instruct students with visual impairments in each of the compensatory and functional skills they need to master. These compensatory and functional needs of the visually impaired child are significant, and are not addressed with sufficient specificity in the existing core curriculum.

So it will find

Compensatory skills include skills necessary for accessing the core curriculum including concept development?

Communication modes? Organization and study skills? Access to print materials?

and the use of braille/

Nemeth,

tactile graphics, object and/or tactile symbols, sign language, and audio materials.

Or Compensatory or functional academic skills, including communication modes-skills that a student with a visual impairment must

83 acquire to access the regular curriculum. These skills include learning braille, study and organizational skills, spatial understanding, and any adaptation of the existing curriculum. ●●●●

Orientation and Mobility:

Orientation and mobility instruction enables students of all ages and motor abilities to be oriented to their surroundings and to move as independently and safely as possible.

Travel skills start in infancy and are not restricted to only those who are mobile, blind, or are without additional disabilities.

Students learn about themselves and their environments, including home, school, and community. O&M lessons incorporate skills ranging from basic body image, spatial relationships, and purposeful movement to cane usage, travel in the community, and use of public transportation. Having O&M skills enables students to acquire independence to the greatest extent possible, based on their individual needs and abilities.

As a part of the expanded core curriculum, orientation and mobility is a vital area of learning.

Skills

to orient children who are

visually impaired to their surroundings and travel skills

to enable them to move independently and safely in the environment.

Teachers who have been specifically prepared to teach orientation and mobility to blind and visually impaired learners are necessary in the delivery of this curriculum.

Students will need to learn about themselves and the environment in which they move from basic body image to independent travel in rural areas and busy cities.

The existing core curriculum does not include provision for this instruction. It has been said that the two primary effects of blindness on the individual are communication and locomotion. The expanded core curriculum must include emphasis on the fundamental need and basic right of visually impaired persons to travel as independently as possible, enjoying and learning from the environment through which they are passing to the greatest extent possible.

In these skills involved in independent travel and the concepts that underlie spatial reasoning and navigation. Safe and efficient travel throughout the environment. This procedure fully possible by the help of a specialized instruction, such as numerous methods to represent spatial, environmental, and temporal and/or body concepts, including those too small, large, or dangerous to be experienced directly. ●●●●

Social Interaction Skills: Social interaction skills include awareness of body language, gestures, facial expressions, and personal space. Instruction also includes learning about interpersonal relationships, self-control, and human sexuality.

Almost all social skills are learned by visually observing other people. Instruction in social interaction skills in school, work, and recreational settings is crucial.

Almost all
social skills

used by sighted children and adults have been learned by visually observing the environment and other persons, and 84 behaving in socially appropriate ways based on that information. Social interaction skills are not learned casually and incidentally by blind and visually impaired individuals as they are by sighted persons. Social skills must be carefully, consciously, and sequentially taught to blind and visually impaired students.

Nothing in the existing core curriculum addresses this critical need in a satisfactory manner. Thus, instruction in social interaction skills becomes a part of the expanded core curriculum as a need so fundamental that it can often mean the difference between social isolation and a satisfying and fulfilling life as an adult.

Or it may be say that

having appropriate social skills

can often mean the difference between social isolation and a fulfilling life as an adult.

Since nearly all social skills are learned by observation of the

environment and people, this is an area where students with vision loss need careful, conscious and explicit instruction.

Because acquisition of the subtle modes of interaction that people develop by watching, imitating, and reacting to each other. Where

visual impairments can socially isolate a student and affect his or her ability to benefit from innumerable non-verbal social cues. This can have an effect on the student's personal life and future employment. •••••

Independent Living Skills: Independent living skills include the tasks and functions people perform in daily life to increase their independence and contribute to the family structure. These skills include personal hygiene, eating skills, food preparation, time and money management, clothing care, and household tasks.

This area includes

the tasks and functions people perform in daily life to optimize their independence - skills such as personal hygiene, food preparation, money management, and household chores.

This area of the expanded core curriculum is often referred to as "daily living skills."

It consists of all the tasks and functions persons perform, in accordance with their abilities, in order to lead lives as independently as possible. These curricular needs are varied, as they include skills in personal hygiene, food preparation, money management, time monitoring, organization, etc.

Some independent living skills are addressed in the existing core curriculum, but they often are introduced as splinter skills, appearing in learning material, disappearing, and then reappearing. This approach will not adequately prepare blind and visually impaired students for adult life. Traditional classes in home economics and family life are not enough to meet the learning needs of most visually impaired students, since they assume a basic level of knowledge, acquired incidentally through vision.

The skills and knowledge that

sighted students acquire by casually and incidentally observing and interacting with their environment are often difficult, if not impossible, for blind and visually impaired students to learn without direct, sequential instruction by 85 knowledgeable persons.

The myriad of skills that assists with living is primarily learned visually. Students with visual impairments are likely to need structured instruction in personal, financial, and/or home management skills. Family members may help facilitate learning these skills.

People with vision typically learn such daily routines through observation, whereas individuals with visual impairments often need systematic instruction and frequent practice in these daily tasks.

It can include cooking, personal hygiene, money management, time monitoring, and organization. These are often skill areas that children with visual impairments do not develop because they do not observe them in others and they are often not explicitly taught. •••••

Recreation & Leisure Skills:

Skills to ensure students' enjoyment of physical and leisure-time activities, including making choices about how to spend leisure time.

Skills in recreation and leisure are seldom offered as a part of the existing core curriculum. Rather, physical education in the form of team games and athletics are the usual way in which physical fitness needs are met for sighted students.

Many of the activities in physical education

are excellent and appropriate for visually impaired students. In addition, however, these students need to develop activities in recreation

and leisure

that they can enjoy throughout their adult lives. Most often sighted persons select their recreation and leisure activity repertoire by visually observing activities and choosing those in which they wish to participate.

The teaching of recreation and leisure skills to blind and

visually impaired students must be planned and deliberately taught, and should focus on the development of lifelong skills. That while physical fitness is generally addressed in the regular curriculum, activities that can be used to actively fill leisure time are often not addressed. Without direction instruction, it is not likely that a child will be exposed to the range of activities possible.

Students need to be exposed to recreation and leisure activities, as exposure may not happen incidentally. Students should be made aware of modifications needed to make an activity accessible.

Being unable to observe others reduces awareness of recreation and leisure options. Instruction in recreation and leisure skills will ensure that students with visual impairments will have opportunities to explore, experience, and choose physical and leisure-time activities, both organized and individual, that they enjoy. This instruction should

focus on the development of life-long skills. •••••

Career Education:

Career education-

as in many of the other areas listed, children with visual impairments are often not exposed to a large variety of career options. This is both because of a lack

86 of prior visual experiences and because of a perception that the range of options is severely limited for children with visual impairments. Unemployment and underemployment is one of the biggest problems facing adults with visual impairments in today's society.

Students with vision loss benefit most from an experiential learning approach. Structured visits to community sites and discussions with people who perform various jobs, enable them to understand concepts and specific skills that are needed to be successful in those jobs.

Considering the national rate of unemployment or underemployment of working-age adults who are blind is 70% -75%, this area needs attention throughout the school years to help students with vision loss develop marketable job skills.

With limited ability to learn about employment options via observation, students need to be taught about the various types of career options and the skills necessary to achieve personal goals.

Career education will provide students with visual impairments of all ages the opportunity to learn through hands on experiences about jobs that they may not otherwise be aware of without the ability to observe people working. They also learn work-related skills such as assuming responsibility, punctuality, and staying on task. Career education provides opportunities for students to explore and discover strengths and interests and plan for transition to adult life.

There is a need for general vocational education, as offered in the traditional core curriculum, as well as the need for career education offered specifically for blind and visually impaired students. Many of the skills and knowledge offered to all students through vocational education can be of value to blind and visually impaired students.

They will not be sufficient, however, to prepare students for adult life, since such instruction assumes a basic knowledge of the world of work based on prior visual experiences. Career education in an expanded core curriculum will provide the visually impaired learner of all ages with the opportunity to learn first-hand the work done by the

bank teller, the gardener, the social worker, the artist, etc. It will provide the student opportunities to explore strengths and interests in a systematic, well-planned manner. Once more, the disadvantage facing the visually impaired learner is the lack of information about work and jobs that the sighted student acquires by observation. Because unemployment and underemployment have been the leading problem facing adult visually impaired persons in the United States,

this portion of the expanded core curriculum is vital to students, and should be part of the expanded curriculum for even the youngest of these individuals. •••••

Assistive Technology: Assistive technology is a powerful tool that can enable students with vision loss to

87 overcome some traditional barriers to independence and employment.

Assistive technology is an umbrella term that includes assistive and adaptive tools as well as instructional services that can enhance communication, access, and learning.

Access to information in "real time" is a key issue for students with visual impairments. High- and low-tech strategies may be critical for students to access the general curriculum and enhance communications.

Use of assistive technology can be a great tool for providing access to information for people with visual impairments.

Whether it is through speech, braille, or large print output, the use of technology gives a person with a visual impairment access to information at approximately the same time as a person who is sighted. It

can include electronic equipment such as switches, mobile devices, and portable notetakers? computer access such as magnification software, screen readers, and keyboarding? and low-tech devices such as an abacus, a braille, Active Learning materials (e.g., Little Room®), and optical devices.

Technology is a tool to unlock learning and expand the horizons of students.

It is not, in reality, a curriculum area. However, it is added to the expanded core curriculum because technology occupies a special place in the education of blind and visually impaired students. Technology

can be a great equalizer. For the braille user, it allows the student to provide feedback to teachers by first producing material in braille for personal use, and then in print for the teacher, classmates, and parents. It gives blind persons the capability of storing and retrieving information. It brings the gift of a library under

the fingertips of the

visually impaired person. Technology enhances communication and learning, as well as

expands the world of blind and visually impaired persons in many significant ways.

Thus, technology is a tool to master, and is essential as a part of the expanded core curriculum. ●●●●

Sensory Efficiency Skills:

Sensory efficiency includes instruction in the use of vision, hearing, touch, smell, and taste.

It also addresses the development of the proprioceptive, kinaesthetic, and vestibular systems.

Learning to use their senses efficiently, including the use of optical devices, will enable students with visual impairments to access and participate in activities in school, home, and community environments.

Students are likely to need structured and systematic instruction in visual, tactual, and auditory skills in order to benefit from other areas of the general curriculum and the expanded core curriculum.

Or these skills are

help students use the senses - including any functional vision, hearing, touch, smell, and taste - to access skills related to literacy and concept development.

But now a day sensory efficiency includes instruction in

the use of residual vision, hearing, and the

other senses? for example, learning how to use optical devices, hearing aids, augmentative communication devices, and the like. In addition, learning how to integrate

all remaining senses to counter the impact of any missing or impaired sense is also integral to this area?

for example, learning how to use tactual, gustatory, and olfactory input rather than visual cues to identify one's personal possessions, or using hearing and the other senses to identify people one knows without visual cues, fits into this area.

Visual efficiency skills that although the amount and type of vision varies greatly among individuals, a common requirement is instruction in using what vision they have efficiently. For a student with a field loss, it might be viewing print eccentrically to maximize clear perception of the print. For another student it might be paying attention to objects in their peripheral field when walking to get as much advance warning of impending obstacles as is possible. Every person's situation will be different: that is why it is important to involve the TVI in the development of the activities designed to answer the needs outlined in the expanded core curriculum. ●●●●

Self-Determination: Self-determination includes decision-making, self-advocacy, and individual responsibility. These skills lead to competence, as opposed to "learned helplessness," and are appropriate for all students, at all ages and abilities.

It also

includes choice-making, logic-making, problem solving, personal advocacy, assertiveness, and goal setting. Students with visual impairments often have fewer opportunities to develop and practice the specific skills that lead to self-determination. Students who know and value who they are and who have self-determination skills become effective advocates for themselves and therefore have more control over their lives.

Skills to enable students to become effective advocates for themselves based on their own needs and goals.

In

this

area of the ECC

highlights the importance of believing in oneself, while understanding one's abilities and limitations.

Students learn from successes and failures how to achieve one's goals in life. Self-determination is the ability for people to control their lives, reach goals they have set and take part fully in the world around them. Bringing together all of these skills learned in the expanded core curriculum produces a concept of the blind or visually impaired person in the community. It is difficult to imagine that a congenitally blind or visually impaired person could be entirely at ease and at home within the social, recreational, and vocational structure of the general community without mastering the elements of the expanded core curriculum. What is known about congenitally blind and visually impaired students is that, unless skills such as orientation and mobility, social interaction, and independent living are learned, 89 these students are at high risk for lonely, isolated, unproductive lives. Accomplishments and joys such as shopping, dining, attending and participating in recreational activities are a right, not a privilege, for blind and visually impaired persons. Responsibilities such as banking, taking care of health needs, and using public and private sectors. 1.8 Let Us Sum Up Curriculum refers

to the total structure of ideas and activities developed by an institution to meet the needs of students and to achieve the desired educational aims.

A well designed and properly implemented curriculum can help aesthetic, emotional, ethical, intellectual, physical, social, spiritual and vocational development of a child.

Curriculum

is needed for national development, developing democratic life, rising standard of living, national integration and international understanding. Curriculum is all short experiences gained by the students in school through various planned activities and informal activities with the support teachers. 1.9 Check Your Progress 1. Describe the significance and need of curriculum. 2. Describe different types of curriculum. Which type of curriculum do you prefer? Discuss briefly. 3. What are the major factors that lead to the efficient implementation of the curriculum? 4. What are the various approaches to curriculum development? Explain one of them. 5. Write the needs of expanded core curriculum in special education. 6. What is core curriculum? Explain the difference between core curriculum and expanded core curriculum. 1.10 References 7. AGGARWAL, J.C(1990) Curriculum Reforms in India, Delhi, Doaba House 8. Wilson, Bob (1987) The System Design of Training Courses. Lancashire: The Parthenon Publishing Group Limited 90 9. Bradley, L. H. (1985). Curriculum leadership and development handbook. Englewood Cliffs, NJ: Prentice Hall. 10. Brandt, R. S. (Ed.). (1981). Applied strategies for curriculum evaluation. Alexandria, VA: ASCD. 11. Eisner, E. W. (1979). The educational imagination: On the design and evaluation of school programs. New York: Macmillan. 12. National Board of Professional Teaching Standards (2001). Exceptional needs standards for teacher of students ages birth-21+ (3rd printing). Arlington, VA: Author. 13. No Child Left Behind Act of 2001, 20 U.S.C. § 6301 et seq. (West 2003). 14. Oh, H. C., Ozturk, M. A., & Kozub, F. M. (2004). Physical activity and social engagement patterns during physical education of youth with visual impairments. *RE:view*, 36, 39-48. 15. Riley, R. W. (2000, June 8). Policy guidance: Educating blind and visually impaired students. *Federal Register*, 65(111), 36585-36594. 16. Rizzo, T., Woodard, R., Ozmun, J. C., Piletic, C. K., Faison-Hodge, J., & Sayers, L. K. (2003). Characteristics of athletes with visual impairments. *Adapted Physical Activity Quarterly*, 20(2), 206-208. 17. Rude, H., Jackson, L. B., Correa, S. M., Luckner, J. L., Muir, S. L., & Ferrell, K. A. (2005). Perceived needs of students with low-incidence disabilities in rural areas. *Rural Special Education Quarterly*, 24(3), 3-14. 18. Sacks, S. Z., Lueck, A. H., Corn, A. L., & Erin, J. N. (2005). Supporting the social and emotional needs of students with low vision to promote academic and social success. Position paper of the Division on Visual Impairments, Council for Exceptional Children. Arlington, VA: Council for Exceptional Children. 19. Simmons, J. N., & Davidson, I. F. (1984). Mediation for young blind children: An introduction to the literature. *Journal of Visual Impairment & Blindness*, 78, 118- 20. Spungin, S. J. (1996) Braille and beyond: Braille literacy in a larger context. *Journal of Visual Impairment & Blindness*, 90, 271-274. 21. Tutt, L. M., & Brasher, B. (n.d.). Physical education for students with visual impairments. Position paper of the Division on Visual Impairments, Council for

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92 Unit - 2 □□□□□

Teaching Functional Academics Skills Structure 2.1 Introduction 2.2 Objectives 2.3

Learning Media Assessment 2.4 Braille Reading Readiness 2.5 Techniques of Teaching Braille 2.6 Techniques of Teaching Print to Children with Low Vision 2.7 Braille Aids and Devices, Optical Devices for Print Reading and Writing 2.8

Let Us Sum Up 2.9 Check Your Progress 2.10 References 2.1 Introduction

Functional academic skills are the important part for a blind person's life like other people. Because of its usefulness it is too much important to know how a visual impaired person develops his ability in learning efficiency. Functional academics means—literacy (reading and writing), basic math, time and money skills, Self-care skills, domestics, recreation, community experiences, Formal employment opportunities which all are beginning in middle school. On the other hand it must be in mind if the procedure of teaching these skills is following absolute correct method then the learning capacity of a child is easier or it must be said that the child can be able to use the skills totally. Learning media assessment, braille reading writing capacity and use print material in developing ability is come under functional academic skills. Or it may be said that these abilities are the major part of the functional academic skills. In this unit discuss about the process for developing functional academic skills. 2.2 Objectives After going through this unit you will able to: 1. Describe various types of aids which are used in braille learning.

93 2. Explain the procedure of pre braille teaching methods. 3. List out the optical devices used in reading and writing. 4. Discuss the necessary for assess of learning media. 5. Follows the teaching techniques of braille. 2.3 Learning and Media Assessment

The

Learning Media Assessment (LMA) offers a framework for selecting appropriate literacy media for a student who is visually impaired. A Functional Vision Assessment (FVA) should be done first, in order to determine what the student is able to see and how he or she is using his or her vision. These two assessments should be used together to help to guide the team decision about the best instructional medium for a given student, such as braille, print, dual media (both print and braille), auditory, tactile or some combination.

Learning Media Assessment is

an assessment for selecting the appropriate literacy media for students with visual impairments. "

Literacy media" refers to the way in which students access the general education curriculum and includes braille, print, auditory strategies, objects, and pictures,

offers teachers and educational teams a framework or decision making process for the selection of literacy media, provides a

decision

and monitoring tool for both conventional and functional literacy for students with visual impairments, Involves a team process and the collation of medical, educational, family and student supplied data to make informed decisions.

The

LMA assesses a student's learning style, or the way in which he or she uses vision, touch, hearing, and other senses, either singularly or in combination, to gain access to information. This is where LMA has often been misunderstood. One of the key things that

are

assessed is the student's learning style, which is particularly useful when working with young children with visual impairments. The LMA scale should begin no later than age 3, when a child begins the transition to preschool. It should be updated annually and/or as visual functioning changes. This scale can be used academically for students who are in the general education curriculum and proceeding along an academic track. However, it should also be used with children with more complex disabilities in looking at functional literacy. LMA takes a broad definition of literacy, which includes reading and writing in some form, such as using drawing or expressive communication. Some Teachers of the Visually Impaired (TVIs) only look at the braille/print decision, but the Learning Media Assessment goes much further than that to look at the preferred sensory channels of ALL students. The primary reason to perform a Learning Media Assessment is to ensure that all children have access to literacy and to education. In addition, Braille Bills require the determination of literacy media exist at both the Federal and State level. These various Braille bills assume that Braille is the modality to be used unless otherwise demonstrated through appropriate assessment. Learning Media Assessment offers the tool to make that determination and monitor it over time. For instance, the Legislative Changes in IDEA (Individuals with Disabilities Education Act), which was just reauthorized, states the following about Braille: "Consideration of Special Factors: The IEP Team also shall (iii) In the case of a child who is blind or visually impaired, provide for instruction in Braille and the use of Braille unless the IEP Team determines, after a determination of the child's reading and writing skills, needs and appropriate reading and writing media (including an evaluation of the child's future needs for instruction in Braille or the use of Braille), that instruction in Braille or the use of Braille is not appropriate for the child." This means that TVI's have to prove that, at that particular point in time; a student with visual impairments does not need braille. There exists a false assumption that every child who is blind or visually impaired needs braille. A Learning Media Assessment is designed to help TVI's make that determination. Teachers of the Visually Impaired really have to disprove the need for braille. TVI's should therefore be documenting that a child with, for example, cortical visual impairment or severe cerebral palsy, does not need braille, but needs to be evaluated with an LMA and can learn in other ways. The key point here is that TVI's document that their students do not need braille, but that they do need other intervention. LMA's Primary Goals are: "Examine efficiency with which student gathers information from various sensory channels", Types of general learning media the student uses, or will use to accomplish learning tasks, "The literacy media the student will use for reading and writing" and Using the Learning Media Assessment to Guide Educational Planning Once a Learning Media Assessment has been performed, the team should gather to weigh various considerations in order to determine what medium is most appropriate for each student. Some students may learn better through a tactile mode and thus braille may be recommended, while others have sufficient vision to learn to read print. Still others may benefit from dual media, in which they learn both print and braille. For other students auditory channels may be the most appropriate.

A Learning Media Assessment or Reading Media Assessment (LMA/RMA), conducted by the Teacher of Students with Visual Impairments (TVI), is required to determine what kinds of literacy and functional learning materials are appropriate. Although sometimes used interchangeably, the Learning Media Assessment can perhaps best describe the assessment of the learning mode of students who are non-readers or pre-

95 readers. A Reading Media Assessment is a better term for students who are already reading. Either way, it assesses the way a student learns from the environment. The LMA/ RMA is a systematic way of collecting information about sensory preferences, learning environments, and intervention materials and methods. It is used with the Functional Vision Evaluation (FVE) to describe sensory abilities. It identifies sensory preferences, allows the Teacher of Students Visual Impairments (TVI) to understand how to present information to the student. For younger students or those with multiple impairments, the TVI can gain sensory information to the student, understand how to calm or alert the child, and identify adaptations and intervention strategies to promote effective use of senses. In an academic student, it is used to determine the primary or secondary mode for reading or if the student is a dual learner. The LMA/RMA indicates the use of sensory channels; best learning media; indicators of readiness for a literacy program; initial selection of literacy medium; continuing assessment of literacy media; and literacy tools inventory. When conducting the RMA, be sure to provide a variety of environmental print for the student to read in addition to using a formal assessment tool such as the Jerry Johns Basic Reading Inventory. If the student has been prescribed low vision devices, encourage them to use the devices. Possible media includes: class handouts, class textbooks, leisure books, maps, graphs, dictionary, diagrams, ruler, newspaper, magazine, catalogue, ads, phone book, menu, food labels, and clothing tags. Be sure to take note of the estimated font size and type. Also be sure to observe the student's writing skills including keyboarding skills. Include if the student uses the correct fingering, and what the words per minute were as well as the errors. Observe the student copying information from the board and note the distance. Also observe the student copying information from a text to a separate paper. Note the size of writing, the difficulty and note if it was legible to the student and to you. Learning Media Assessment of Students with Visual Impairments identify the following characteristics of students who may be print learners. The student: ●●●●

Uses their vision efficiently to complete tasks at near distances. ●●●● Shows interest in pictures and demonstrates the ability to identify pictures and/or elements within pictures. ●●●● Identifies name in print and/or understands that print has meaning. ●●●● Uses print to accomplish other prerequisite reading skills. ●●●● Has a stable eye condition. ●●●● Has an intact central visual field.

96 ●●●● Shows steady progress in learning to use his/her vision as necessary to assure efficient print reading. ●●●● Is free of additional disabilities that would interfere with progress in a conventional reading program in print.

They identify the following characteristics of students who may be braille learners.

The student: ●●●● Shows preference for exploring the environment tactually. ●●●● Efficiently uses the tactual sense to identify small objects. ●●●● Identifies his/her name in braille and/or understands that braille has meaning. ●●●● Uses braille to accomplish other prerequisite reading skills. ●●●● Has an unstable eye condition or poor prognosis for retaining current level of vision in the near future. ●●●● Has a reduced or non-functional central field to the extent that print reading is expected to

be inefficient. ●●●● Shows steady progress in developing tactual skills necessary for efficient braille reading. ●●●● Is free of additional disabilities that would interfere with progress in a conventional reading program in braille. 2.4

Braille Reading Readiness One of the most difficult tasks facing the kindergarten or first grade teacher is to recognize the degree of readiness to read which her young students have attained by the time they face her on that first September morning. A great deal has been written on the subject of reading readiness, which is as it should be, since it is so important a subject. However, much that has been written is inaccurate, and most of it is incomplete. There is essential agreement on what is meant by the words, "reading readiness." It might be translated as, "the time at which a child is capable of learning to read." Traditionally consider that a child is ready to read when he is about six years and six months old. Formal reading instruction is introduced in kindergarten or in the first grade, and since we have rules that govern when a child may start school, it customarily happens to six-year olds. Thus chronological age is made the official gauge of reading readiness. There are, however,

97 many people who have challenged this timetable. Some parents became aware that their offspring were ready for new experiences and new learning opportunities long before the "average" child was ready. They began trying out new learning experiences on their babies, and they saw that their children not only learned, but that they delighted in the exploration of new territory. Thus was born the belief that children--even infants- were capable of learning far more than had been asked of them heretofore. Educated parents and interested educators became excited with the possibilities of advanced education for very young children, and a new philosophy was instituted; teach your child to read before his second birthday. Babies have been taught to recognize symbols, and they have been taught to match the symbol-clusters with certain verbal stimuli. They have even been able to identify objects symbolized by the printed, written or vocalized stimulus. So far, however, no one has been able to show that a two year old can comprehend, "the blue chair I saw yesterday is softer than the one you are looking at now." There are others who suggest that a child should not be introduced to reading until he is eight years old or older. In any case, in order to decide when reading readiness occurs in a child, we must know what reading is. Is reading the identification of symbols? Is it the ability to reproduce those symbols in some other form, such as pronunciation or cursive writing? Is it the interpretation of the symbols? We can identify and correctly pronounce "slithery in the troves," but can we attach meaning to it? It seems obvious that reading must be "a purposeful activity in which the individual seeks to identify, interpret, and evaluate the ideas and points of view expressed by the writer." The reading readiness process has a number of prerequisites- 1. Before a child actually starts to learn to read, he should have a variety of concrete experiences which give him knowledge about things and relationships between them and also understanding of relationships between cause and effect. 2. A child must acquire basic language skills and sufficient vocabulary to correspond with his experiences. 3. He should be able to understand directions and express himself sufficiently. 4. He should have acquired adequate attention span. 5. He should have developed the ability to localise objects through hearing, a modicum and self -control memory. 6. The child need have motivation and the curiosity to learn about things in general. Reading readiness is the product of the whole child, not a splinter or a segment of

98 himself. Reading is a process of perceiving symbols, of visual, oral and aural discrimination. It involves the ability to form concepts, and it certainly involves prior experience. If a child has never been introduced to the fact of wetness, or hardness, or even of a cow or a cat, the written or oral stimulation of the word will not evoke any mental image in the child. He will not be able to read those words, no matter how well he can pronounce or reproduce them. The time in a child's life when he becomes capable of reading involves a manifold readiness Gestalt. He must have reached readiness in four different aspects of growth; physiological, psychological (emotional and intellectual), educational and sociological (cultural and environmental). A child must be ready physically before he can learn to read. Children ordinarily start out far-sighted, and their eye muscles slowly tighten in their focusing ability. Book publishers are aware of this and accommodate their clients by using large type for little children. Very often we find that poor readers have "double vision" which usually means their focus field is too far out; that they are still farsighted. Also, auditory acuity is a near-necessity. Reading, talking, and listening are so intertwined as to be almost inseparable. There are Helen Keller's in the world, but they are remarkable exceptions. Physical factors are also important in that a child must have mastered at least a modicum of ability in use of fine- as opposed to gross muscular control. The sequence of growth follows a typical pattern in humans, but the rate of this growth is a highly individual process. The sequence of development is from the head downward, from the centre outward, and from gross to refined movements. The grasping of discrimination between "b" and "p" requires fine distinctions, whether the stimulus is visual or oral. A third requirement in physical factors is general good health. If a person has an habitual headache, or he is partially blind, or his feet hurt constantly, he will not be able to concentrate on the intricate process of reading. Psychological factors are every bit as important as the physical, in determining reading readiness. Educators differ in their evaluation of a person's "intelligence quotient," but everyone will undoubtedly agree that there are degrees of mental maturity, and that a child must have attained a certain degree of intellectual functioning before he can assimilate what he reads. One of the most important factors of all is emotional stability and maturity. A child who is at odds with himself and the world will not be able to concentrate on those black-on-white squiggles on a page. A child who has been taught to be super organized and structured will be unable to venture into the excitement of reading and, conversely, the disorganized, wholly impulsive child will be incapacitated. The paranoid child will not be able to accept the authority of the printed word and the autistic child will refuse to respond in any way. The degree of

99 instability or immaturity of a child has a direct relationship to his reading readiness. It is interesting to note that there is a typical pattern of development in the human personality, just as there is in the physical growth. "At some ages (C.A. 2, 5, and 10 years) the child tends to be good tempered, cooperative and well adjusted. These are followed by ages (C.A. 2Y2, 5Y2 to 6, and 11 years) when the child seems at odds with himself and others. There are also regular periods of withdrawal and introspection (C.A. 3Y2, 7, and 13 years) followed by ages at which the child is outgoing, expansive, and adventurous (C.A. 4, 8, and 14 years)." So far as young children are concerned, the third factor, education, must be considered in conjunction with the child's sociological background. Aside from any nursery school he may have attended, educational factors are a product of his family's culture and environment. The type of society the child comes from will have an important bearing on the direction his development takes. Cultural differences have been widely discussed in the past few years and need not be reiterated here. The educational-environmental factor is influenced by the kind of family the child belongs to. Some of the more important aspects are: the language patterns within the home; the concern and interest of the parents in stimulating the child to explore new ideas and new places; the attitudes parents have toward learning, toward school, and toward books; the model they present to the child; and, the care with which they provide mental content, or experiential background. Some of the specific things the teacher hopes a child has learned before he enters first grade, which parents might teach their children, are how to hold crayons or pencils, to become familiar with writing implements, the ability to detect likenesses and differences, the ability to rhyme, being able to interpret pictures, also the conventional left to right progression, and hopefully the attention span of the child will be sufficiently lengthened so he can sit still long enough to learn new things. The teacher who is faced with anywhere from ten to thirty kindergarteners or first- graders cannot expect that they will all be at the same stage in the developmental process. Difficult as it is, it is up to her to recognize the degree of readiness of each of the children. There are many reading readiness tests on the market; however, none of them is comprehensive enough to take into accounting all of the factors necessary. By means of an appropriate selectivity of standardized tests, informal inventories and observation the teacher can become proficient in recognizing the physiological, psychological, educational, and sociological factors which combine to produce the "complete" child who is ready to read.

100 The concept of braille reading readiness depends on three major facts these are as follows- 1. Pre braille training: through pre braille training, the children learn to be sensitive to the positions of the six cells and to distinguish the difference between dots and lines by using Peg Board. When they are ready to teach braille numbers the English alphabet and Bharti braille initial particles. Braille boards are used for practice. Another important aspect in training the 'reading fingers' is the skills of scanning and locating text ranging from the orientation of lines to paragraphs and pages. 2. Tactile training: without vision the children received fragmentary information through their sense of touch and form a concept of the 'whole' from the information of the 'part'. Therefore tactile training and pre braille training are very important to visually impaired children. In order to acquire sensory acuity and efficiency tactile training, manipulative play and art and craft activities are emphasized. 3. Training in Reading Graphics: reading symbolic pictures in raised forms in another specialized area of training since braille textbooks also require the incorporation of graphic illustrations. However when they are in the form of photos they are too complicated to be represented in line graphics and thus brief. The development of tactual exploration and discrimination skills are necessary for future braille readers. It is also important for students with cognitive disabilities who may not be able to learn formal braille, but can learn to discriminate objects by touch to help make sense of their world or to use for communication. Locate & Explore Objects One of the first steps in becoming independent and reaching out to tactually explore the world is for students to attempt to reach out and locate objects. The facilitator may need to assist the student in developing an interest in locating objects. One primary way is to not retrieve objects for the student. If the student loses an object, provide a sound source to help the student locate the object, or touch the object to the student, but encourage them to reach for and obtain the object. This is part of the student beginning to understand object permanence. Encourage students to: ●●●● Reach for and obtain an object that comes into contact with their body. As stated before, try to involve the student in the process of locating and obtaining objects. Students need to understand that objects continue to exist even when they are not 101 in contact.

Tap the toy/object on the tray or floor if it fell on the floor or place the object in touch with the student's arm or leg. ●●●●

Locate partially or fully hidden objects. Help students explore their area and teach them that they can locate partially hidden objects. Play fun hide and seek games by partially hiding the object. If students have difficulty, provide a sound source by the object to help the student locate it. •••• Find objects after systematic search (use a search pattern to locate an object). Teach the student to use a pattern to locate materials. For example, starting in the top left hand corner and working in a zigzag pattern moving to the right and left and up and down until they locate the object. •••• Retrieve object when placed in their usual location. Students should be oriented to the room and be instructed in where materials are kept. Refer to "Labelling System" for suggestions on creating a well-organized area that can assist students in locating materials. •••• Explore a variety of objects with both hands. Provide tactually interesting materials to encourage exploration. The Importance of Tactual Discrimination & Finger Sensitivity When preparing for braille literacy, it is important to develop tactual discrimination skills and finger sensitivity. The development of tactual discrimination skills follows an order from larger to smaller that is similar to the development of the hands and fingers. It begins with using the whole hand to explore objects and progresses to using fingers and fingertips to examine the details of tactile materials. Students with limited sensitivity in their fingers may not be good candidates for braille reading. There are a variety of diagnoses that can cause numbness or reduced sensitivity in the fingers. This will be a factor in determining if a student will be a candidate for formal braille instruction. Tactual discrimination usually follows the following sequence: 1. Three-dimensional forms; 2. Flat shapes, such as puzzle pieces; 3. Embossed shapes with the entire area raised; 4. raised outline shapes and raised lines; 5. and

finally

braille letters.

102 Identify, Compare & Organize Objects Encourage the student to begin to identify, compare and organize objects and toys they are exploring. Talk to the student about different temperatures, weights and textures and encourage them to locate identical or similar materials. Draw the student's attention to where toys and materials are located and encourage them to locate the objects and put them away in their correct place. Encourage students to begin identifying and naming objects. Once they are successfully able to identify objects, begin to transfer this skill to embossed shapes, and then outlined shapes. Developing Tactual Discrimination & Finger Sensitivity You can help the development of tactual discrimination and finger sensitivity by providing many opportunities throughout the day for the student to tactually discriminate materials and compare similarities and differences, classify, and sort. Many commercially produced classroom classification kits consist of moulded plastic figures that all feel the same. These lack the variety of textures of real objects. Instead, use real materials whenever possible. Using real materials that support the current topic make these activities interesting for all students! Draw the student's attention to textures and describe the textures. This will help the student become aware of their differences.

You can help

a student develop finger sensitivity and refine their tactual discrimination skills by providing them with a variety of textures to match, sort and play with and explore. When selecting toys, choose toys that are tactually interesting. Throughout the activities, provide the student with the language that connects the experience.

See the section for a list of materials to classify and sort. Although real materials should always be included in each unit, commercially available texture sorting materials to complement these activities. These activities are as follows: 1. Sensory Play Fill a bin or container with water, beans or sand, or unit related material. Add unit related confetti, sequins, mini bells, beads or other items in colours related to the unit or materials related to the unit. Provide the student with empty containers. Encourage the student to transfer the materials from the bin to the container using sponges in shapes related to the unit or other utensils and tools. Provide droppers, measuring cups, and various tubes for water play. Provide scoops and a variety of tools for dry material play. 2. Texture Match Obtain a variety of textured papers, fabrics, and materials in colours related to the unit. Using the materials, create a texture match board or file folder activity.

103 3. Feely Bag Place unit related items in a bag. Have the student take turns reaching into the bag and identifying the item(s). Once the student has identified the objects, extend the activity by encouraging the student to match the item to the printed word. Encourage the student to have more time exploring the details of the materials. Provide two of each item and have the student match objects. 4. Object/Word Match/Sort Present the student with three identical items or words from the unit and one item that are different. Encourage the student to identify what object or word is different from the others. On the other hand another suggested materials are- (i) Flip-Over Concept Books: This concept book provides interactive, independent learning from young children as they build basic concepts and develop early tactile skills. (ii) Scattered Crowns: Tactile Attribute Game that encourages young children to develop tactile skills. (iii) Ruffs House Teaching Tactile Set: This texture matching toy by directional and positional concept. Learning Resources is another fun way to practice matching texture. (iv) Giant Textured Beads with Pattern Matching Cards: This bead and card set includes 12 large beads that vary in colour, shape, and texture and include pattern matching cards and sorting trays. (v) Occupational Therapy Tactile Discs: This toy challenges children's sense of touch on both hands and feet. The tactile discs are made of synthetic rubber and contain different tactile structures. Activity suggestions for memory and recognition. (vi) Textured Matching Blocks: encourages recognition of textures, identification of textures by name, and actual matching, while reinforcing directional and positional concepts. (vii) Teachable Touchable Textures: These textures by Educational Insights are a fun way to practice matching textures. 2.5 Techniques of Teaching Braille The beginning braille reader, like all beginning readers, must acquire the readiness skills associated with the actual reading process. An important prerequisite that all readers

104 must have to be efficient and read with comprehension is

a rich background of concrete experiences involving many objects, people, places, activities, and cause and effect relationships. In addition, the child must have receptive and expressive vocabulary that corresponds to his experiences. Each individual child must develop auditory skills of identification, closure, sequence, memory for stories, and discrimination. The young reader must be able to concentrate, exert self-control, and follow directions. Another important readiness factor is motivation. Once the student has experiences and language sufficient to read, he can begin a more structured reading program. There are many effective teaching programs used to provide reading instruction. Each child will have his or her own unique set of experiences. The teacher will find that the number and quality of concrete experiences will vary from child to child. One should never assume that basic information is correctly understood until the child can demonstrate that he or she does understand. While both sighted and blind children require language concepts, it is more time consuming to provide the experience required to teach the concepts to the student without vision. Other point is that motivate the child for reading acquired sufficient readiness skills and vocabulary before start meaningful reading. For developing this using various method these are- 1. Word method: the word method makes use of meaningful whole words from the beginning. Children are helped to move their fingers so as to rapidly cover words high interest to them with a single gliding sweep until they become familiar with the total configuration. To encourage discrimination, a sheet of paper may be used, containing three or four words repeated in three or four lines, with the same words being used exactly on the same place in each line. Flash cards can similarly be used and the child be told to sort them on the basis of likenesses. This exercise can be further developed by using words having the same letters or many of the same letters but in different sequences. Analysis of individual letters can be done later on when the child is able to recognise whole word configurations. 2. Sentence method: the sentence method makes use of a few small sentences with varying constructions in which more or less the same words are repeated time and again. The child is first required to memorise the sentences by rote and then tries to read them. The idea here is that with sufficient practice over time, the child becomes familiar with certain words. Analysing of individual letters may not start before the child has learnt to recognise few hundred words. 3. Letter method: in contrast to the above mentioned analytic methods as they are known, we have the synthetic method. Here, the child first learns to recognise

105 individual letters and then combines them into whole words. The first letters may be chosen on the basis of ease of recognition and when the child can tell one from the other with some rapidly; these can be combined together to form words. 4. Multi method: even a multi method approach may suit some children. Here the child is taught to recognise whole words and is simultaneously enable to analyse individual letters. In this metod, letters to form the words may be chosen on the basis of recognition. Remaining letters of alphabet may also be selected according to their ease of recognition. 5. Comparing method: it is different to pronounce judgement on the comparative merits of the four methods of introducing braille. There is perhaps no need for being dogmatic. Children differ from one another in their mental make-up and learning styles. Therefore, different approaches will have to be tried out with each individual child. It is important to provide experiences in a natural environment. The child who has been read to, seen braille labels, and experienced braille books is more apt to understand. The children that have already learned to read print have mastered the "reading process" skills; however, they must develop the skills associated with reading using their fingers. All students learning to use braille must acquire the following: •••• Tactual Discrimination: Theability to discriminate discrete tactualdifferences is essential to efficient braille reading. The noticeable shape orarrangement of dots is the most critical variable in braille reading. Do notteach the child by teaching the dot numbers. This may be helpful to theperson who reads braille with his eyes, but not for the tactile reader. Also, avoid teaching the idea that some letters are reversible pairs? for example, "r" and "w." •••• Finger Dexterity: Theeffective braille reader will have "curious" fingers that move quickly, with ease. Many readers use all four fingers of eachhand. This speeds up the reading process by allowing the reader a view of aseries of symbols rather than a single cell. •••• Hand and Finger Movement: Mostgood braille readers use two hands. A skilled two handed reader begins reading a line of braille by placing bothhands at the beginning of a line. At approximately the middle of the line, theright hand continues to read to the end of the line while the left hand

moves in the opposite direction to locate the beginning of the next line. The righthand finishes reading the first line, 106 the left hand then reads the first words onthe next line, and the right hand quickly joins the left hand on the secondline. •••• Light Finger Touch: Beginningreaders may have a heavy touch, however, to be good two hand readers one must acquire a light touch. Games may becreated to help students develop a light touch. An example of an activity toencourage a light touch is to ask students to slide their fingers across a pieceof paper without moving the paper. This takes practice and attention to task.In addition, the student's hands should move smoothly from left to rightwithout stopping. •••• Page Turning: Thestudent should be instructed to turn the page quicklywith the right hand when the left hand cannot find another line.

As we teach young children with visual impairments/blindness towrite braille, our approach needs to be developmental. We need

to write

braille, our approach

needs to be developmental. We need to look at readiness for formal instruction, and then we need to adjust our pacing, expectations, and activities according to the learning needs of young children. In the guidelines that follow, these approaches are addressed. Before children begin a formal braille writing curriculum, they should be able to attend for at least a few minutes at a time. They also should be able to isolate their fingers and their thumbs, pressing each one separately and firmly. (Modelling with clay and manipulating other art materials can increase hand strength. Children's songs and poems can be used to teach them to isolate and name their fingers. If these are not available, teachers can invent simple verses, themselves.) Next, it would be helpful if the children already have some experience with braille and tactile symbols, pretending to read tactile books and being involved as older children and adults read and write braille. Lastly, because literacy builds upon language, they should be able to speak or sign words and simple messages, and understand as others communicate with them. (However, please note that while language provides readiness for braille, sometimes braille literacy in turn builds spoken/ signed communication skills. In forming braille symbols, children at a prelanguage level may come to realize that written messages carry meaning. This may motivate and shape their spoken/signed language skills.) Make It Fun 1. Emphasize enjoying braille and having fun with it. There is an expression that "play is the work of children." It's important for young children with visual impairments to enjoy reading and writing braille, rather than regarding it as an arduous task that is to be resisted. Adults can make braille fun by incorporating children's ideas in what they read and write, in keeping sessions short, and in

107 modelling their own pleasure in braille literacy. ("Oh, it's a brand new page. The dots are so nice and crispy!" or "I think I'll see how fast I can write the numbers 12345.") Another marvellous way to bring enjoyment to braille writing is to pair it with music, such as singing an alphabet song while writing the ABCs.

2. Give children the opportunity to playfully explore reading and writing. Let them pretend to read as they move their fingers across pages, even if they have no idea what the letters and words say. And let them form patterns and pretend to write before you ask them to produce conventional braille characters. This might involve children simply pressing any keys until they reach the end of a line and the bell rings, or creating an uphill/downhill pattern by pressing dots 3 then 2 then 1 then 4 then 5 then 6, or making a simple tactile graphic by alternating dots 1245 with dots 2356. It might involve pretending to write: pressing seemingly random keys while telling a story orally, just as young sighted children do. Children typically take great pleasure in doing what they notice adults and older children do, and even more when the adult joins them in reading back what they have "written."

3. At the beginning of the curriculum, enthusiastically accept approximations, or all attempts to read and produce braille. Then gradually guide children to use correct posture and hand formation, to read real letters, to decode real words, and to produce Braille which is increasingly closer to conventional braille. A component of incorporating fun into early braille is giving children the freedom to attempt it without needing to adhere to rules they are not developmentally ready for. That is, while some children will be motivated to form correct characters with correct fingering right from the beginning, others will be easily discouraged if every early attempt is suppressed because a key is pressed with the wrong finger, or a character is inverted. As long as correct posture and fingering are expected in a reasonable amount of time, inefficient posture and movement habits don't seem to persist. Given this, a successful practice is to enthusiastically respond to all early attempts to read and write, even when they are incorrect, then gradually expect greater and greater accuracy.

Make It Meaningful

1. Let children experience whole events, from obtaining books or a braille writer and paper, using them, and then putting them away. It clearly takes time for a child to walk to a shelf, pick up a piece of paper and a braille writer, carry these to his/her desk, load the paper in the braille writer, produce his/her work, unload the paper, and pass in the paper and store the braille writer back on the shelf. However, participating in the whole event allows the child to understand the literary process and develop independent literacy habits. The child doesn't need to participate in the full process every time he or she writes. However, it is important for him/her to do this periodically, or at least to participate in some of the obtaining/putting away steps regularly.

2. Let children witness adults reading and writing braille. Fully sighted children regularly see adults as they read books, signs, menus, instructions, etc., and they see them as they write notes, lists, letters, etc. In witnessing adults doing literacy, sighted children learn about literacy tools, literacy techniques, and purposes for literacy. With these models, they become motivated to do literacy themselves. Future braille users need these same models. To accomplish this, even if adults read braille visually and not by touch, they might open their own braille books as they are sitting beside children, explicitly labelling what they are doing. ("I think I'll read this story. Oh, I like how the design on the cover feels. Now I'll turn the page and read who the author is.....") Similarly, adults might make it a point to save some of their braille writing tasks for times when the children are within earshot (and possibly even within reach), so the children can hear a braille writer being carried to the table, the paper being loaded into it, the keys being pressed, lines periodically checked, errors corrected, etc.. The adults may mediate as they write, just as they had when they read out loud, "I think I ought to write down this telephone number, so I won't forget it. Let's see, which dots is a number sign?" or "I'm going to make a list of all the children in the class now. I'll start with a capital sign....." This exposure to purposes and methods of writing will introduce children to some braille writing steps, and it will motivate them to write, as well.

3. Integrate reading and writing, so that children continuously read back what they have written. Braille reading and braille writing are quite separate processes. First, they are based upon different sensory systems. Braille reading is tactile and motoric? dots are felt through the touch receptors in the fingertips as they move across lines. Braille writing is kinaesthetic/proprioceptive and motoric? dots are formed by moving the fingers to press specific keys, and braille writing is mastered by memorizing how the joints in the fingers feel as specific keys are pressed. Secondly, when braille is produced with a braille writer, reading and writing are based upon different layouts of the six dots. Braille is produced in a one-by-six array, with the six keys in a horizontal line to produce, from left to right, dots 321 with the left hand and then dots 456 with the right hand. Braille is read in a

109 twobythreearray: dots 123in the first column, and dots 456in thesecond column. Given these differences, children should integrate reading and writingby writing a few characters, reaching up and feeling what they produced, writing a fewmore characters, feeling these, etc. This sets the stage for more advanced literacyprocesses, where students may write preliminary notes, write a first draft, read it back,then write a finish draft. 4. Approach the mechanics of braille production and reading within the largercontext of Braille literacy. Give children opportunities to produce braille characterswhich are meaningful and functional for them as soon as possible. Children are oftenmotivated to read and write their own names, and those of friends and family members.Children who often ask, "What 's next?" may quickly realize the importance of a simpledaily schedule taped to the corner of their desks. Place a strong focus on reading andwriting messages which have meaning for the children, even when their braille readingand production skills are extremely limited. Make It Developmental 1. Allow some portions of lessons to be child led,that is, let the children have somechoices as to what they write with the brailewriter. This can provide more functionalityand more motivation in braille literacy curricula. For example, in introducing a specificletter of the alphabet, a teacher might let the child select a list of words that begin withthis letter, rather than preplanninga teachermadelist. Similarly, children may be muchmore motivated to read and write lists of family members, favorite toys, or preferredfoods. 2. In sequencing both producing and reading braille characters, build from symmetricalto asymmetrical, from fewer dots to more dots, and from unique characters thatare easily reversed and/or inverted. In addition, in writing braille, try to begin withletters that use the first and second fingers of each hand (dots 1, 2, 4 and 5), thenbuild to writing letters with the third fingers (dots 3 and 6.) (An example of asymmetrical braille letter is "X" and an asymmetrical braille letter is "M." In terms ofnumber of dots, braille letters "A" and "B" have fewer dots with one and two,respectively, while "Q" and "Y" have more with five dots each. "G" is not easilyreversed with other letters, while early readers typically confuse "E" and "I", "M" and "U","R" and "W", and "D", "F", "H" and "J.") Published braille literacy curricula vary in theirsequences of letter introduction. That is, there is not a standard for exactly which letteris introduced first, second, third, etc. However, all the braille literacy curricula for youngchildren take into account these principles

110 of symmetry to asymmetry, fewer to moredots, and unique to easily reversible characters. Beyond that, easilyreversible/invertible characters should not be taught together?for example, a teachermight have the child learn the letter "R" to mastery before introducing the leftrightreversal of "W." Specifically to writing braille, the fingers that are used is also a factorfor sequencing. The first and second fingers of each hand are typically stronger thanthe third fingers, so a braille "A" (dot 1) will probably be easier to form than a capitalsign (dot 6.) Of course, all four of these factors may be trumped by letters/words thatare most motivating and/or most functional for children, such as their own names. 3. Begin by scheduling short lessons, and expect speed and stamina only at theend of the curriculum. Young children have short attention spans, perhaps especiallyfor the more structured, seated tasks of braille literacy.

Physically, it takes time to learn to maintain correct reading and writing posture and hand/finger positioning, to toleratethe sensation of running their fingers over Braille lines, and to strengthen each finger,especially for pressing the keys for dots three and six. It also takes time for children tobuild up speed in reading writing, especially with the letters with more dots.Accordingly, braille writing instruction might begin with just five or ten minute lessonsand expectations of just a few lines of braille. (In braille writing, the margin might evenbe set in the middle of the page, so that each line is shorter.) As lessons progress,lessons become longer and longer and expectations for strength and stamina increase.Sometimes children maintain their attention in braille, and sustain more arm and fingerstrength, when they stand (rather than sit) at a table or desk as they read and writebraille. In any instance, the pages or keys should be at elbow level or even slightlylower. Exercise and special activities are needed to develop strength, dexterity, and endurance. Writing braille using a brailewriter will assist the braille reader by reinforcing his recall and memory of the shape of the letters and symbols. Students will perform better if their hands are clean, dry, and warm. Furniture should fit their bodies allowing the arms from the wrists to the elbows to be even or a bit higher than the desktop. Feet should be flat on the floor and the back straight.

Every braille teacher's "dream student" is the one who approaches the task of learning braille with enthusiasm and an understanding of how much they will benefit from this new skill. In reality, however, many newly blinded adults bring with them a number of myths and stereotypes about blindness in general and braille in particular. Here are some suggestions that may help put braille in a positive light and encourage a somewhat

111 reluctant student to give braille a chance. Change negative attitudes about braille, and dispel the myths and stereotypes. Explain that braille doesn't "make you blind"?nor is being seen reading or writing braille in public a symbol of weakness or lack of ability. On the contrary, knowing braille is a symbol of literacy, competence, and independence. Tell students to bring their literacy skills with them. They already know how to read and write?this is just a new code, and they can learn it. Explain how braille will fit into each individual student's life. Make braille immediately relevant by stressing functional uses: making lists, keeping track of phone numbers and addresses, reading to children or grandchildren, labelling personal items, and so on. Point out that braille will insure privacy. Students can keep journals, write reminders to

them, and

keep track of finances, and so on. Increase positive impressions of blindness and people who are blind. Encouraging students to get in touch with successful blind people is a good way to do this.

students to get in touch with successful blind people are

a good way to do this. Find other adventitiously blind volunteers to mentor newly blinded students learning braille. This way you can set up a "mentoring partnership" with a student and another adult who is blind. People have individual learning styles. Each learner will have his/ her own way of mastering braille and incorporating it into daily life. Here are some suggestions from teachers with experience in teaching braille to adults. Choose the techniques you feel will work most effectively with each individual, and combine them with your own ideas. Start with something simple and personal (e.g., the student's name, phone number, etc.). Building in immediate success encourages the student to continue learning. Use small and familiar motivational items for practice: jokes, Bible verses, quote, and so on. Use a fabricated braille cell to provide examples. Try a muffin tin with tennis balls, an egg carton, a pegboard, or an APH Swing Cell. Teach anticipation. Tell students not to get stuck on a word?skip it and use context cues and letter clues. Use playing cards, Bingo sets, and other games that have been adapted with braille for motivation. Students can continue to enjoy these activities with family and friends, and practice their braille skills at the same time. Motivate students. Cribbage can be motivating, especially since it is a social activity and only uses 4x6 cards. This is a good way to teach numbers. Use braille magazines in areas of high interest (e.g., cooking, sports, etc). Use a Braille 'n Speak and other equipment that has speech to reinforce braille skills. Use flash cards. Cut off a corner for easy orientation. Cut print letters out of heavy paper or cardboard, or use WikkiStix. Then glue them onto the cards. Braille letters

paper or cardboard, or use WikkiStix. Then glue them onto the cards. Braille letters can be made with puff paint, large or small circles made of felt or Velcro, or with a Dymolabeler. Use visual

112 dots to reinforce concepts with learners who can use available vision. Concentrate on the meaning of symbols by making them relevant to daily activities for people with low literacy skills. Make lesson and practice schedules flexible and suited to the needs of individual students (e.g., some may be more alert in the morning, while others may find it easier to learn later in the day). Contract practice time before you start the lesson so that both you and your student are clear on what is to be accomplished between classes. For some students, you may want to suggest several short practice sessions per day rather than one long one. Tape the lessons to help the student remember what he/she has learned. This can also facilitate practicing between lessons. Make homework practical. Assign productive activities that will be functional, as well as good for practicing braille skills. Ask students to try: labelling clothes, canned goods, tapes, CDs, and so on?compiling addresses and family birthdays?labelling medicines and writing out medical information?writing out recipes and directions?making notes from instructions for using adapted equipment?making shopping lists?anddeveloping organizational techniques for home and workplace (e.g., personal files, calendar, etc.). Help clients by assisting in setting up an address book or recipe file using braille so they can add to it as their skills growEncourage family members to participate in reinforcing your students who are developing braille skills by playing games with braille cards, labelling grocery cans after shopping in the grocery store, or keeping track of the weekly shopping list in braille. Give your students lots of support and encouragement.

Research has shown that a few good Braille readers use only one hand, but the vast majority use two hands. The following are typical of the majority of good Braille readers: 1. the student exhibits few regressive hand movements (either vertically or horizontally). 2. Uses very little pressure when touching the Braille dots. 3. Utilizes a two handed reading technique in which the left hand locates the beginning of the next line, while the right hand finishes reading the previous line. 4. uses at least four fingers at all times. 5. Demonstrates the ability to scan efficiently when reading both a vertical and horizontal format. 6. Demonstrates the ability to read letters accurately without confusing letters which are mirror images of other letters. If your student has a heavy touch tries the following: Place a piece of paper on the table, asks the student to pass his hands over the paper so lightly as not to move the paper. Another suggestion would be to place plastic discs or checkers on raised line graph paper and ask the student to pass his hands over the objects so lightly as not to move the objects across the lines on the graph paper. Create your own games which would encourage a light touch. Encourage your student to touch the dots lightly (tickle the

113 dots). Try to help him develop a smooth movement of the hands from left to right and try to avoid having the student stop as he moves across the page. Suggest that your student keep all fingers in contact with the paper. It should be remembered however, that some Braille readers have been known to use unorthodox hand positions efficiently. If your student displays dominant one handed reading, it may take along time to develop the coordination and motivation required for two handed reading. Continue to instruct your student in the two handed method, but respect his right to experiment with other methods when he is working independently. It is important that the school furniture fit the student. The student's elbows should be on the same plane, or perhaps a little higher than the top of the desk or table being used. If the furniture cannot be adjusted, let the student sit on several books (not Braille, of course). Some beginning readers have little strength in their hands or arms. As a result, they may tire quickly. If this is a problem you might try the following activities. 1. Have the student punch holes all the way around a heavy piece of construction paper using a single hole punch. 2. Have the student lace from one hole to another, all the way around the border using medium weight yarn. The resulting product may be used as a placemat during snack time, or folded in the middle and used as a cover for completed work. 3. As a reinforce for work completed satisfactorily let the student use a nutcracker to crack nuts, after which he may eat them. Start with peanuts first. 4. Cut strips of heavy construction paper (about 1/2" wide). Have the student cut across the strips with scissors to make pieces of paper. The small pieces may be pasted down to decorate the folders. 5. A box containing several dozen nuts and bolts of the same size may be given to the student to put together. Clean warm hands are important for rapid and correct Braille reading. Be certain that your student washes his hands, rinses them thoroughly, and uses a little hand lotion before beginning to read. An old hair dryer is useful on cold days to warm hands before reading. Place the student's worksheets one at a time on top of a rubber pad. This prevents the paper from slipping around the desk and thereby, promotes a light reading touch. This is a consumable program. That is, an entire new set of Braille work sheets should be provided for each student who receives instruction through this method. The pages

114 should be taken out of the binders and used according to the instructions in the teacher's manual. The use of the pushpins will deface the pages, but will strengthen the arm muscles and heighten the reading performance of the student. After use, the pages should be given to the students to take home. Sighted children take home completed pages every day and proudly boast to friends and family about their marvellous achievements. Visually impaired students need the same kind of reinforcement and encouragement if they are to maintain enthusiasm toward reading. Teachers will doubtlessly be tempted to keep the entire program and use it with other students. Braille becomes rubbed down easily when used with beginners. Every student deserves an equal opportunity. Many adults think of Braille letters as reversible pairs. i.e., (w and r) etc. Never, teach a child that there are reversible pairs of letters in Braille. This requires that the student perform a double mental process when he applies his knowledge of letters to academic assignments. Remember that one of your greatest strengths is your ability to reinforce correct reading techniques. Reinforcing incorrect techniques only shows the student what is "bad", but offers no example of the desired behaviour and thereby, provides no substitute for the "bad" techniques. Reinforcing correct techniques provides an example of the goal behaviour and increases the probability that the desired behaviour will recur more frequently. Good reading skills are only mastered after years of practice. 2.6

Techniques of Teaching Print to Children with Low Vision Approximately 90% of individuals with visual impairments have functional or

low vision? Just 10% are functionally blind. However, students with low vision are often an overlooked majority in the population of children who are visually impaired. Difficulties of students with low vision are often not as apparent as they are for students who are blind. Nonetheless, students with low vision require direct instruction in literacy, visual efficiency, accessing the core curriculum, compensatory skills and more.

The following educational interventions are beneficial to students in any school setting: Teacher of Students with Visual Impairments Every child who meets the criteria of visual impairment in his/her state is eligible to receive services from a certified teacher of students with visual impairments (TVI). A

TVI is a teacher who specializes in working with students who are visually impaired. Most often, when a new student with a visual impairment enters a school system, it is the TVI who is responsible for assessing the student, determining and aiding in adaptations and modifications, as well as creating individualized education programs

115 (IEPs). If the situation does not permit the TVI to perform all necessary specialized instruction with a student, the TVI will generally oversee or direct the instructional process.

Accessing the Visual Environment

One of the principal concerns for students with low vision is their ability to access the visual environment.

Just as students who are blind have difficulty with environmental cues such as facial expressions and eye contact, so too do students with low vision. One way for students to access the visual environment is through optical devices. Optical devices include magnifiers, microscopes, and tele-microscopes for accessing near information and monocular telescopes and bioptic lenses for accessing distance information. Near devices aid a child in viewing regular print materials, non-textbook materials such as baseball cards, and menus. Distance devices are used for viewing information that is beyond arms reach, such as the chalkboard, menus in fast food restaurants, or sporting events. Because every child's vision is different, a certified professional should always prescribe optical devices. Every child with low vision should receive a clinical low vision evaluation from an optometrist or ophthalmologist who specializes in such services.

Access to information One of the most important academic areas related to accessing the visual environment is accessing information through print. While some students with low vision require their texts to be transcribed into braille, many are able to access regular or large print. Large print books and papers can be created through modern copy machines but such copies are often of poor quality. Many states have centres and agencies that can be contracted to create required large print and braille materials. For students who can access regular print through optical devices, instruction beyond the introduction of the optical device is required to make sure the student uses it effectively. Lengthy texts such as novels might also be presented on audiotape. However, it is recommended that audiotape materials not be stressed until later grades to ensure that students develop the requisite basic literacy skills. Audiotapes are often used more by students in university who must access large amounts of information from a variety of sources. Many technology solutions exist for accessing information via computer. Progress is being made on the ability to download academic texts from publishers directly to student's computers, bypassing the print medium. Text on computer can be output through speech,

116 large print, or braille, depends on the software and hardware available. Some students might also benefit from any combination of braille, large print, regular print, optical devices, and technology.

Access to core curriculum Students with low vision are often at a disadvantage when presented with information in regular classrooms. If a student has difficulty seeing material at a distance, writing on chalkboards will be hard to discern. A distance optical device, preferential seating, and hand-outs containing pertinent information are all ways that the information can be more easily accessed by the student. Curriculum areas such as the sciences that require hands on activity and interaction with materials can also present a challenge to students with low vision. Specialized instruments with larger numbers or inventive ways of using existing materials can overcome barriers. The use of groups to complete assignments is also useful for providing a support not only for students with visual impairments but for all students. Above all, teachers should encourage students to indicate when they are having difficulty in accessing information, completing a task, or understanding a process or skill. In most cases, between the student and the teacher for students with visual impairments and the classroom teacher a solution for any barrier will be discovered. Psychosocial Issue Another issue relating to low vision is the psychosocial impact of a visual impairment. Children growing up with a visual impairment can experience many negative consequences including: feeling like they look different, either because they cannot visually verify how others look or because they wear glasses or use optical devices, feeling like an outsider because they cannot take part fully in activities, feeling less than capable because they do not understand visual concepts fully, feeling clumsy because they drop things or bump into objects. All of these consequences can have the effect of lowering self-esteem. It is important those students identify themselves not by their visual impairment but see their visual impairment as one aspect of who they are. Intervention may be necessary so that a student can build successful experiences and find activities in which they excel. Unique educational interventions are essential for students with low vision in order to ensure successful outcomes in the school setting. For educational purposes, the low vision student is typically one who reads print and has a corrected visual acuity of 20/70 or worse in the better eye. Most low vision students

117 have very poor distance vision, so this makes it difficult for them to see the chalkboard or to gather detailed information from filmstrips, charts, or overhead screens. These students can usually read print and gain information from pictures, charts, and graphs when the material is up close. Each low vision student's needs are unique, but the following suggestions may be helpful when working with a low vision student in the classroom. Some General Facts Regarding Students with Low Vision: •••• Using the eyes does not injure or harm them. Encourage the student to use his/her eyes since greater efficiency can only be developed through the use of the eyes for visual tasks unless a doctor has indicated otherwise. •••• The use of glasses cannot help improve visual acuity for all eye conditions. Glasses may be worn to reduce glare and help with fatigue. Some students can read ordinary type with ease?others may require large print, a hand-held magnifier, or a closed circuit TV. The visually impaired child should be able to participate in most recreational activities except for those that require good visual acuity. •••• Eyes cannot be "strained" but may tire quickly. An activity that allows the student to change focus is often helpful and appreciated. •••• Holding materials close to the eyes will not harm them. Allow the student to position materials at a distance he/she chooses. •••• Check the student's folder for the modification sheet. This will tell the classroom teacher what specific modifications need to be made in the classroom. Remember, these modifications are REQUIRED, since they are written in the student's Individualized Education Plan (IEP). Contact the teacher of the visually impaired if have questions or need suggestions for particular room.

Suggestions for the Classroom Teacher: •••• Preferential seating is often necessary for a student with low vision. •••• Let the student select a seat where he/she sees best •••• Seat a student as close to the board as practical •••• Reduce glare from windows and lights, as much as possible •••• Seat the student with his/her back to windows •••• Read the student's Functional Vision Evaluation to find out if this student can copy materials written on the board or overhead projector.

118 ••••

Purple dittos or "fuzzy" Xerox copies should not be used with this student.

Clear contrast between the print and the background will help the student be more successful. •••• Black print on white paper is usually best. If other modifications are required they should be contained in the list of modifications handed out at the beginning of the semester and in his/her Functional Vision Evaluation of the Special Education Folder. •••• Contrast, print style, and spacing of letters can be more important than print size. •••• Low vision students may require more time to complete assignment. •••• Low vision students are usually slow readers because of the visual impairment. •••• Standardized tests that require separate answer sheets may be especially difficult for a student to use. Check modifications to see what procedure to use. •••• Word games, puzzles and graphs may be inappropriate for a low vision student. Check with the VI teacher if unsure. •••• Give the student the grade he/she earns. Donating a grade to a student really hinders-not helps the student's learning. •••• Storing and using large print materials may be difficult for the student to manage in a classroom. Help the student find a place for books and supplies. Also, a locker may not be accessible if it has a combination lock.

Understanding A Low Vision Student: •••• The emotional needs of a low vision student are like those of any other. He/She wants to be liked by teachers and peers. They do not want to be different. •••• Schedule a time for a private meeting with the child. This will allow the student to tell you about seating preferences, lighting, and modifications that are helpful. •••• Have the student explain his/her visual problem to you. •••• Try not to call attention to the child's eye problem in front of the class. •••• Always use the student's name when addressing him/her. •••• The rules of discipline should be the same for a low vision student, as for any other, unless the IEP states otherwise.

119 •••• So much of communication is non-verbal. Often a student with low vision is unable to recognize the expression on someone's face or figure out what has happened in a situation that is nonverbal. It is helpful if the teacher privately explains the situation to the student with low vision. •••• Be aware of the student's frustration level since so much of learning and school is visual. It is easy for a student with poor acuity to become frustrated. •••• If notice the student has food or ink on his face or clothes, discretely tell them. A Functional Vision Assessment and Learning Media Assessment should be done for each student, and these generally offer specific suggestions for optimal visual functioning, including magnification, lighting, font size, colour preference, and ideal environmental conditions. The individual needs of a student will depend on factors such as his or her eye condition, age, learning style, and additional learning challenges. Strategies for Reading Print There are a variety of ways in which students with low vision can access print, and many students will use different strategies in different situations. For example, out in the community, they may prefer to use spot magnification to check menus or prices, but in school they may prefer to use text books in large print. A CCTV (Close Circuit Television) or other form of video magnification may be the preferred way to view graphics or a text in school that is not available in large print. It is often necessary for the student to try different tools in various circumstances in order to be part of the decision making process about what works best. SETBC (Special Education Technology British Columbia), a provincial resource program of the BC Ministry of Education, outlines strategies for paper materials, as well as e-text. Instructional strategies for paper materials include: 1. Provide regular print 2. Use handheld magnification with regular text 3. Enlarge Small Amounts of Text, Pictures, Diagrams, Charts on Photocopier 4. Provide Large Print Version of the Text 5. Use Standalone Video Magnification 6. Use Video Magnification with Computer Integration Additional strategies for e-text include: 1. Change Appearance of Text and/or Background

120 2. Magnify Text and/or Computer Screen 3. Provide E-text with Tracking Support or Highlighting 4. Provide E-text Environmental Factors The Functional Vision Assessment will include specific strategies and suggestions for the individual student, based upon his or her visual condition, the type of educational program, the child's age, and other challenges the student may face. The needs of each student will be different depending on the eye condition, but in general it is necessary to consider the following: 1. Glare 2. Contrast 3. Lighting 4. Positioning 5. Reducing Visual Clutter 6. Visual Cues 7. Self-Advocacy Font When determining which font to use, it is important to look at both the size and the type of font. APHont: A Font for Low Vision (American Printing House for the Blind) APHont was developed by APH specifically for low vision readers. APHont embodies characteristics that have been shown to enhance reading speed, comprehension, and comfort for large print users. 2.7

Braille Aids and Devices, Optical Devices for Print Reading and Writing

Braille Aids and

Devices Students who read braille also usually write in braille, using a variety of low or high-tech devices. If your child writes in braille on a computer or personal digital assistant (PDA), the teacher of students with visual impairments can use braille translation software, which converts the text and prints it out for you, the teacher, or anyone else

121 who reads print. There are a number of different methods for personal braille writing that can result in tactile output. The focus here is on the process of writing braille which assumes, of course, that one either knows or is copying correct braille in the first place. (Note that while writing braille can be used for transcribing from print to braille, it is not the same as transcribing. Different writing methods have different advantages and many braille lists end up using different ones depending on their purpose. On this page I've made a distinction between mechanical and electronic devices. Another distinction, which is more significant to braille literacy, is between brailers and note-takers. Brailer is the name generally given to a device with the capability for direct output of embossed braille whereas a note-taker is a device that has digital storage capabilities and, possibly, direct output via a speech synthesizer or refreshable braille display (RBD). Tactile braille can be produced by sending an electronic braille file produced using a note-taker or personal computer to an embosser (or RBD) just as ink print can be produced by sending an electronic print file to an inkjet printer. (However, even a low end embosser is considerably more expensive than an ordinary printer.)

Writing and braille literacy The writing devices most significant for early braille literacy are those that like pencil and paper couple writing and reading by tying the writing process directly to the production of hard copy output. These devices include the slate and stylus as well as mechanical and electronic brailer. Attempting to achieve braille literacy by restricting oneself to the use of a speech enabled braille note-taker would be rather like attempting print literacy with a computer keyboard and a word processor with synthetic speech output. Braille writing devices like the slate and stylus and brailer are also uniquely important for blind children because they allow a blind child to develop the two dimensional or planar concepts that a sighted child picks up automatically from seeing a page. The child develops an understanding of writing on a page, page size, formatting, alignment, information on a page, etc. that is not possible with virtual writing. On the basis of this the braille devices can be further

classified into the following broad six categories: 1.1

Braille Duplicators and Writers 1.2 Writing Devices 1.3 Braille Paper 1.4 Talking Books and Tape Recorders 1.5 Reading Machines 1.6 Braille Computers

122 1.1 Braille Duplicators and Writers •••• Thermoform Machine: '

Endotherm'

is an indigenous

semi-automatic Braille duplicating

machine. It is useful for taking out multiple copies of the Braille matter on the Endotherm (or Braillon) sheets from the master generally prepared on the Braille paper. This machine operates on the principle of vacuum and high temperature.

••••

Braille Writers: It

is an upward writing machine for writing on one side of the paper, enabling the Braille

to be read as it is written. This machine can be compared to a normal type writer with a major difference that it has only nine keys, three for paper setting and six for embossing; the brailer embosses combinations of six dots in a Braille cell.

The

Braille machine

is made of metal with an enamel finish, with plastic key-tops and adjustable margin stops. The paper is roller-fed and line spacing is achieved by pressing a

special key. 1.2 Writing Devices •••• Peg Slate: This paperless device helps to teach beginning users of the braille slate. A frame is mounted with pegs that represent the braille dots in 10 braille cells. A finger is used to push the pegs down. The frame is then flipped over to read the braille message. Made of black plastic with white plastic pegs for high contrast. Instructions in print and braille. •••• Slate and Stylus: The slate and stylus are inexpensive, portable tools used to write braille—just the way paper and pencil are used for writing print. The most low tech method of writing braille, comparable to writing print with pen or pencil, is to emboss each braille dot using a stylus and slate. This method ordinarily requires writing from right to left. (One can also write from left to right by writing upside down but this is generally more error prone.) Slates are made of two flat pieces of metal or plastic held together by a hinge at one end. The slate opens up

to hold paper. The top part has rows of openings that are the same shape and size as a braille cell. 123 The back part has rows of indentations in the size and shape of braille cells. The stylus is a pointed piece of metal with a plastic or wooden handle. The stylus is used to punch or emboss the braille dots onto the paper held in the slate. The indentations in the slate prevent the stylus from punching a hole in the paper when the dots are embossed. Slates and styluses come in many shapes and sizes. ••••

123 The back part has rows of indentations in the size and shape of braille cells. The stylus is a pointed piece of metal with a plastic or wooden handle. The stylus is used to punch or emboss the braille dots onto the paper held in the slate. The indentations in the slate prevent the stylus from punching a hole in the paper when the dots are embossed. Slates and styluses come in many shapes and sizes. ••••

Interline Braille

Frame: is used for writing standard character interline Braille. The frame comprises a woodenboard, a metal guide, a reversible paper clamp and astylus. The clamp fits at the top of the board and has a small swivel stud for locking and holding Braille paper. When one side of the paper has been Brailled, the clamp with the paper still held, is turned over as a unit. The binding margin is made automatically. ●●●●

Taylor Postcard

Frame: It

is used for writing small character Braille on one side of the paper. The corner pins are arranged in such a way that the Braille can be read

124 without removing the paper from the frame; when the top section is lifted, the paper remains attached to it. ●●●●

Pocket Braille Frame:

The

four-line pocket Braille frame produces small character Braille on one

side of the Braille paper. This is specially used for making small and occasional notes. ●●●● Styli:

These

are produced with handles of various shapes

to suit individual needs. The points of all styli are made of stainless steel and the handles are of polished hardwood or synthetic material. ●●●●

Braille Kit: is a

retine coated or a decorative wood box and

contains the following items: ✓✓✓✓ Braille Writing Frame ✓✓✓✓ Braille Writing Pocket Frame ✓✓✓✓

Rubber Sheet ✓✓✓✓ Foot Ruler ✓✓✓✓ Compass Set ✓✓✓✓ Two Styli ✓✓✓✓ Folding Stick or Abacus and ✓✓✓✓

Signature Guide. ●●●●

Pragnya Sketching Device: It enables a visually impaired child as well as a low vision child

to create simple sketches and diagrams out of a thread. It is based on principle of using acrylic thread as "writing ink" and nylon fabric fastener strips as a "writing slate".

125 ●●●●

Product Design: Acrylic thread of a contrast colour that works as refill is passed through the empty body of an open ended ball pen, keeping the other end attached to bobbin spool. The thread is wound on the spool that rotates about a wire axle, attached to the upper part of the ball pen. The nylon fastener strips are stitched together width wise and pasted on the woodenboard to make 1'x1' area. ●●●● Operation: The child holds the pen as any other normal pen for a sighted person and makes contact of the thread over the slate surface. Keeping continuous touch with the surface, the child glides the pen in different directions and the thread delivery is maintained smoothly through the rotating spool. A line can be terminated by snapping off the thread by using a sharp stationary blade. A continuous running thread can also make different shapes like circles, rectangles, curved lines, letters, graphic symbols, maps etc. The drawn picture can be easily "erased" by simply pulling away the thread from the slate surface and rewinding it again over the spool. The child can immediately feel the shape by moving fingers over the thread surface and add, correct or erase the line quickly. It enables interaction of the child with the writing media and encourages drawing of various objects. A low vision child may see the shapes by holding the board close to eyes. Advantages (i) Self operated excellent user friendly device (ii) Serves as useful educational media for the teaching personnel (iii) Operates on concept of "draw as you think" which is better as compared to tactile devices where "embossing" is carried out on the reverse side of the paper, metal sheet etc. to get mirror image of the actual profile. (iv) Simple design using readily available components. (v) Easy to manufacture, even in the rural areas. (vi) Low cost and affordable. (vii) No training manual required as it is easy to operate. ●●●●

Braillewriters: Mechanical embossers that support six key entry are usually called brailleur? Mechanical braillewriters work a little bit like typewriters. They have six keys-one for each dot in a braille cell-a space bar, a backspace key, a carriage return, and a line feed key. Braillewriters use heavyweight paper. The most popular braillewriter is the Perkins braillewriter, made by the Perkins School for the Blind in Massachusetts. One high-tech device devoted to writing in print is the

126 Mountbatten Braille. The Mountbatten Braille combines a mechanical braillewriter and computer in one device. It has the same keys as a braillewriter, but the keys do not require as much pressure to operate. As your child uses the Mountbatten, she can feel the braille paper to see what she has written. The Mountbatten has computer technology built into it so that files can be stored and retrieved at a later time, and the device can also "speak" aloud what is Brailled. The Mountbatten is typically used with younger children or with children who have additional disabilities and limited hand strength. A new design for a mechanical six-key braille has recently been developed by an Australian researcher after many years of effort. This new device is known as a Jot A Dot and is currently expected to be commercially available in January 2003. It looks much like an electronic braille note-taker.

127 1.3 Braille Paper:

The standard size of Braille paper is 22"x28" and weight 8.6 kg. per gross. 1.4 Talking Books and Tape Recorders •••••

Talking Books:

The material recorded on cassettes has emerged to be the most popular mode of imparting education to visually impaired persons. As Braille books are very heavy and many newly blind persons are not able to learn Braille easily, talking books are emerging to be the most viable alternative.

For listening to the talking books, the conventional cassette players with the compact cassettes with a playing time of either 60 or 90 minutes are generally used. •••••

Digital Tapeless Recorder: The blind people can use it alone without someone's help.

It has a special voice prompt for the blind which includes a voice guide, easy research mode, volume adjustment and option for use of earphone. 1.5

Reading Machines ••••• Kurzweil Reading Machine:

A portable optical scanner that reads type-set or type-written text and turns it into speech.

Its features include: (i) a large memory to provide improved processing of incoming text; (ii) an automatic contrast control; (iii)

tools for format analysis; (iv) multi-lingual capability for text in any of these verbal languages; (v) communication interface which allows it to serve as an input or output device with other data or text processing equipment. ••••• Optacon: is

a book-sized electronic device with a movable camera, the size of a pocket knife and a tactile screen the size of a fingertip which presents a tactile image on an array of vibratory pins. The reader passes the camera over printed material with his right hand and his left index finger feels in vibratory relief the image the camera sees. The manufacturer claims that an experienced Optacon user reads up to 90 words per minute, about half his Braille reading speed. 1.6

Braille Computers ••••• Braille Window: is the Braille-display for connection to all sort of IBM compatible personal computers.

128 ••••• Keytone: is a portable information handling, word processor and computer access device that talks to its user.

••••• EHG-BW/ 2-PIEZO: is a monitor and key board which provides output in raised dots and can be conveniently used by the

visually impaired persons. ••••• Galaxy Piezo: is a special computer for the visually impaired and it gives output in

embossed dots. ••••• Galaxy speech: is a special computer for the visually impaired with speech output ••••• Braille'n

Speak: is pocket size note taker. It can be used for word processing, as a calculator, as a clock and a calendar. It can store 200 pages of Braille text. •••••

Versa-Braille II+: is recognized as a convenient Braille operating system. It can be used for editing, programming and word processing.

The input is from six keys and output is in the form of raised dots. It is a product of Tele-sensory Systems Inc. •••• Index Braille: Index Braille is a Sweden based privately owned business with a mission devoted to development and production of Braille Embosser. The company has introduced Double-sided Braille Embosser, popularly known as "Index Everest". It has a high speed Interpoint Braille Embosser which uses normal cut sheet. Over the years, the Everest has proved to be one of the most reliable Embossers on the market. ••••

Speech Synthesizers: A speech access system converts text from a computer into spoken words. It is the hardware device that does the speaking in a speech access system.

Important features of synthesizers include (i) voice quality (ii) speed at which text is converted to speech (iii) memory requirements, and (iv)

compatibility of the synthesizer to the computer (Mac or PC) and the number of languages available.

a. External device: It connects to a computer externally and comes with a speaker and a socket for headphones and can be moved around to different machines.

129 b. Internal device: It comes as a chip or a circuit

board that must be inserted inside the computer with sockets for speakers and headphones. It can be moved around to different machines, it works faster than an external device. c. Soft-ware based device: It is loaded as software on a compatible computer and it gives speech out through the sound system of the computer itself. The Microsoft Voice is useful for reading the documents and for operating window commands with the help of multimedia kit.

d. Language software: The Indian Institute of Technology (IIT) Chennai has developed Braille Software as well as Language Software which enables a visually impaired person to access computers for Braille as well as language outputs in all the Indian languages.

It is also providing the software completely free of cost to the users and the

institutions. It has also developed a system of keyboard mapping and operations in Indian languages and instruction manual for use of the special version of the ITI

Multilingual Software. e. Refreshable braille display: A refreshable braille display or braille terminal is an electromechanical device for displaying braille characters, usually by means of round tipped pins raised through holes in a flat surface. Blind computer users who cannot use a computer monitor can use it to read text output. Speech synthesizers are also commonly used for the same task, and a blind user may switch between the two systems or use both at the same time depending on circumstances. Deaf blind computer users may also use refreshable braille displays. The base of a refreshable braille display is a pure braille keyboard. There, the input is performed by two sets of three keys plus a space bar (as in the Perkins Braille), while output is via a refreshable braille display consisting of a row of electromechanical character cells, each of which can raise or lower a combination of six (or in some cases, eight) round tipped pins. Other variants exist that use a conventional QWERTY keyboard for input and braille pins for output, as well as input only and output only devices. On some models the position of the cursor is represented by vibrating the dots, and some models have a switch associated with each cell to move the cursor to that cell directly. The mechanism which raises the dots uses the piezo effect of some crystals, whereby they expand when a voltage is applied to them. Such a crystal is connected to a lever, which in turn raises the dot. There has to be a crystal for each dot of the display, i.e. eight per character. Because of the complexity of producing a reliable display that will cope with

130 daily wear and tear, these displays are expensive. Usually, only 40 or 80 braille cells are displayed. Models with between 18 and 40 cells exist in some note-taker devices. The software that controls the display is called a screen reader. It gathers the content of the screen from the operating system converts it into braille characters and sends it to the display. Screen readers for graphical operating systems are especially complex, because graphical elements like windows or slide bars have to be interpreted and described in text form. Modern operating systems usually have an Application Programming Interface to help screen readers obtain this information, such as UI Automation (UIA) for Microsoft Windows, VoiceOver for OS X and iOS, and AT-SPI for GNOME. Optical Devices for Print Reading and Writing An estimated 1 in 250 children are visually impaired as a result of eye disease. Some of these children have nearly normal vision, some are totally blind, but the majority fall into a broad range between these two points. Children are said to have 'low vision' or 'partial sight' when they have: (a) a corrected visual acuity in the better eye of $\geq 6/18$ to 'perception of light' (or a visual field of less than 10 degrees) and (b) the ability to use their residual vision to orientate themselves or to perform tasks. They are identified at eye clinics, school screening programmes, community based rehabilitation (CBR) programmes or special schools for the visually impaired. The education, employment prospects, independence and quality of life of a child with low vision can all be improved by enhancing vision. Optical devices (spectacles, magnifiers and telescopes) play a key role in achieving that approximately half of children who have low vision show an improvement in distance and/or near visual acuity with the help of spectacles, a magnifier or both. The majority of magnifiers are prescribed for children who have a visual acuity in the better eye of $\geq 6/60$ to $1/60$. The management of children with low vision requires cooperation between the child, his/her family and eye care educational and social personnel. There are five stages in the management of children with low vision. Eye care personnel are primarily involved in the assessment and monitoring stages which include: visual acuity measurement (distance and near) eye examination, diagnosis and prognosis surgical and/or medical treatment and the provision of optical services. Sight is a key source of stimulus during a child's development, and so children with low vision should be motivated to make the maximum use of their residual vision. This can be done using both non-optical and optical methods. Large Print Standard print is usually in a 10-12 point size. While large print was often thought of as 18-24 point, today computers and printers can produce text in any size the user desires and in a variety of fonts. Most users of large print prefer a sans serif font such as Arial or Verdana which do not have embellishments on letters that can cause visual clutter and confusion like those found on Times New Roman and other serif fonts. Non-optical Devices Tools that do not optically magnify or change the image being viewed. Lighting options-appropriate lighting conditions can greatly improve one's ability to read printed information. Natural-natural lighting is a great source of lighting for reading especially when it can be controlled with blinds, shades, or curtains. Book/reading stands-allows the reader to place reading materials at a comfortable position for reading and are available in portable, desktop and floor models. Light filtration systems-better known as sunglasses or colour filters, these devices can be very useful especially in brightly lit environments. Enhancing Vision Using Non-Optical Methods •••• Move CLOSER, e.g., use an angled reading desk. •••• Use COLOUR to show objects more clearly. •••• Use CONTRAST, e.g., eat white rice off a coloured plate.

132 ●●●● Pay attention to LIGHTING, e.g., sit near a window in class. ●●●● Make objects LARGER, e.g., write with larger letters. ●●●● Use a LINEGUIDE such as a ruler when reading and writing. ●●●● Optical Devices. These devices magnify the image of the material being viewed and should be prescribed by an eye care professional specializing in low vision. The most widely used optical devices are spectacles or eye glasses and contact lenses. When these do not provide enough magnification users can turn to handheld or stand magnifiers. Enhancing Vision Using Optical Devices Optical devices play a key role in enhancing vision and reducing visual disability in children with low vision. They include: standard prescription spectacles?optical low vision devices for distance vision?and optical low vision devices for near vision. a. Standard prescription spectacles: It is important to ensure that children with low vision are refracted and provided with any spectacles they require. Work in West Africa indicates that at least 30% of children with low vision needs spectacles. Refraction should always be carried out before a magnification assessment. b. Optical low vision devices for distance vision: Distance vision magnification requires a telescopic lens system. Telescopes are expensive and have limited applications. It is often more practical for a child to sit near the front of class to see the backboard than to use a telescope. c. Optical low vision devices for near vision: An optical low vision device for near vision uses one or more lenses placed between the eye and an object to alter the retinal image size of the object. This makes the object larger and easier to see. The minimum dioptric power of a device used in this way is +4.00D. These devices are inexpensive and have a wide range of applications. They play a vital role in giving children with low vision access to print and illustrations in standard textbooks. Prescribing Magnifiers for Near Vision The power of magnifier prescribed for a child is determined by the child's visual requirements, recorded near visual acuity and measured working distance. They are prescribed, starting with low power magnifiers and then progressing to higher powers. The higher the power, the smaller the area of visual field seen through the magnifier. More

133 words in a sentence can be viewed through a +10D magnifier than through a +20D magnifier. The power of the magnifier prescribed should be the maximum power which enables the child to perform the task required, but not above requirements so that maximum visual field is maintained. Moving the eye closer to the lens of a handheld or stand magnifier also increases the field of view. In West Africa 71% of magnifiers prescribed were low power magnifiers (under +25D). These were prescribed more frequently for those with a visual acuity of 3/60 or better. High power magnifiers (over +25D) were prescribed in 29% of cases and were mainly prescribed for those with a visual acuity of less than 3/60. To determine the appropriate type of magnifier it is important to assess the child's personality, coordination, motivation and task aims. The same magnification can be provided using different mounting systems and working distances. Optical devices for near vision include: handheld magnifiers (illuminated or non-illuminated) ?stand magnifiers (illuminated or non-illuminated) ?spectacle mounted magnifiers (e.g., high plus spectacle lenses, Hyperocular lenses)?and spectacle mounted telescopic units. The most widely available optical low vision devices for near vision are non-illuminated handheld magnifiers, non-illuminated stand magnifiers, and high plus spectacle lenses. There are many benefits in providing magnifiers to children with low vision. The magnifiers encourage children to use their low vision to the full, thereby increasing visual stimulus and helping the children's development. The magnifiers promote literacy by increasing access to printed material for educational purposes and private reading. It is also more cost effective to provide children with optical devices enabling them to use standard books than to provide large print books which are expensive and heavy to carry. There are some limitations in providing magnifiers. Using a magnifier may make a child's visual disability more noticeable causing the child to feel different from other children. The human and financial resources available to provide the magnifiers may be limited. The child needs to be taught carefully how to use the magnifier as the restricted field of view can prevent a child from perceiving the overall pattern of words or sentences on a page.

Optical devices are of two kinds near and distance. Near devices are designed for magnifying close objects and print. Distance devices are for magnifying things in the distance (from about 3 metres to far away).

Check that each person has been examined to see if spectacles are needed to correct or improve vision before recommending low vision devices. It is necessary to find out what people are unable to see and what they want to be able to see well. It might be a very specific task such as reading labels on food packets. The nature of the task will also affect the type of low vision device which

134 is suitable. Before selecting a low vision device, consider: ••••• the size of objects to be viewed ••••• the possible viewing distance from the object ••••• the length of time needed for the activity ••••• whether one or both hands are needed for the activity. ••••• Some people use both near and distance devices, others use only one type. Optical devices for near tasks Magnifiers for close tasks are designed to be either held in the hand (handheld magnifier), to be placed on a book or over a small object (stand magnifier) or mounted in spectacle frames. With magnifiers for near tasks, objects or print look larger and detail can be seen. A standmagnifier is a strong lens which is mounted in a plastic stand. A stand magnifier is usually easier than a hand held magnifier for a child to use. It can be moved along while still resting on a page of a book. With spectacle magnifiers, both hands are free to work on tasks. Magnifiers for near tasks can be used for: ••••• reading a book or a newspaper ••••• reading labels, signs or prices in shops ••••• using tools, for example measuring ••••• threading a needle ••••• identifying money ••••• inspecting objects such as plants or insects

135 For reading, the magnifier has to be moved along each line of print, sometimes only showing a word or part of a word at a time. More words will be seen if the eye is held close to the magnifier. Reading is very slow at first. It is difficult to learn to use the magnifier properly a lot of practice is needed. Optical devices for distance tasks Magnifiers for distance are like small telescopes. They improve the ability to see distant objects or people. Objects appear to be closer and it is hard to judge distances properly. It is best not to use telescopes while walking around. Training to use optical devices Encouragement and training are needed for people to use low vision devices well. The field of view or amount able to be seen through the magnifier or telescope is small. It takes practice to be able to find objects and then follow them or scan to find other objects. For distance tasks it is best to look in the general direction of an object without the device and then point or place the device in that direction to locate objects. It is easier to scan along horizontal objects such as roads or fences and up and down vertical objects such as trees or walls. Training in the use of all magnifying devices is vital: Magnifying glasses Useful for when you need both hands free for the task e.g. School age children/adults who need to read and write a lot. Up to 20 Dioptres can be prescribed. Always consider if non-optical devices might help instead of or with magnification. For example, a writing stand is useful for relieving posture problems. Do not just give out magnifying glasses, if there is no one to train the person in its use. A person will often reject the device, because they do not know how to see better with it. 1. Uses: ••••• for reading any material ••••• writing ••••• looking at objects from close range 2. Advantages: ••••• range of magnification ••••• both hands free ••••• readily available- e.g. "cataract" glasses can be used as reading glasses •••••

once used efficiently, can be used for long periods

136 3. Disadvantages: ••••• exact reading distance important ••••• Short reading distance with high powered lenses ••••• more fragile than magnifiers (scratching, breaking) ••••• good lighting needed at close distance ••••• often a reading stand is beneficial to bring material close Hand Magnifiers 1.

Uses ••••• reading signs, labels, prices, books ••••• identifying money ••••• inspecting objects such as plants or insects ••••• handwriting 2. Advantages: ••••• easy to carry ••••• available from low to high power ••••• cheap to make or buy ••••• can be used in any position or angle ••••• allows light onto print or objects 3. Disadvantages: ••••• difficult to keep appropriate distance ••••• one hand occupied ••••• difficult to hold steady

137 Stand Magnifiers 1. Uses ••••• Reading from a book or newspaper ••••• Looking at a picture or diagram 2. Advantages ••••• Has a fixed distance for ease of movement ••••• Easy to use ••••• Available from low to high power magnification ••••• Allows light onto print if legs thin and tapered or clear 3. Disadvantages ••••• Keeps one hand occupied ••••• Not useful for activities like writing ••••• Poor posture (bending above lens) ••••• Causes fatigue

138 Telescopes Telescopes can be used for looking at distant objects and activities such as: signs finding and recognising people or animals reading from a blackboard in school finding an entrance to a building watching games. 1. Uses ••••• Reading from a blackboard from a distance >2 m ••••• Looking at objects you cannot get close to, e.g. top of tree, animals 2. Advantages ••••• Makes distant objects appear closer ••••• Can be used in a classroom for blackboard reading or outdoors 3. Disadvantages ••••• Requires very good contrast ••••• Not easy to copy what you have seen, takes time to: (i) Find text on blackboard and read (ii) Write notes down, possibly using other low vision device ••••• Expensive to make ••••• Not easy to use, requires extensive training

139 Electronic Devices Video Magnifiers or CCTVs -A video magnifier, also known as a closed circuit television system (CCTV), allows the user to view an enlarged image of text or pictures that are placed under a camera. The image is displayed on a monitor or television. There are video magnifying systems that are mounted on a permanent stand and are very powerful but not easily moved, as well as portable handheld systems that can travel with the user from location to location, to the store, and back home again. Regardless of which type of video magnifier is used, the concept is the same. The user places the material to be viewed under the camera and the camera projects the image onto the screen. The user can increase the size of the image and change the colour of the text and background. Some models connect to a computer, which allows the individual to use one monitor for both systems. The computer screen can be split, with half the screen showing the information from the computer and half showing the information under the video magnifier's camera. A video magnifier is also considered to be an optical device because

140 it changes the image of the material seen by the eye. Read more about video magnifiers and learn about specific models. Scanners and Optical Character Recognition (OCR) -Scanners have now become a global technology that many people use. When combined with special software that can recognize letters, known as optical character recognition (OCR) software, however, they become an assistive technology tool that can transform print into alternative formats that can be read by people who are blind or visually impaired. For example, one might receive an important document in print. With a scanner connected to a computer the printed document can be scanned and convert into an electronic file that can be displayed as text on the computer monitor. The text can be read using several different methods, such as a screen reading program, a screen magnification program, or a refreshable braille display. A computer word processing program can be used to print the text in the user's choice of print sizes and fonts. Some people with visual impairments use conventional OCR software, while others prefer a specialized scanning system. Some visually impaired users prefer a reading machine, which is a standalone system with a scanner, the OCR software, and voice output.

2.8 Let Us Sum Up Functional academic skills improve the reading writing skills of blind and low vision persons. The techniques are very useful at the time of learning how to read and write. Various reading and writing devices are help for giving success of the goal of these skills. By the use of assessment procedure teachers can be satisfied how much a child can able to learn. Both blind and low vision person can easily learn their academic skills by the use of various types of aids and appliances. These appliances are made on the depends on child's capability. So it must be say that now a days academic procedures are not a barrier for a visual impaired person. 2.9 Check Your Progress 1. What is LMA? 2. Write the importance of reading readiness at the time of braille teaching? 3. How you help a low vision child at the time of reading and writing? 4. Write the difference between aids and devices? 5. List up the name of devices print and braille reading.

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143 Unit - 3 □□□□□

Teaching

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Components 3.4

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and

Mobility Aids 3.4.1

Need and Importance 3.4.2 Techniques of Teaching Mobility 3.4.3 Sighted Guide Technique 3.4.4 Pre Cane Technique 3.4.5 Cane Techniques 3.4.6 Mobility Aids 3.5

Daily Living Skills- Assessment of Needs and Techniques of Teaching Age Appropriate Daily Living Skills 3.5.1

Assessment of Needs of

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Sensory Efficiency- Importances and Procedures for Training Auditory, Tactile, Olfactory, Gustatory, Kinaesthetic Senses and Residual Vision 3.6.1

Importances and Procedures for Training Auditory 3.6.2 Importances and Procedures for Training Tactile 3.6.3

Importances and Procedures for Training Olfactory 3.6.4 Importances and Procedures for Training Gustatory

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Techniques of Teaching Social Interaction Skills, Leisure and Recreation Skills and Self-Determination 3.7.1

Techniques of Teaching Social Interaction Skills 3.7.2

Techniques of Teaching Leisure and Recreation Skills 3.7.3 Techniques of Teaching Self-Determination 3.8 Let us sum up

3.9 Check Your Progress 3.10 References 3.1 Introduction The teacher of visually impaired children expected to acquire adequate skills for teaching visually impaired children. The skills must be in the areas of expanded core curriculum or plus curricular activities such as sensory efficiency training, orientation and mobility, daily living skills, socio personal skills etc.

Considerable amount of time should be provided to the students in these areas. All these skills are come under independent skills or independent living skills. On the other hand these skills help a blind person for developing their self-confidence and make them mentally strong. By which they can easily overcome their psychological barrier. Or clearly it must be said that independent living skills help the visually impaired person for removing all types of difficulties which they faces day to day life and make them self depended adoptable socialized person. 3.2

Objectives After going through this unit you should be able to: 1.

Describe about independent living skills 2. List out the activities of independent living skills 3. Discuss the techniques of mobility skills 4. Point out the importance of sensory training

145 5. Know the usefulness of daily living skills 6. Understand the needs of social interaction skills 3.3 Independent Living Skills- Meaning, Importance, Components 3.3.1 Meaning

One of the primary purposes of education is to prepare individuals with the tools that allow them equal opportunity to successfully cope with the demands typically encountered in adulthood. In general, these demands involve living with others, managing one's personal life, earning a living, and contributing to and participating within the community. The tools needed to meet these demands include knowledge and skills acquired through academic instruction, social competency developed through interactions with others, specific vocational preparation based on interests and aptitude, and skills of independent living. Independent living,

as seen by its advocates, is a philosophy, a way of looking at society and disability, and a worldwide movement of people with disabilities working for equal opportunities, self-determination, and self-respect. In the context of eldercare, independent living is seen as a step in the continuum of care, with assisted living being the next step. In most countries, proponents of the Independent Living Movement claim preconceived notions and a predominantly medical view of disability contribute to negative attitudes towards people with disabilities, portraying them as sick, defective and deviant persons, as objects of professional intervention, as a burden for themselves and their families, dependent on other people's charity. These images, in the Independent Living analysis, have consequences for disabled people's opportunities for raising families of their own, getting education and work, which, in turn, result in persons with disabilities making up a large portion of the poor in any country. According to philosophical thoughts - "Independent Living does not mean that we want to do everything by ourselves, do not need anybody or like to live in isolation. Independent Living means that we demand the same choices and control in our everyday lives that our non-disabled brothers and sisters, neighbours and friends take for granted. We want to grow up in our families, go to the neighbourhood school, use the same bus as our neighbours, and work in jobs that are in line with our education and interests, and raise families of our own. We are profoundly ordinary people sharing the same need to feel included, recognized and loved." So it may be said that Independent living includes the skills and knowledge an individual needs to direct his or her life at home and in the community.

146 3.3.2 Importance

Skills of independent living necessary for managing adult life include skills related to personal hygiene, eating, dressing, clothing selection and care, food preparation, money management, time management, use of the telephone, cleaning, home maintenance, and community functioning. Within each of these broad areas are additional sub-skills that must be mastered in order to function as interdependent individuals within society. Acquisition of these skills and sub-skills occurs gradually for most children beginning in infancy, primarily through watching adults and older members of society accomplish tasks in which they are used. Children whose interest has been piqued through vision watch carefully, ask questions, practice observed skills in their play, and are physically and verbally guided in their attempts to reproduce the task by competent, older members of society. Spontaneous instruction is provided as needed within the naturally occurring context of the task and often involves demonstration and modelling by competent others, specific feedback on the child's attempt, and encouragement to practice the task, first while helping, then independently. Because acquisition of these skills occurs primarily within home and community environments, academic programs typically do not formally address them. That school programs do not incorporate instruction in independent living

skills, however, does not make them any less critical for post-school success. As is true for other children and youth, the acquisition of independent living skills is crucial for the post-school success of students who are blind or who have low vision. Visual

impairment may impede

the process of the development of independent living skills in several ways,

among which are: •••••

Children may not clearly observe others performing tasks, so may not be aware that the tasks even exist or that other children attempt them in play and real situations. ••••• Children may not clearly observe the whole task or the techniques that others use to perform independent living skills so

may

not have a cognitive model upon which to build skills that includes an understanding of the whole task or its component parts. ••••• Instruction in independent living skills is complicated when learners cannot easily benefit from demonstration and modeling and when the person providing the instruction does not have a well-established understanding of appropriate strategies for addressing the impact of visual impairment on learning. ••••• Children with visual impairment may not

be

given enough opportunities to practice new skills until they become fluent.

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For students with visual impairments to achieve success in adulthood, they must have well-developed independent living skills prior to transitioning from school to work. Teachers of students with visual impairments (TVIs) must annually assess all students' skills

in each independent living skill area and compare these skill levels to those being acquired by their same age peers, considering that peers often learn about skills long before they use them. Little research has been conducted on the acquisition of independent living skills by students with visual impairments, but there is evidence that these students are delayed in their development of skills in this area. In 2002, Lewis and Iselin compared the interview responses of 10 parents of children with visual impairments ages 6-9 to the responses of 10 parents of same-age students with unimpaired vision to determine the students' level of independent functioning. The 101 survey items focused on hygiene, dressing, clothing care, kitchen, home care, and money, telephone, and community skills. The difference between the level of assistance provided to these students was statistically significant, with children with unimpaired vision clearly demonstrating levels of independence far above their peers with visual impairments. The students with visual impairments were performing only 44% of the tasks independently, while their sighted peers were reported to perform 84% of the skills independently. In fact, students who were blind or who had low vision were not performing 41% of the tasks, even with assistance, while their peers were unable to perform only 14.5% of the tasks independently. In a more recent study of adaptive behaviour in the areas of communication, daily living, and socialization skills of 46 Greek students with visual impairments ages 5 to 18 years old, Papadopoulou, Mestizo, and Agilities (2011) found that the lowest adaptive level of their participants was in the independent living domain. Using the national norms of Vineland Adaptive Behaviour Scales (1984), students with visual impairments scored between the low to moderately low categories (1.46 on a 3 point scale), although when compared to the supplementary normative group, participants were determined to be functioning between the average and above average range. The authors also noted that, while students' abilities in the living skills domain improve with age, the rate of their delay increases. They recommended that instruction in daily living skills be emphasized in school programs to reduce performance gaps. For students with gaps in the development of independent living skills, TVIs must advocate for the inclusion of appropriate goals related to these functional skills on Family Service Plans and Individualized Education Programs (IEPs), as well as for the time and resources to teach these skills. Strong advocacy is key, since people unfamiliar with the long-term outcomes of many students with visual impairments may mistakenly believe that the acquisition of academic skills is of greater importance to post-school success. Experienced educators of students who are blind or who have low vision, however, recognize that students without well-developed independent living skills struggle to use academic knowledge within adult education, vocational, and community environments. A second role, then, of TVIs is to help administrators, parents, and other members of IEP teams to realize the critical importance of including instruction in independent living skills in the curriculum of students who need it. Finally, TVIs must be prepared to provide carefully designed formal instruction in independent living skills to students from infancy until age 22 and to assist students' parents as they acquire experience in introducing, teaching, and reinforcing these skills within the home and community. Instruction should meet the assessed needs of each student; incorporate appropriate alternative sensory methods; focus on safety, fluency, and efficiency; and facilitate development of students' problem solving, organizational, sensory efficiency, and self-advocacy skills.

As much as possible, instruction should occur within naturally occurring environments and contexts, but the limited availability of either or both of these conditions should not prevent instruction from occurring. As part of their responsibilities, TVIs must maintain longitudinal records of students' acquisition of skills and assure that the development of more complex skills within any area occurs when appropriate. Students with visual impairments deserve the opportunity to acquire and use independent living skills similar to those of their peers. Similarly, teens with visual impairments deserve to leave high school ready to function in the adult school, community, and work environments to which they transition. Through assessment, advocacy, collaboration with families, targeted formal instruction, and a commitment to positive post-school outcomes, these objectives are much more likely to be achieved. It is the position that children and youth with visual impairments require carefully designed instruction in independent living skills that is

facilitated by qualified individuals who understand the impact of visual impairment on the acquisition of general information and learning. Development of independent living skills is vital for full integration in society. Specialized assessment and instruction must be provided. In addition, sufficient time, resources, and support must be available to teachers of students with visual impairments to allow them to address all the educational needs of their students, including those related to independent living skills. Teachers, parents, and administrators must work together in these efforts to achieve the promise of equal opportunity, the overarching goal of education.

149 3.3.3

Components The components of independent living skills are as follows- ✓✓✓✓✓ Home Living ✓✓✓✓✓ Household & Money Management ✓✓✓✓✓ Transportation ✓✓✓✓✓ Law & Politics ✓✓✓✓✓ Community Involvement ✓✓✓✓✓ Personal Safety ✓✓✓✓✓ Recreation & Leisure ✓✓✓✓✓ Interpersonal Relationships ✓✓✓✓✓ Self-Advocacy / Self-Determination

On the basis of these components various activities are included in the expanded core curriculum's syllabus. Which are most commonly named as orientation and mobility skill, daily living skill, personality development skill etc. 3.4

Orientation and Mobility-Need and Importance, Techniques of Teaching Mobility Sighted Guide and Pre Cane, Cane Techniques and Mobility Aids

Orientation and Mobility

Movement is a building block for learning. As a child explores his world and has physical contact with it, learning takes place. Children with visual impairments typically need encouragement to explore their surroundings. To them the world may be a startling and unpredictable place, or it may not be very motivating. Orientation and mobility training (O & M) helps a blind or visually impaired child know where he is in space and where he wants to go (orientation). It also helps him be able to carry out a plan to get there (mobility). Orientation and mobility skills should begin to be developed in infancy starting with basic body awareness and movement, and continuing on into adulthood as the individual learns skills that allow him to navigate his world efficiently, effectively, and safely. Orientation and mobility training actually began after World War II when techniques were developed to help veterans who had been blinded. In the 1960s 150 universities started training programs for Orientation and Mobility Specialists who worked with adults and school aged children. In the 1980s the O & M field recognized the benefit of providing services to pre-school aged children. Today, orientation and mobility specialists have developed strategies and approaches for serving increasingly younger populations so that O & M training may begin in infancy. Orientation and Mobility or O&M is a profession which focuses on instructing individuals who are blind or visually impaired with safe and effective travel through their environment. Individual O&M Specialists can work for schools, government agencies or do private contracting for their services. The Academy for Certification of Vision Rehabilitation and Education Professionals offers certification for vision rehabilitation professionals, in the USA. History of Orientation and mobility Orientation and mobility training actually began after World War II when techniques were developed to help veterans who had been blinded. In the 1960s universities started training programs for Orientation and Mobility Specialists who worked with adults and school aged children. In the 1980s the O&M field recognized the benefit of providing services to pre-school aged children. Today, orientation and mobility specialists have developed strategies and approaches for serving increasingly younger populations so that O&M training may begin in infancy.

The profession of Orientation and Mobility began to develop during, and immediately after, World War II, when soldiers who had been blinded in battle were sent to recuperate at Valley Forge Army General Hospital before entering Avon Old Farms Convalescent Hospital, the U.S. Army's former experimental rehabilitation centre for blind soldiers in Avon, Connecticut.

Orientation and Mobility Specialists An Orientation and Mobility (O&M) Specialist provides instruction that can help you develop or relearn the skills and concepts you need to travel safely and independently within your home and in the community. O&M Specialists provide services across the life span, teaching infants and children in preschool and school programs, as well as adults in a variety of community based and rehabilitation settings.

Although Orientation & Mobility Specialists are primarily responsible for O&M training, their work may not always be done directly with the child. When the child is very young, for example, the O&M may provide consultation to the vision teacher, occupational therapist, physical therapist, early intervention specialist, and the family.

151 3.4.1 Need and Importance Orientation and mobility (O&M) training helps children and adults who are blind or visually impaired know where they are, where they want to go (orientation) and how to get there safely and independently by walking or using transportation (mobility) The Department for the Blind and Vision Impaired offers travel skills assessments and training, orientation technique training, and instruction in how to get around independently, to include: •••• Using hearing, touch and smell to gather information about the world •••• Learning spatial concepts to understand the relationships that exist between objects in the environment •••• Using the cane to clear a safe path and locate objects along the way in both indoor and outdoor environments •••• Asking for or declining assistance •••• Independently finding your destination •••• Techniques for crossing streets, such as analysing the shape of an intersection? determining if traffic is controlled by a stop sign, yield sign, a traffic light, or no control ••••

Problemsolving skills

to determine what to do if you are disoriented or lost or need to change your route •••• Using public transportation and transit systems

Specialists provide services to adults in a variety of community based and rehabilitation settings. Orientation and Mobility services are provided in your home, college, community, city and work site. Importance of Orientation and Mobility in Rehabilitating Individuals who are Blind or Visually Impaired Orientation and mobility (O&M) is a vital program for the blind and visual impaired and its importance can never be over emphasized. O&M is important because instruction covers the following areas? "

Sensory development, or maximizing all of your senses to help you know where you are and where you want to go 152 ••••

Concept development, which includes body image, spatial, temporal, positional, directional, and environmental concepts

•••• Motor development, including motor skills needed for balance, posture, and gait, as well as the use of adaptive devices and techniques to assist those with multiple disabilities •••• Sensory development, which includes visual, auditory, vestibular, kinaesthetic, tactile, olfactory, and proprioceptive senses, and the interrelationships of these systems

•••• Residual vision stimulation and training •••• Upper and lower protective techniques •••• Locating dropped objects

•••• Trailing •••• Squaring-off ••••

Using a cane and other devices to walk safely and efficiently •••• Soliciting and/or declining assistance ••••

Following directions •••• Utilizing landmarks •••• Search patterns •••• Compass directions •••• Route planning ••••

Locating destinations using various techniques and tools •••• Analysis and identification of intersections and traffic patterns •••• The use of traffic control devices •••• Techniques for crossing streets •••• Techniques for travel in indoor environments, outdoor residential, small and large business districts, mall travel, and rural areas ••••

Techniques for crossing streets, such as analysing and identifying intersections and traffic patterns Problemsolving skills to determine what to do if you are disoriented or lost or need to change your route

153 •••• Using public transportation and transit systems ••••

Evaluation with sun filters for the reduction of glare •••• Instructional use of low vision devices 3.4.2 Techniques of

Teaching Mobility When planning an O & M program for children the focus of training may include such things as: ••••

Sensory awareness: gaining information about the world through hearing, smell, touch and proprioception.

When a child cannot access his world efficiently through his vision, he must learn to use his other senses more effectively.

Systematic instruction is needed to develop the other senses for use in travel and finding things in the environment.

He must understand that some of the sounds and smells and textures he experiences can be used as permanent markers (landmarks) to let him know where he is in the world. Other pieces of information may be there sometimes and not at other times (clues) such as the sound of the water fountain. Developing sensory awareness is critical for the child with visual impairments or blindness.

Sounds, when not paired with clear visual information, can be very confusing. Try sitting in a busy mall or park for a period of time with your eyes closed. You will probably hear sounds you can't identify and be tempted to open your eyes, to try to pair a sound to its source. You might assume that sounds which get louder and louder are coming towards you because of your visual knowledge of the world. A child with a visual impairment may not make the same assumption. The ringing noise he hears may not mean "telephone" or that the honking sound may not mean "car." He needs help in learning to use his hearing to interpret the world around him. If his hearing is impaired even to a small degree that task will become much more difficult. Close your eyes and plug your ears while you stand on a busy street corner. Can you tell which way the traffic is flowing or when it will be safe to cross the street? Are you startled or distracted by other noises you hear? Children need to learn to localize sounds and use sound clues for orientation, straight line travel, and safety. Though we may not be aware of it, we know much of the world through touch. However, if the things you touch or that touch you feel funny, or hurt, you may become resistant to using touch to examine things in your environment. Touch alone may not be helpful in identifying an object if you can't touch the whole object at one time. Is 154 the furry thing a cat or a rabbit? If you aren't touching the ears or the teeth or the tail you might not know. Developing the tactual sense will help the child in ways that range from finding a toy he dropped on the floor to feeling the difference between the curb and the street with his cane. Normally I don't pay much attention to smells unless they are extremely pleasant or offensive, but I might use that kind of information to help me know exactly where I am in certain environments. Smells can also serve as landmarks and clues for environmental awareness. For example, the smells that can be found in my kitchen differ greatly from the smells in my bedroom. I can also smell food being cooked near mealtime in my kitchen, but after a meal I am more likely to smell the soap used in the dishwasher. If I am looking for a clue to my location, I need to know that both of those smells might mean I'm in the kitchen. The gym at school, unlike my kitchen at home, might always smell about the same. If I have no sight, this smell, especially combined with other clues and landmarks, might help me know that I am in the gym. It is important for children with visual impairments to participate in activities that enable them to fully use their other senses. Learning to interpret the information they tune in to is equally important. Parents and educational staff, with support from the O & M, can do a lot to help children develop their other senses. •••••

Spatial concepts: realizing that objects exist even if not heard or felt, and understanding the relationships which exist between objects in the environment. "Go down the street three blocks and turn right at the corner. I live in the upstairs apartment of the large, red brick building on the left." Pretty clear directions right? What if you don't know "blocks" and "corner" or "upstairs" and "left"? Doesn't "down" mean under? How large is "large?" When vision is impaired these concepts are much more difficult to understand and need to be taught. How do you teach the concept of "corner" without vision? Do you touch corners or draw corners? If you can touch a corner or draw a corner, where do I find the corner to touch when I am walking along the street? Orientation and mobility specialists work to develop distance, size and directional concepts in children with visual impairments. Mom and Dad, and Mrs Henry the art teacher, may work on these concepts too, but having the support of an O & M would likely make their job much easier. Our joints and muscles give us feedback about where our body parts are positioned. This is our proprioceptive sense. Proprioceptors located in the muscles and joints tell us if we are slumping or standing up straight, if our fingers are curled or extended, etc. Our vision system and our proprioceptive system work closely

155 together. When vision is impacted, so is our proprioceptive sense. Children with visual impairments generally need help to learn where their bodies are in space, and in relation to things in the environment. The physical therapist and occupational therapist, along with the O & M, can work directly with the child. They may also be able to suggest specific activities for the family, to help their visually impaired child develop the proprioceptive sense. •••• Searching skills: locating items or places efficiently. By using this skill find out object in unfamiliar surroundings and also save time. •••• Independent movement: this includes crawling, rolling, walking, etc. Most children with visual impairments are capable of learning routes in familiar environments. They learn to use landmarks and clues to help them know where they are along a particular route. They learn specific adaptations to aid them in their movement. These might include understanding that tactual markers on doorways identify the gym or the restroom, using an adaptive mobility device or a cane to identify obstacles and drop offs, or locating a street sign using a monocular. A primary goal of orientation and mobility training is to help each child with visual impairments achieve independent movement to as great a degree as possible. Some children may be preparing to get a dog guide, or learning how to access public transportation to get across town to a job. For children with additional disabilities, independent movement might focus on traveling independently in a wheelchair, or learning how to help get you into a van using a lift. It might mean helping the child learn to control the speed of movement on his walker as he goes down a ramp. Independent movement is tied to growth in other areas, such as communication and socialization. For example, though a child may not be able to tell you he's hungry, if he can take you to the kitchen you will probably understand that he wants something to eat or drink. Peers are more likely to invite your daughter to go to the mall if she can keep up with the group by using sighted guide technique or traveling with a cane. Going where we want when we want gives us control and allows us to make choices. •••• Sighted Guide: using another person to aid in travel. While principal objective of orientation and mobility training is attaining freedom in movement, help of another person is essential under certain circumstances. A visually impaired may require assistance of sighted guide while crossing busy road, moving in a less familiar environment, searching a visual sign or moving in a crowded place.

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Protective techniques: specific skills which provide added protection in unfamiliar areas. Can be used for protection from such vertically placed obstacles or low obstructions. And also used in alone walking. ••••

Cane skills: use of various cane techniques to clear one's path or to locate objects along the way.

It has been and remains the primary tool utilized by the visually impaired individual in his travel through the environment. The purposes of the cane are- protection, feedback and identification. Although Orientation & Mobility Specialists are primarily responsible for O & M training, their work may not always be done directly with the child. When the child is very young, for example, the O&M may provide consultation to the vision teacher, occupational therapist, physical therapist, early intervention specialist, and the family. It is important that an O & M Specialist be a part of the team because it is the O & M who must build upon these early concepts to meet long range goals. Even visually impaired children who have motor impairments need training in orientation and mobility. Though their O & M goal may not be independent travel, they may need O&M to participate more fully in events in their environment. For example, understanding that child's wheelchair is in front of him, can help him find it to assist with the transfer to the chair. Knowing that his switch is on the right side of his lap tray may allow him to play his CD player whenever he choose, instead of having to wait for someone to come help him. Even if he is not yet walking, it would probably be good to know that he could listen for the sounds mom is making in the kitchen to help him find the way to her. Children who are deaf-blind also need orientation and mobility training. Because their other distance sense (hearing) is affected, orienting to their environment and traveling safely becomes even more important. Orientation and mobility specialists have specific knowledge which is critical to the child with deaf-blindness. Orientation and mobility is important for every visually impaired child. It does not matter how young or old he is, how physically active or inactive, how much vision he has, or how smart a child he is, there are probably skills that he needs to develop or refine in the area of orientation and mobility.

3.4.3 Sighted Guide Technique

Sighted guide is a technique originally developed for people who are blind. It is also useful for those with low vision who are unsure of their bearings in an unfamiliar environment. Remember, always ask if any help is needed; not everyone needs or wants sighted guide assistance.

157 •••• Basic Sighted Guide Position and Alignment: The basis of the sighted guide technique is the blind or low vision person holds the guide's arm lightly above the elbow and allows the guide to walk one-half step ahead. This allows him or her to feel and follow the guide's direction. To begin sighted guide, the guider should touch the arm of the person being guided with the elbow preferable to use. He or she can then take the arm above the elbow. If someone needs extra support for walking, the guider should bend the supporting arm, parallel to the ground so he or she can apply weight to the arm. Guiding signals are helpful when a change in motion is needed, for example, a brief pause at the edge of a curb. Verbal clues are also helpful; "We are approaching a curb, the curb is slanted upward." So some important rules are as follows-

1. The sighted guide gives verbal cue ("take my arm/wrist") and/or nonverbal cue (touching the back of the person who is blind's hand with the back of the guide's hand).
2. The person who is blind should stand next to and slightly behind sighted guide, facing in the same direction as the guide. Therefore, the person who is blind is always at least a half step behind the guide.
3. The person who is blind's upper arm remains close to his or her body, with forearm and upper arm making a right angle at the elbow, with the forearm, wrist and fingertips aiming directly forward. The wrist is neither flexed nor hyper-extended, and the forearm neither angles toward the midline of the body nor away from the body, but aims straight ahead. The person who is blind grasps the guide's arm or wrist with the fingers toward the inside and the thumb toward the outside of the guide's arm.

158 4. The guide's arm is grasped at a location such that the person who is blind's upper arm and forearm form a right angle. The height difference determines this. A pre-schooler may grip an adult's wrist, whereas a tall person who is blind may need to grip a short guide's arm just under the armpit. The right angle allows for movement up or down for steps or curbs, etc.

5. The person who is blind's shoulder is directly behind guide's opposite shoulder, so that the pair are approximately one and one-half persons wide, except when traversing narrow passageways in which only one person can safely pass at a time.
6. The person who is blind should be responsible for maintaining orientations as well as the proper grip and alignment with the guide, but if he or she is incapable of doing so, the sighted guide is responsible for monitoring this. The person who is blind's non-grip hand can be used to confirm proper alignment by touching the guide's shoulders and aligning him/herself accordingly. The person who is blind can also assist with doors when appropriate, and the guide is responsible for the decision to transfer sides as needed to traverse doorways based upon the capabilities of the person who is blind.
7. The sighted guide is responsible for the safety of the person who is blind at all times, regardless of the errors on the person who is blind's part. The guide must be especially careful to monitor obstacles at various levels from head to toe. These obstacles not only include furniture, fixtures and people, but also overhanging head-high obstacles as well as slight irregularities in the walking surface, such as carpets, doorway mouldings and changes of texture in the walking surface. If the person who is blind trips, it is the guide's responsibility to support the person who is blind. The guide should choose or adjust walking pace to accommodate the needs of the person who is blind.

•••• Narrow door or passage: When going through a narrow door or passage, move your guiding arm backward toward the small of your back,

so the person being guided can step in single file behind you

1. The guide gives a nonverbal cue for the person who is blind to get directly behind the guide by moving the guiding arm back, placing the wrist in the small of the guide's back.
- 159 2. The person who is blind slides his/her hand down to the guide's wrist, stepping diagonally backward to walk directly behind the guide. The person who is blind extends his or her arm in order to avoid stepping on the guide's heels, walking one full step directly behind the guide. The non-grip hand can be used to confirm proper single-file alignment.
3. When the person who is blind is much taller or has a much longer stride than the guide, the guide may wish to extend his/her guiding arm backward from the small of the back. Although uncomfortable, it allows more room for the person who is blind's greater stride.
4. The guide may choose to reduce the pace and shorten stride slightly while going through the narrow space, then resume arm position, pace and stride after passing through the narrow space.

•••• Reversing Directions or Transferring Sides: (Note: either party can initiate a change of direction or a change of sides, after notifying the other of the need to do so.)

1. Reversing directions: The pair comes to a complete stop, the person who is blind releases grip, and the pair turn toward each other while executing a 180 degree

160 turn. The guide then re-establishes contact and the pair resume proper position and grip, traveling in the opposite direction. 2. Transferring sides: There are two methods of transferring sides; based upon the ability and preference of the person who is blind. o The most stable method is the grip method, done after the pair comes to a dead stop. The person who is blind places the back of his/her free hand just above his/her grip on the guide's arm and moves the original grip hand across the guide's back to the guide's other arm as he/she sidesteps into the new position on the guide's other side, resuming grip with the appropriate hand. o The slide method of transfer can be done while stopped or while traveling, depending upon the abilities of the pair. The back of the person who is blind's free hand contacts the guide's arm just above the original grip hand, with the fingertips pointing toward the guide's opposite arm. The person who is blind then releases the original grip and turns 90 degrees toward the guide's opposite arm, trailing across the guide's back until the guide's opposite arm is gripped and the new alignment is achieved. Since trailing is less secure than a firm grip, and since this method required a change of direction, it is not recommended for lower functioning or physically unstable individuals. •••••

Curb: When approaching a curb, pause briefly at the very edge of the curb and say whether the curb goes up or down.

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Stairs: When

approaching stairs, come to a stop at the edge of the first step and say whether the stairs go up or down and where the railing is located. The person being guided

will follow one step behind, holding your arm with one hand and the handrail with the other. Pause after completing the stairs. 1.

In an unfamiliar area, the guide should indicate the presence of a level change, particularly novel types of stairs (deep, narrow, curved, etc.). 2. With both ascending and descending curbs and stairs, the guide must take care to approach the stairs perpendicularly. In this way, the person who is blind is aligned so as to take the next step either up or down as the guide's movements indicate. 3. The guide brings the person who is blind alongside to the edge of the steps so that

neither person's toes extend over the edge of a descending step or under the extended edge of an ascending step. 4. When a railing is available, it is best to have the person who is blind take the railing before the guide takes the first step, unless he/she requests otherwise. 5. The guide takes the first step up or down in front of the person who is blind. The person who is blind waits until the guide has taken the first step, and both people work together to stay in step, with the person who is blind one step behind the guide at all times. 6. The guide is responsible for monitoring and making

adjustments so that when the guide is at the top or bottom, he or she pauses to indicate this while the person who is blind takes the last step. The guide's arm then moves directly forward (rather than up or down and forward) to indicate the level surface. •••••

Chair: When approaching a chair, place the hand of the person being guided on the back or side of the chair if possible, so he or she knows where the chair is and which way it is facing. He or she can then decide where to sit 1. Place the person who is blind's hand on the back of the chair and/or guide the person to the chair so that his or her knees or shins gently contact the edge of the seat. Tell the person that they are facing the front, back or side of the chair. For table/chair combinations or with stools or other unusual seating, explain the situation first, and then place the person's hand on it.

162 2. In an auditorium or with similar narrow seating, the guide first explains the situation, and then enters the aisle by side-stepping side-by-side with the person who is blind, maintaining contact with the person who is blind by touching the backs of each other's hands until they have located their respective seats. Allow the person who is blind to seat him/herself. •••••

Door: When coming to a door, stop first, then say whether the door opens toward or away from you, and whether it opens to the right or the left. The person being guided can then move to the appropriate side. Open the door and proceed. 1. The guide gives the narrow passageway signal, always going through the door first. The guide's movements to open the door can sometimes be interpreted by the person who is blind as to whether the door is a push or pull door, as well as to which side the door opens. When approaching a pull door, the guide must stop farther back than he/she normally would, reach forward and pull the door back without stepping backward into the person he/she is guiding. 2. With both push and pull doors opening to the person who is blind's side, the person who is blind should anticipate contacting the door by putting his or her arm into a modified hand and forearm position. If the person who is blind does not do so, the guide must be responsible for assisting as

163 necessary, while maintaining proper alignment through the doorway so that the person who is blind maintains the proper alignment through the doorway. 3. The person who is blind is responsible for holding the door, which opens to his or her side. The sighted guide is responsible for seeing that the person who is blind is on the side away from the door opening if the person who is blind cannot hold the door. The guide is also responsible for holding the door or monitoring in such a way as to avoid injury to either party. The person who is blind's hand should never slide on the door while it is opening or closing, nor should the door be contacted on the edge, but as close to the middle as possible. •••••

Escalators and revolving doors : When approaching escalators and revolving doors, use techniques similar to those for stairs, curbs, and doors. If the person you are guiding is uncomfortable, use stairs or regular doors. Buildings with escalators or revolving doors are required to have stairs and regular doors. ••••• Car : When helping a visually impaired person into a car, place one of their hands on the door handle and have them locate the edge of the car roof with their other hand. Thus allowing the guided person to seat themselves.

164 ••••• Other Important Tips to Remember : 1. be considerate of the person who is blind's need to know where he/she is, who and where you are, and who else is present. Encourage others to introduce themselves so that the person who is blind can locate them and connect names with voices. 2. Never leave that person unless you first inform them. Make certain that he/she knows where you are going and when you will return, etc. If he or she is not sitting, it is helpful for them to have something substantial to touch (chair, table or wall) in order to maintain his or her orientation. ••••• Final thoughts: These techniques are useful in numerous circumstances. Family and friends often use them in daily activities such as shopping, dining out, and much more. Co-workers of those with low vision may find these techniques useful when assisting their colleagues. Healthcare professionals and other caregivers also find these techniques beneficial. If you or someone you know will benefit from additional information on the sighted guide technique please contact the SightConnection office.

165 3.4.4 Pre Cane Technique The Trailing Technique Trailing is a technique of using the back of the hand with fingers curled slightly inward and arm slightly extended to trail a wall or around an object such as a table. The Trailing Technique can help to locate a door, walk in a straight line, or detect the position of objects in front of the person on the same side of his body as his extended arm. This technique can provide him with useful information about everyday objects, obstacles, and potential hazards that he may encounter as the time of move about own home. It can also provide him with a feeling of security while the walk, by allowing him to remain in contact with walls, countertops, desks, tables, or other types of stationary surfaces. It's important to remember that this technique will not warn you about approaching drop-offs, such as steps and stairs. For maximum protection, he should use the trailing technique in combination with either the upper or lower body protective technique, depending upon his needs in a particular environment. It is essential to impart training to visually impaired persons as it: 1. Begin along a straight stretch of wall in an uncluttered area. Stand with the side of own body about 6 inches from the wall. 2. Extend his hand in front of him at approximately hip level and angled downward toward the floor, about 12 inches from own body. 3. The back of his hand should be in contact with the wall, with his fingers slightly cupped toward his palm. 4. This will prevent him from injuring his fingers if they make contact with an object. His fingers will also act as "bumpers" to warn him about objects that he may encounter. 5. Walk forward slowly while holding his arm in this position, keeping the backs of his fingers, especially the knuckles of his ring and "pinks" fingers, in contact with the wall. 6. Make sure that the back of his hand is always in contact with a surface while he is moving. 7. When he make contact with or locate an object, take a few moments to examine and identify it. 8. If he comes to a doorway, walk across the opening and resume trailing on the other side.

166 9. For maximum protection when crossing the door opening, it is recommended that he use either the Upper Body Protective Technique or Lower Body Protective Technique, depending upon the particular environment. 10. Initially, he may be able to hold this position for only a minute or two, but with repeated practice he will be able to maintain this position for longer periods of time. Search pattern It can be frustrating when a person can't locate something he has dropped. Some useful rules can help him locate dropped objects more easily. As search, remember to protect own's upper body, particularly his face and head. Also be sure to check with the doctor if he have a medical or eye condition that prevents from bending over, squatting, or kneeling. These search techniques can be used whether dropped something on the floor or a work surface such as a desk, table, or counter. 1. First stop whatsoever the person is doing. 2. Listen for the sounds the object makes when it falls to help you determine its general location. If the object falls on a soft surface, such as carpeting, it may not make a loud noise, but it is likely to remain close to the point where it fell. Objects that fall on harder surfaces, such as tile or wood, will make a louder sound but are also more likely to bounce or roll away from the point of impact. 3. Face in that direction. 4. If can determine the general location of the object, plant the foot with the toe pointing in that direction. 5. When searching for a dropped object, follow a system. Begin searching close to own body and then move outward. Search with own hands (not only with your fingertips) in overlapping semicircles, for example, or overlapping rows from side to side. Don't forget to check between and around own feet. 6. Try to search with one hand at a time, using the other to protect and stabilize ownbody. 7. Being a systematic search in the following pattern: i) Circular: move hand in ever increasing circles
ii)

Perpendicular: follow a square pattern making a series of horizontal movements each separated by one hand's width
167 8.

Instead of using own hands, stand in one place and search with own feet, or use a yardstick, broom handle, closed umbrella, or cane to search the area systematically. 9. Use a broom to sweep the area and check the pile that he has collected. He can also use a broom if he has balance problems, have difficulty bending over, or areafraid of falling. 10. The person can also sit in a chair and use own hands or feet to search. 11. Always remember to protect head and face as the time of searching. 12. Use own visual memory in combination with these search techniques to receive maximum feedback from the surroundings. Protective techniques Protective techniques are designed to be used to protect one when traveling indoors or outdoors. There are several different ways can protect them when they are traveling. There are two techniques called the upper and lower protective techniques. The upper protective technique is to protect individuals from overhanging dangers that a cane may not detect. Either arm is extended in front of the face or upper chest area. The elbow is bent and the palm is facing away from the face. The arm should extend approximately six to twelve inches away from the face. The traveller then can detect doors, walls, cabinets, outdoor overhanging trees or branches, etc... The lower protective technique is to detect things waist down. The arm is extended diagonally across one's midline. The palm should face towards the body and be approximately six to twelve inches away from the individual. The traveller can use this technique to detect chairs, tables, desks, beds, etc... The techniques can be used individually or together. They can also be used in conjunction with a cane in the opposite hand. Protective techniques are meant to be used temporarily to detect immediate danger in one's pathway. Once the object is found, the arm can be lowered. A final tool that can be used is trailing. Trailing can be use while walking along a wall, fence, building line, or any straight pathway. The object of trailing is to keep a straight line of travel and to help find objects along the pathway. When trailing, one's arm is extended along the wall, approximately one foot, in front of them. The fingertips should be curled to protect from door jams and other hazards along the way. One should then slide their arm along the wall. Again, this technique can be used alone or in conjunction with a cane or other protective techniques. Hopefully, these safety techniques will come in handy on their next trip near or far.

168 Support 3.4.5

Cane Techniques Mostly and widely used, very practical and economical way of mobility is cane technique. The use of the cane is systematized by Dr. Richard Hoover so it is known as Dr. Hoover's cane and it is painted white so it is also known as 'white cane'. Many visually disabled feel shy to use the cane

is the symbol of INDEPENDENCE. It is the extension of the sense of touch. The cane has three parts; they are grip, stuff and tip.

The grip is generally of rubber for firmness. The stuff is a long hollow aluminium tube. The tip is generally of nylon.

There are three types of canes available long cane, folding cane and electronic cane. All the canes have almost the same parts.

The cane techniques are simple, universal and can be applied even in a relatively unknown environment. The length of the cane is determined by the height of the user, generally 90 centimetres, should reach the breastbone when held vertically and should touch the ground about one meter in front when a person holds it. Holding the Cane: Ø Person can hold the cane in either hand. Ø Grip: while holding the cane thumb should be on the front of the top, forefinger should be fully extended and second finger is curled behind to support the cane. But other fingers should be kept relaxed and elbow should be slightly bent near the body. Ø Hand position: the hand holding the cane should always be in line with the middle of the body and in front of the navel.

169 Using the cane: Ø Wrist movement: the cane is moved from side to side by the flexion and extension of the wrist with the tip touching the ground lightly at each movement. The arm should not be moved. Ø Arc: the cane tip should touch the ground a little wider than the width of the person's body. Ø Instep: simultaneously with the extension of one foot forward, the cane should move in the reverse. For example, as the left foot steps forward, the cane moves to the right and as the right foot comes forward, the cane goes to the left. Ø Rhythm: the cane tip is lifted just clear of the ground as it traverses between two points of contact. The cane should move back and forth at steady speeds as the visually impaired person walks. Ø Shorelining: the technique of following a fence, wall or side of a pavement with a cane is called Shorelining. The person should swing the cane to touch the wall, swing it back to the other side and as the person walks the cane should hit the wall lightly on one side of the arc and ground on the other.

170 Ø Ascending and descending: When going down stairs, let the cane tip fall onto the next step and don't swing it in case other people are trying to go down the stairs too. When going up the stairs, the cane will hit the first step when you are on the ground level. Grab the cane so it's relatively vertical, and let the cane hit each step as you ascend. Once you reach the top, go back to swinging. When going down the stairs, let the cane tip fall onto the next step and then step down to it. For a smoother descent push the cane forward along the step and allow the cane drop two steps below, so that it is always a step ahead of you. Keep the cane from swinging to allow other people to use the stairs. When pushing the cane forward doesn't result in it dropping you know you've reached the end of that set of stairs. To avoid a nasty fall, remember that after the cane has reached the bottom of the stairs, you still have another step to take. 3.4.6

Mobility Aids Canes: The following

types of canes are available: i.

Symbol Canes: Made of sections of light metaltubing, generally aluminium or its alloys, joined throughthe centre by means of an elastic cord. The canes foldup conveniently for carrying in the pocket or handbag. When required for use, the top section is held andothers automatically fall into position.

Devised for portability and not intended to be usedother than as a guide aid and an indication that theuser is a visually impaired person. This cane is popularlyknown as a Braille folding stick. ii. Guide Canes: A stronger version of the symbolcane and intended to be more of a mobility aid butnot a means of support. The four sections, coveredwith ribbed

171 plastic

sleeving, are joined through the centre by means of an elastic cord enclosed in nylonsleeving. It is fitted with an elastic loop handle anda standard nylon tip.

iii.

Long Canes: A wooden or aluminium stick of 85to 90 centimetres. Three models are available:

rigid,two piece, and four piece. The aluminium cane is generally sleeved with PVCmaterial, having a rubber grip and a nylon tip withor without a crook.

iv. Electronic Travel Devices:

An ETA is describedas a device that sends

out signals to sense the within a certain range or distance, processes theinformation received and furnishes the person withrelevant information about the environment. Most ofthese devices are based on integrated circuits and emitsound or tactile signals.

As ETAs are not available and prevalent in India, itis not very necessary to give description of these devices.However, for the sake of information, these devices are listed below: •••• Lind Say Russell E-model Path Sounder •••• C 5 Laser Cane

•••• Ultrasonic Torch •••• Sonic Guide •••• Light Probes •••• Mowat Sonar Sensor •••• Nottingham Obstacle Sensor

•••• Electro-cortical Prosthesis •••• Electro Roftalm •••• AFB's Computerized Travel Aid •••• Polaroid Ultrasonic Travel

Aid

Mobility Show Card: A plastic show card to help visually impaired persons to cross busy roads and to hail a taxi. Mini Beeper: A battery operated, hand-held electronic gadget having application

Electronic Aids for Orientation and Mobility

There are a variety of O&M devices that individuals with visual impairment use. Most are considered "low tech" because they are very simple devices, typically a cane or adaptive

172 mobility device. These are the devices that most people with visual impairment will use for two good reasons: (1) they are relatively inexpensive to purchase and maintain, and (2) you typically must be able to use these basic devices (especially a cane) before you can learn to use other types of mobility devices or strategies such as ultrasonic technology or dog guides. Your O&M specialist can show you canes and adaptive mobility devices and will be able to dispense these "low tech" devices to your child. There are also other O&M devices, more "high tech" and less well known, which we thought you might like to learn about. These devices can only be issued by an O & M Specialist with ETA certification. The ETA certified O & M Specialist must also provide training in the use of these devices. Non-ETA certified O & M Specialists may not dispense or train individuals using these devices.

The Sonic Pathfinder is a head mounted ultrasonic mobility device designed for outdoor use in conjunction with a long cane, dog guide or residual vision. The Sonic Pathfinder gives the user advance warning of objects which lie within the travel path. The distance and position of a detected object is signalled via the ear pieces using the eight tones of the musical scale. The Sensory 6 detects objects that are farther away than a long cane, and the user hears tones that indicate the distance to the objects. As objects are approached, the tones become higher pitched. The Sensory 6 is not intended to be the only travel aid. It should probably be used in conjunction with another aid, such as a cane. The MOWAT Sensor is a small handheld device that uses high frequency sound to detect objects within a narrow beam. The entire sensor vibrates if an object is present. To avoid confusion, the sensor responds only to the closest object within the beam and the vibration rate increases as the user approaches the object. The Polaron is a compact aid that utilizes ultrasonic technology to detect objects within four, eight, or sixteen feet. The Polaron may be used as a secondary aid to a standard long cane, or with a guide dog. When an obstacle is within range, the Polaron either vibrates or emits a sound. The Polaron is designed specifically for the blind, visually impaired and deaf-blind wheelchair user. The Wheelchair Pathfinder is a set of small rectangular boxes mounted to the front of the wheelchair. Lasers point downward while ultrasonic beams are transmitted in front and to the sides of the wheelchair. When the beam contacts an object, it bounces back to 173 a receiver, triggering an audible warning signal or optional tactile signal. The Wheelchair Pathfinder has forward detection (an intermittent beeping sound), side detection (a continuous tone on the side where the object is) and step detection (a low pitch signal within 4 feet in front of a drop off). The Laser Cane operates with three lasers that emit invisible beams of light from the cane. The beams detect drop offs and obstacles at different heights and distances. In this way, the cane provides the user with advance warning of obstacles in his/her path through an audible and tactile alarm system. There are three distinctly different audible tones: high, middle, and low pitched. The vibrating unit, known as the tactile stimulator, signals the index finger when there is an obstruction straight ahead. The Mini Guide is an ultrasonic device that detects obstacles from 1.5 to 26 feet away to augmentative information from other mobility aids such as cane or dog guide. This hand held electronic travel device uses ultrasound to detect objects and gives tactile or auditory feedback by vibrating or chirping more rapidly as the user approaches an object. The device can help a blind person avoid obstacles and overhangs, locate landmarks or items such as mailboxes or trash cans and find open paths through crowds. The Wicab Brain Port device takes information gathered from a small digital camera in a pair of glasses and sends it to a 'lollipop' electrode array that sits on the user's tongue. The camera then transmits the light information to a small base unit about the size of a cell phone. The base unit then converts the light information into electronic impulses. The Handheld Mobility Device is a small device which the user points around the surrounding. Once the handheld device detects a particular object the device will vibrate. The vibration enables the user to identify that there is an object nearby. A fainter vibration for a relatively far object and a stronger vibration to a near one. These devices should be used with a cane. The C2 Compass is a miniature handheld battery operated 8 point compass with digitized voice output. The compass is contained in a semi-transparent light blue enclosure. At the top there is the speaker and the activation button. A 3 position slide switch on the side is used to switch the compass off and select one of the two inbuilt language or voices. The GPS although used in identifying one's location. GPS (GLOBAL POSITIONING SYSTEM) devices also help blind persons in travelling independently. It determines and verifies correct travel route.

174 3.5

Daily Living Skills- Assessment of Needs and Techniques of Teaching Age Appropriate Daily Living Skills 3.5.1

Assessment of Needs of Daily Living Skills Activities of daily living (ADLs) are basic self-care tasks, akin to the kinds of skills that people usually learn in early childhood or a person employs daily to maintain and keep himself on par with the others and certain activities that are must for a person to live and dose on a day to day basis are called activities of daily living which also known as 'survival skills'. They include feeding, toileting, selecting proper attire, grooming, maintaining continence, putting on clothes, Bathing, walking and transferring (such as moving from bed to wheelchair). ADLs are often mentioned by geriatric care professionals in connection with instrumental activities of daily living, which are slightly more complex skills. ADLs are occasionally referred to as basic activities of daily living (BADLs). Instrumental activities of daily living (IADLs) are the complex skills needed to successfully live independently. These skills are usually learned during the teenage years and include the following: •••• Managing finances •••• Handling transportation (driving or navigating public transit) •••• Shopping •••• Preparing meals •••• Using the telephone and other communication devices •••• Managing medications •••• Housework and basic home maintenance Together, ADLs and IADLs represent the skills that people usually need to be able to manage in order to live as independent adults. Doctors, rehabilitation specialists, geriatric social workers, and others in senior care often assess ADLs and IADLs as part of an older person's functional assessment. Difficulty managing IADLs is particularly common in early Alzheimer's and other dementias. Assessing IADLs can help guide a diagnostic evaluation, as well as determine what kind of assistance an older person may need on a day-to-day basis. As visual discrimination is involved in these activities, a visually impaired person cannot learn the same on his own. Through his other senses, he may get an idea of what is going on but he cannot learn the exact procedure. It has been

175 observed that loss of confidence associated with the loss of vision retards the daily living skills of such a person. At the same time, lack of opportunity and environment are also the major causes of restricted performance of such activities. Thus the major objectives or needs of imparting training in daily living skills should be to: •••• enable him to carry out his day to day activities with the least possible external assistance and with safety; •••• help him to be self-sufficient in all functional activities; •••• in still confidence to enable him to be socially integrated; •••• develop healthy personal and family relationships; •••• learn scientific management of self and home; •••• become aware of safety precautions to be taken in the home; •••• become a well groomed person; •••• reduce dependence upon the care-takers; •••• expedite comprehensive rehabilitation including economic independence; and •••• develop a positive self-image. Acquisition of daily living skills refers to a child's ability to complete daily adult activities, including: •••• Caring for personal health •••• Managing money •••• Taking care of personal needs •••• Preparing food •••• Caring for clothing •••• Shopping •••• Maintaining a living space •••• Managing time Evaluating the skills the child already has is the first place to start. Begin by assessing child's skills in the following areas and then target areas to work with your child to increase his or her level of independence:

176 •••• Gets self up in morning •••• Maintains personal hygiene/grooming •••• Selects appropriate clothing •••• Dresses self independently •••• Cares for personal hygiene and grooming •••• Manages time effectively •••• Meets schedules/attends appointments on time •••• Performs routine household cleaning •••• Does laundry •••• Prepares simple or pre-packaged foods •••• Manages money effectively •••• Selects/shops for appropriate foods •••• Finds appropriate source for varied consumer goods •••• Dials telephone numbers •••• Practices personal safety rules in all environments Appropriately asks for assistance when needed Occupational therapists are often involved in helping students learn daily living skills. Activities of daily living (ADLs or ADL) are a term used in healthcare to refer to people's daily self-care activities. The concept of ADLs was originally proposed in the 1950s by Sidney Katz and his team at the Benjamin Rose Hospital in Cleveland, OH and has been added to and refined by a variety of researchers since that time.[1] Health professionals often use a person's ability or inability to perform ADLs as a measurement of their functional status, particularly in regard to people post injury, with disabilities and the elderly.[2] Younger children often require help from adults to perform ADLs, as they have not yet developed the skills necessary to perform them independently. ADLs are defined as "the things we normally do... such as feeding ourselves, bathing, dressing, grooming, work, homemaking, and leisure." [3] A number of national surveys collect data on the ADL status of the U.S. population. [4] While basic definitions of ADLs have been suggested, what specifically constitutes a particular ADL for each individual may vary. Adaptive equipment and devices may be used to enhance and increase independence in performing ADLs.

177 Basic ADLs Basic ADLs consist of self-care tasks that include, but not limited to: Functional mobility, often referred to as transferring (moving from one place to another while performing activities) For most people, functional mobility is measured as the ability to walk, get in and out of bed, and get into and out of a chair? the broader definition above is useful for people with different physical abilities who are still able to get around independently. Bathing and showering (washing the body), Dressing, Self feeding (not including cooking or chewing and swallowing), Personal hygiene and grooming (including brushing/ combing/styling hair), Toilet hygiene (getting to the toilet, cleaning oneself, and getting back up) One way to think about basic ADLs is that they are the things many people do when they get up in the morning and get ready to go out of the house: get out of bed, go to the toilet, bathe, dress, groom, and eat. Although not in wide general use, a mnemonic that some find useful is DEATH: dressing/bathing, eating, ambulating (walking), toileting, hygiene. Instrumental ADLs Instrumental activities of daily living (IADLs) are not necessary for fundamental functioning, but they let an individual live independently in a community: Housework, Preparing meals, Taking medications as prescribed, Managing money, Shopping for groceries or clothing, Use of telephone or other form of communication, Transportation within the community A useful mnemonic is SHAFT: shopping, housekeeping, accounting, food preparation/meds, telephone/transportation. Occupational therapists often evaluate IADLs when completing patient assessments. The American Occupational Therapy Association identifies 12 types of IADLs that may be performed as a co- occupation with others: Care of others (including selecting and supervising caregivers), Care of pets, Child rearing, Communication management, Community mobility, Financial management, Health management and maintenance, Home establishment and maintenance, Meal preparation and clean-up, Religious observances, Safety procedures and emergency responses, Shopping Role of physical therapy Physical therapists use exercises to assist patients in maintaining and gaining independence in ADLs. The exercise program is based on what components patients are lacking such as walking speed, strength, balance, and coordination. Slow walking speed is associated with increased risk of falls. Exercise enhances walking speed, allowing for safer and more functional ambulation capabilities. After initiating an exercise

178 program it is important to maintain the routine otherwise the benefits will be lost. Exercise for patients that are frail is essential for preserving functional independence and avoiding the necessity for care from others or placement in a long term care facility. Assistance Assisting in activities of daily living are skills required in nursing and as well as other professions such as nursing assistants. This includes assisting in patient mobility, such as moving an activity intolerant patient within bed. For hygiene, this often involves bed baths and assisting with urinary and bowel elimination. Evaluation of ADLs There are several evaluation tools, such as the Katz ADL scale, the Older Americans Resources and Services (OARS) ADL/IADL scale, the Lawton IADL scale and the Bristol Activities of Daily Living Scale. Most models of health care service use ADL evaluations in their practice, including the medical (or institutional) models, such as the RoperLoganTierney model of nursing, and the resident centered models, such as the Program of All Inclusive Care for the Elderly. 3.5.2 Techniques of Teaching Age Appropriate Daily Living Skills Activities of Daily Living (ADL) comprise everything entailed in human life and relationships. These are the basic activities necessary during an ordinary day. There are hundreds of activities which a person performs from the moment he wakes up in the morning till he goes to sleep at night. Sighted persons normally learn to perform these activities by themselves by observing other persons. A large part of daily living activities are learnt by observation and imitation. The area to consider when wanting to introduce Activities of Daily Living (ADL) into either a resource classroom setting or itinerant program is a foundation of Consistency and Developing Memory Skills. These skills are also fundamental in Planning and Organization. Consistency includes: ●●●● The student is the one to determine the placement of items; some guidance may be offered to ensure that the student is not making more work for themselves by having to crisscross back and forth across the work area. Example, when doing dishes in a double sink, if all the dishes, to be washed, are setting to the right side of the sinks, then the wash water should be the first sink to the left, then the drying rack should be in the left-hand sink. Remember to be aware of and work

179 toward the student's dominant side. (left or right handed)The student should also be responsible for retrieving the desired object, not family, teacher aides, other classmates, or the teachers themselves. •••• Developing the memory through practice. If the student has some memory problems (not cognitive impaired) then teaching some memory techniques can work. If a student does have some cognitive impairment then make use of tape recorders, braille or large print lists placed in obvious places to assist with the established systems. Planning and organization skills are not something that need to occur only at school. The organizational systems should begin at home. •••• Understand and arrange for appropriate lighting for the low vision individual. Levels of Labeling Categories: i. Permanent--appliances: microwaves, washers and dryers, stoves, etc. ii. Reusable--kitchen supplies: canned goods, spices, different bottle shapes (ketchup versus mustard) similar shaped bottles, use olfactory to distinguish, such as salad dressings. iii. Disposable--quick, one time read: post-it notes for large print or braille where it needs to be only used for short time, or one reading iv. Tactual--for the non -reading student, use recognizable shapes to specify items, such as a shapes, circle, square, or triangle. Rubber bands, held in place with masking tape, even if bands break the tape holds them in place for counting purposes. •••• Home Systems: 1. Clothing--Group long sleeve shirts, short sleeve shirts, casual clothes, and dress clothes into separate parts of the closet. Label the clothes with some tactual means of identification that will go through the laundry safely and intact. and intact. For example, sewn-in braille colour tags, crimped safety pins in a specific design, sewn-in number of buttons that means blue, red, yellow, etc., with a secondary means of knowing whether there are stripes or patterns to the outfit. 2. Sock locks--Means of keeping pairs of socks together, during washing, or socks that are tactually identifiable from other socks, minimize the number of different colour socks. If a student has memory problems with these systems, the above mentioned taped, brailled, or large print list can be placed in an adjacent location,

180 taped to the wall, on a shelf in the closet or in a drawer in the room. This establishes a pattern of consistency. •••• Food and canned goods: Labelling foods, canned goods have the opportunity to have reusable labelling systems. For instance, a rubber band, a brailled strip of paper with a hole punch, will allow a student to identify items in the cupboard, use them, remove the label and place it in a box for later use. This placing in a box also provides a grocery list. The labels can be taken to the grocery store and provide the list and place the label on the items as they go into the basket. This way when they return home it is already labelled while at the store. •••• Planning is in large part an exercise in problem solving. The first step in problem solving is to realize that you have a problem, then to determine all the options that might solve the problem. Once all the options have been identified, then the options can be reviewed for disadvantages and advantages. Once these have been reviewed there are usually several final choices for one to choose from. This latter part is important for if another person is involved in solving this problem, they are always more receptive in working out the problem if they have choices. This system has been named SODAS. Identifying the problem is the Situation Options is the brainstorming phase, Disadvantages and Advantages is obvious and Solutions are the choices for solving the problem. •••• Curriculum Connections: integrate the curriculum with the various ADL skills. There will be overlap between the various areas. Ø Math: 1. Measuring: reading recipes utilizes fractions, 1/4 cup, teaspoon, etc., plus, literary or Nemeth Code, reinforcement. 2. Setting timers teaches 15 minute versus quarter hour, time telling skills, etc. 3. Time and distance: Planning for the grocery store trip, how to get there, how long it will take to get there, learning and understanding bus schedules if applicable. Coordinate with O&M instructor. 4. Budgeting: figuring costs, taxes, learning about product brands, coupons, use of abacus, talking calculator, etc. creating a check register or use of a talking check book program. 5. Technology: shopping online, Pea Pod, using the calculator of a portable electronic note taker.

181 Ø Science: 1. Cleaning supplies: teach how to use for directional sprays, what is dangerous if ingested, gets into eyes, organized patterns, circular or overlapping patterns, etc. Natural cleaning supplies, such as vinegar, baking soda, club soda, etc. can be a good alternative. 2. Effects of temperature on foods, best storing methods, melding of long kept foods. Ø Reading: 1. Reinforce braille reading and writing skills: create the menu, reading and writing the recipes, reinforces literary or Nemeth Code. (Use thermoform paper to write recipes so that any cooking materials can be washed off.) 2. Use technology to search for recipes either on a CD or Internet. 3. Creating the shopping list braille or large print reinforces spelling skills. 4. Use of low vision aids and appropriate lighting for reading stove temperature, recipes, etc. Ø Social Studies: 1. Different Nationalities: research about different cultures, their foods, Holidays through the year as themes for the cooking experiences. 2. Repetition of activities: slicing, dicing, peeling and paring of vegetables, remember one experience is not likely to make the students skilled in the activity. 3. Technology: research through CD based books, or the Internet. Ø Language Arts: 1. Spelling and grammar: Involve the students in the writing of letters, requests for small grants, the thank you notes once a grant is secured. (See section on funding.) 2. Signature and handwriting: This for writing checks, signing for credit cards, etc. (Begin this at the same time sighted students are learning their letters and cursive, much easier to convince at that age, then later.) Ø Preparation options: 1. Coordinate with the Home Economics department to make use of the kitchen. 2. Electric skillet: can be done in the resource classroom, can prepare a wide range of dishes in this from scrambled eggs to hamburgers, to chicken, etc.

182 3. Microwave cooking: This offers a wide range of choices and can meet different student skill levels; it will incorporate many of the above skills as well. 4. Toaster ovens or specialty devices, like pizza makers, cookie ovens, George Foreman Grills, etc. (see funding options for more information). ●●●● Eating Skills: This doesn't fall under any specific traditional educational curriculum, but is a critical skill to possess. Once the cooking has occurred in a classroom the students need to have experience with cutting meat, spreading condiments, etc. Play Dough can be used as the on-going cutting experience, spreading butter on a cracker, etc. ●●●● Restaurant excursions: Sit down restaurant, not fast food. Can order off menu, no finger foods, can order hamburger, but must take off bun and use knife and fork. Budgeting for their meals, including tax and tip (math skills). ●●●● Menu reading and understanding: this could be in braille, using low vision aids, or in some cases using access technology to read the restaurant web site menu, prior to arriving at the restaurant. (This may involve VI teacher securing the print menu prior to excursion and preparing it in braille ahead of time.) Coordinating with the O&M instructor to plan the bus, train, or walking route with appropriate students. While the others, need to learn to negotiate the cluttered environment of the appearance of randomly placed tables and chairs. Low vision students dealing with the potentially inadequate lighting for locating a table and reading menus. This could then bring out the advocacy skills of a student to request assistance of the restaurant staff for sighted guide. ●●●● Technology: research for local addresses, through the phone, web site, or phone book with a Video magnifier. Use the technology to write the request, printing out in braille or large print for proofreading purposes and use of spell checker. Involve the parents whenever possible to observe how the students learn the different skills for follow up at home. ●●●● Itinerant Programs: Many of the same content listed above can happen in an itinerant program, but the difficulty comes when trying to take the time out of the regular class day. Some VI teachers arrange for a specific time in the day where they have the student outside of the regular classroom when some of these activities could occur. Coordinating with the home economics teacher for the use of the kitchen or at least part of it.

183 Thus activities of daily living include all those activities which people do every-day. Training a visually impaired person in these activities would enable him to become self-reliant, independent and more confident in his routine activities.

Although these activities are not an end in itself, these certainly are a very essential means toward complete, meaningful and comprehensive rehabilitation. ●●●● Daily Living Devices These devices can be further classified into the following five categories: ●●●● Clocks and Watches ●●●● Games and Puzzles ●●●● Sports ●●●● Kitchen Equipment ●●●● Personal Devices

Clocks and Watches: Alarm Clock: A standard alarm clock adapted for the use of the visually impaired.

It has strengthened hands and an open plastic dial having the hour positions indicated by two raised dots at the 3, 6, 9, 12 positions

and

single dots at the remaining hours.

Pocket Watch: A hunter watch, the hinged cover of which opens when the winding knob is depressed. Fitted with strengthened movements and dots as mentioned earlier. Ringer Timer: A one-hour ringer, in streamlined plastic case for timing any operation where an audible reminder is required. Each five minute period is indicated on the embossed setting dial by two dots and the first quarter hour is additionally marked to show the individual minutes.

Talking Time: This is an electronic watch as well as alarm clock fitted with an electronic device which announces the time whenever the knob is pressed. It is possible to set time, date, day and alarm etc. All the settings are audible in signals, it is thus possible for a visually impaired person to do the setting himself. The most popular brands are Sony and Sharp. In India,

Games and Puzzles: Playing Cards: Superior quality standard playing cards with the reverse embossing in standard Braille on the top left corner.

184 Chess: A wooden board with the black squares raised and all the squares drilled in the centre for the reception of the pegged chessmen. Holes are provided at each end for pieces not in play. The pieces are of uniform height, the white having a point at the top to distinguish them from the black. Dominoes: Made of plastic and having raised black dots on a white background with black inset pieces on the reverse. These dominoes are ideal for players with low vision also.

Brahma Puzzle: The puzzle consists of three pegs on a wooden base and eight discs of different diameter each with a hole in the centre. The purpose is to transfer all the discs from the peg to another without allowing any disc to be placed over a smaller one. Audible Ball: Made of strong good quality rubber in which holes have been punched. Small metal balls are inserted for creating sound enabling the

ball to be located when in play.

Draught Board: A wooden board with sunken playing squares. The colours of the men are distinguished by size. Pieces of double thickness are used as kings. A variety of other games as listed below have also been adapted for the visually impaired: Bezique Maker, Bridge Scorer, Lexicon, Happy Family, Whot, Patience Board, Chess Clock, Jigsaw Puzzle, Electronic Ball, Beetle Game, Centre-peg, Dice and Dice Cup, Nine Men's Morris, Scrabble, Unilock Word Building Device,

Tic-Tac-Toe, Checkers Set, Rattle Bells.

Sports: Football, Basket Ball and Soccer Ball: These

are equipped with a small electronic beeper which is battery powered and emits a compact sound. The beeper is held within a moulded cavity designed for easy access to 'on & off' switch.

Stick

Walking: The ordinary strong bamboo sticks with foot rest at a height of 30 Cms from the ground can be used for training the visually impaired in stick walking. Swimming: is also emerging to be a popular sport among visually impaired persons. The normal swimming pool with sound indicators on the sides can be used for training them in swimming.

Athletics: The normal track with some precautions and safety measures can be used for training the visually impaired in race, shot put, javelin throw, bag-walk, musical chair, hit the target etc.

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Table Tennis: has become a popular in-door game for the visually impaired in many South-East countries.

The normal table tennis table with some modifications in the net and the sides can be used for the purpose.

Kitchen Equipment

Equipment Adapted for the Visually Impaired: i. Egg Poaching Ring: An adaptation of standard egg ring to enable visually impaired persons to fry or poach eggs, and to serve them easily. It has a handle vertically attached to the egg ring. ii.

Measuring Jug: A heat proof clear glass jug of standard capacity with raised markings inside to indicate the specific volume. With the use of fingers, a visually impaired person can measure the volume. iii. Bread Cutting Box: An adjustable slide is fitted to gauge thickness of the slice. It enables visually impaired persons to cut the loaf of bread into even slices using a standard bread knife. iv. Liquid Level Indicator: A simple electronic device, powered by a battery, enables a visually impaired person to ascertain the level of liquid being poured into a cup. It emits a sound signal when a particular level is reached. v. Self Adhesive Labels: These plastic labels can be embossed with Braille and used for labelling a wide variety of articles. vi. Open Market Products with Special Relevance for Use by the Visually Impaired: Tomato Slicer, Chilly Cutter,

Kitchen Helper, Vegetable and Fruit Scraper, Multi-purpose Scraper, Egg Beater-cum-Juicer, Gas Lighter, Milk Cooker, Pressure Cooker, Jar & bottle opener, Pan holder.

Personal Devices i. Sound Beacon: This pocket size electronic device emits a sound which can be varied from a loud continuous whistle down to low intermittent beeps at various rates. It is generally used as a homing device. ii. Notex: It consists of a rectangular base and flaps made of high-density polythene hinged together. It differentiates Indian currency notes of different denominations. It considers length and breadth of a currency note for its differentiation.

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iii. Magnets: Round, square and U-shaped magnets for picking up pins, small nails and other iron or steel objects. iv.

Signature Guide: A template to guide the visually impaired persons in placing signature in proper position on letters, cheques etc. v. Address Templates: Made of cardboard with four raised lines to guide a visually impaired person to write his address on Inland letters and envelopes. vi. Light Probe: Full function light detector may be adjusted for desired sensitivity to light. vii. Location Finder:

Find your

house, apartment, or office easily with portable, light weight location finder. A siren, attached outside location, will sound on pressing transmitter attached to a key chain.

viii. Other Personal Devices: The American Foundation for the Blind and Maxi Devices are supplying a variety of personal devices for the visually impaired persons as listed below. These are so far not available in India.

Like-

Thermo Voice: announces temperature, Talking Blood Pressure & Pulse Monitoring Kit, Becton Dickinson Magni Guide: for accepting barrel of insulin syringe, Insulin Needle Guide, Talking Blood Glucose Monitoring Kit, Big Print Address Book, Talking Wallet, Locklid Saucepan, Weight Talker, Keyfinder, Clothing Identifiers, Tactile Braille Signs, Eye-Ease Eye drop Guide, Medicine Spoon ❖❖❖❖❖

Training Strategy Due to lack of visual perception as well as discrimination, it is difficult for a visually impaired person to learn daily living skills on his own. As most skills are of a routine nature, he does not need to learn any special techniques for performing these skills. However, it is essential to train him for the particular procedures involved in performing the activity. In swimming, for example, he has to follow the same steps as a sighted person but may need to be given special training in safety matters. Many times, special techniques or special equipment or adaptations may help him to perform certain activities more proficiently. These techniques or adaptations make use of other senses of touch, hearing, and

taste etc. for his convenience. By using a Talking Clock, for example, he may know the time, day and date as conveniently as a sighted person.

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Procedure for Designing the Daily Living Skills a. Observe daily living skills of sighted persons of different age groups. b. Identify the difficulties faced by a visually impaired person in performing such activities and learning the skills. c. Develop specific procedures for each skill with suitable modifications. d. Consider the following aspects concerning visually impaired persons while evolving the training schedule: individual felt needs, physical potentials, age, age at the on-set of visual impairment, family background, economic status and occupation, environment, and past experience e. Explain the procedure followed by sighted persons in performing a particular activity to visually impaired persons. f. Impart relevant training in orientation and mobility associated with the effective performing of a particular activity. g. Supplement the skills with appropriate assistive devices and adaptations. h. Incorporate an in-built system of monitoring and evaluation of the training programme. i. Adopt a system of follow-up for sustaining the abilities to perform the activities. Specific Rules for Teaching Daily Living Skills

a. Gather the relevant and needed following items before initiating the training: All materials, Equipment Special assistive devices and adaptations

and Embossed diagrams and tactile adaptations b.

Perform task analysis for evolving the proper sequence; deciding the procedure of performing the activity; and finalizing the lay-out and positioning of the material and equipment. c. Orient the person regarding location of the materials; procedure of taking and replacing the same; hand co-ordination; sequence of various operations; safety measures; use of equipment and adaptations; and safety measures. d. Ensure appropriate use; safety of the individual; no damage to equipment; and least possible wastage.

188 e. Supervise during the performance of the procedure and provide instructions whenever essential. f. Follow-up, evaluate and appreciate good performance. Example: Preparing a Cup of Tea

Step 1. Collecting the Material and Equipment

a. Material: milk, sugar, water and tea leaves

b. Equipment: stove/cooking gas and kettle/utensil, cup, strainer, table spoon

c. Adaptations (optional) for: •••• measuring volumecan be easily developed locally kitchen utensils can be used •••• indicating boiling liquid can be developed on the lines of pressure milk boiling pot by sound •••• sugar measurecommonly used spoon in the house

Measuring devices are available abroad but are very expensive and not advisable for developing countries. It is best to teach how to use utensils and other Items which are used by the general population. Thus adapting techniques to suit visually impaired person would be necessary. Most adapted material like measuring and pouring devices (to name a few) are generally expensive and not easily available, the majority of visually impaired persons would have to learn to utilize the existing and available equipment after careful sensory training.

Step 2. Task Analysis for Evolving the Procedure

On task analysis, the activity of preparing a cup of tea can be divided into following tasks:

Pouring Water

1. Lift and scrub kettle/utensil
2. Fetch water
3. Measure water
4. Pour water into kettle/utensil

Making Fire

5. Locate stove/gas stove
6. Lift match box/gas lighter with one hand
7. Hold match box/gas lighter in one hand
8. Pour kerosene by pressure in case of stove or switch on gas stove
9. Strike match or press lighter
10. Make fire by holding match or lighter near the stove/gas stove

Boiling

11. Lift kettle/utensil
12. Position the kettle/utensil on stove/gas stove
13. Cover the kettle/utensil with the lid

Adding Tea Leaves

14. Lift the container containing tea leaves
15. Open the lid
16. Fill a spoon with tea leaves
17. Remove the lid when water is boiling and add tea leaves
18. Replace the container back to its original position

Adding Sugar

19. Lift sugar measure/ If it is not available, lift the sugar container
20. Add sugar by tilting the measure (or from the spoon)
21. Replace the sugar measure (or sugar container) to its original place

Adding Milk

22. Take milk pot
23. Measure the desired quantity using a measure or a cup
24. Pour milk into the utensil/kettle
25. Cover the utensil/kettle
26. Replace the milk pot to its original position

190 Pouring Tea

27. Wait for the tea to boil
28. Switch off the stove/gas stove to put off fire
29. Wait for two minutes
30. Bring tea-pot near the stove
31. Remove lid of the tea-pot
32. Lift strainer and place it on the tea-pot
33. Remove lid of the kettle/utensil
34. Lift the kettle/utensil off the stove/gas stove using cloth or clamp
35. Pour tea into the tea-pot through the strainer
36. Cover tea-pot with lid
37. Place the kettle/utensil, strainer and clamp in the sink for washing

38. TEA is READY for serving.

Serving Tea

39. Hold handle of the tea-pot in the right hand
40. Touch the cup with left hand and keep first finger on outer side of the top of the cup
41. Lift tea-pot with right hand and bring the pouring point over the cup.
42. Start pouring till first finger of the left hand feels hot.
43. Leave the tea-pot back with right hand, lift cup with right hand itself and drink tea.

Step 3. Time Study for Deciding Location of Various Materials and Equipment

Consider the following pre-requisites of efficient production performance while evolving the most appropriate location pattern:

- a. All materials and equipment should be within arm's length
- b. Left hand should move clockwise and right hand anti-clockwise while lifting materials and equipment etc. and in the reverse direction while keeping it back.

191 c. Positioning should be according to sequence of the tasks to be performed. The kettle/utensil, for example, as required first should be at the left extreme; and water as required next should be on the right extreme

- d. Safety of the person should be ensured while performing the activity
- e. Overlapping and criss-crossing of materials and equipment should be avoided. Based on time study, task analysis and other principles of production and operations management, the location pattern as given in the figure may be evolved.

Step 4. Orientation •••• explain location of materials and equipment to a visually impaired person •••• enable him to touch all these things •••• explain him the relative positioning of these things in the context of the entire room and his own self.

Step 5. Explaining the Procedure •••• explain all 43 tasks involved in the process •••• explain the sequence of the tasks •••• explain the need for following the sequence correctly, safety measures and likely eventualities. •••• explain the procedure for measuring water, sugar and tea-leaves •••• explain the procedure of pouring hot liquid

Step 6. Performing the Activity •••• supervise while a person is performing the tasks •••• instruct him as and when required •••• advise him to repeat the task whenever correct sequence is not understood or being followed •••• follow-up the process.

Hand Movement: The hand coordination based upon the above noted task analysis, positioning of equipment and materials and sequence of tasks in case of preparing a cup of tea is as listed below:

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Task No. Hand Activity
 1. Left Lift the kettle/utensil
 2. Both Measure and pour water
 3. Left Lift match box/gas lighter
 4. Both Light the stove/gas stove
 5. Left Lift the lid and cover kettle/utensil
 6. Right Lift tea-leaves container
 7. Both Add tea leaves to kettle/utensil
 8. Right Lift stirring spoon
 9. Left Lift sugar measure/container
 10. Right Add sugar to kettle/utensil
 11. Right Measure and pour milk
 12. Left Lift tea-pot
 13. Right Lift strainer
 14. Both Position tea-pot with strainer on top
 15. Right Lift kettle/utensil
 16. Both Pour tea into

the

tea-pot
 17. Right Place kettle/utensil, strainer in the wash basin
 18. Left Lift tea-pot
 19. Right Pour tea
 20. Right Returning tea-pot to its position
 21. Right Lift cup and DRINK tea.

Step 7. Follow-up and evaluation in terms of
 •••• correct sequence
 •••• convenience in handling equipment and materials
 •••• pouring of tea leaves, sugar, milk or tea etc.
 193 •••• correct measurement of materials
 •••• speed of handling the tasks
 •••• confidence while performing tasks
 •••• any unnecessary delays, confusion, criss-crossing,
 •••• over lapping of tasks and collision of equipment " uniformity in operations and sequence when the same activity is repeated
 By following this procedure, activities of daily living, self-care skills and systems of home economics can be modified suitably to enable a person to perform the same independently. "

Training Content To enable a visually impaired person to be independent in the activities of daily living and home economics, training should be imparted in the aspects described below. The activities may be adapted to suit the needs of visually impaired persons of rural and urban areas. The principles are the same but minor modifications may be necessary.

Personal Care
 a. Hygiene •••• bathing •••• care of hands and feet •••• cleaning of ears •••• nail cutting •••• oral hygiene: manage toothpaste, brush teeth •••• personal hygiene
 b. Grooming •••• combing and care of hair •••• dressing and undressing •••• shaving, using facial cream •••• skin care, applying cosmetics •••• female grooming and hygiene

194 •••• using hair oil, cosmetics
 c. Social Graces •••• social manners, etiquette, courtesy •••• table manners, eating habits with fingers, spoon etc. •••• style and mode of dressing •••• postures while sitting, standing and talking •••• gestures •••• gait •••• socializing, art of conversation
 d. Toilet Activities
 Cooking Skills
 a. Orientation of •••• kitchen equipment, utensils, knives •••• weights and measures and modifications in techniques •••• special adaptations •••• grains, pulses, vegetables, flour, spices and provisions •••• different parts of stove, fuel, fire place •••• gas lighter, match box
 b. Preparatory Operations •••• cutting, slicing, peeling, pouring •••• grinding, mixing, kneading, grating •••• washing, cleaning, soaking, scrubbing •••• sieving, filtering, straining •••• rolling bread and roasting •••• boiling, frying, baking •••• making fire, lighting stove or cooking gas •••• operation and care of stove/gas stove

195 •••• setting curd, preparing butter milk •••• steaming and pressure cooking
 c. Serving Food •••• taking out food in serving bowls •••• setting dining table or arranging on floor •••• putting food on dining table/floor •••• following clockwise method of putting food in plates •••• serving water •••• removing bowls, plates and cleaning table
 House Keeping Skills
 a. Cleaning •••• sweeping, dusting •••• washing, scrubbing, mopping floor
 b. Care of Furniture •••• dusting •••• washing of upholstery •••• wiping of table tops •••• keeping furniture at fixed locations •••• hanging curtains
 c. Laundry •••• sorting, washing, drying •••• folding, ironing, proper stacking •••• mending, stitching, buttoning, darning
 d. Washing Utensils •••• sequence in scrubbing and washing •••• use of cleaning powder and scrubber •••• disposing off waste

196 •••• drying utensils •••• replacing utensils at pre-determined locations •••• special care of crockery
 e. Bed-making •••• location of cots •••• adjusting of mattresses •••• spreading of bed spreads •••• positioning of pillows, blankets and bed sheets
 Home Economics
 a. Money Management •••• currency identification, coin counting •••• safe keeping of money •••• budgeting for the month •••• simple account keeping •••• savings and investment •••• maintaining and operating a bank or postoffice account •••• depositing or withdrawing money •••• signing of cheques •••• knowledge about interest
 b. Time and Energy Management •••• time and routine activity planning •••• leisure time planning •••• work simplification techniques •••• process of cooking, heating water and lighting for energy conservation
 c. Furnishing the Home •••• selection and arrangement of furniture, furnishings and decoration articles •••• proper lighting and ventilation

197 ••••• proper placing of calendars, pictures, idols and other decorative articles ••••• positioning of wall clock and alarm clock d. Shopping Techniques ••••• quality of products ••••• types of shops and their location ••••• system, period and frequency of buying ••••• benefits of bulk buying ••••• awareness of mal-practices in faulty weights and measures; deceptive packaging and adulteration ••••• consumer rights and responsibilities ••••• method of using shopping bags ••••• sequence in stacking of items in the bag e. Using Appliances ••••• electric switches, plugs, fan regulators ••••• telephone ••••• call bell ••••• oven, refrigerator, toaster, mixer, geyser, pressure cooker ••••• cassette player, radio, television ••••• shaver f. Care of the Home ••••• sweeping and mopping floors ••••• repair & maintenance of doors, windows, furniture & fixtures ••••• proper placing of furniture, TV, other appliances etc. ••••• keeping doors and windows properly closed or opened to avoid protruding shutters ••••• white-wash, painting of walls etc. ••••• polishing, painting of doors, windows, furniture & fixtures ••••• proper arrangement and parking of vehicles ••••• keeping movement areas free of obstructions.

198 ••••• Training in Individual Activities Bathing techniques are the same for both sighted and the visually impaired. However, training in following aspects should be provided: ••••• Orientation of the bathroom or bathing place, hanging clothes and towel, place for keeping soap, bucket, tumbler etc. ••••• method of fetching water and its source ••••• safety precautions ••••• steps to be followed. Brushing Teeth techniques are the same for both sighted and the visually impaired. The main difficulty may be applying tooth paste on the tooth brush. The following steps may be followed for this purpose: ••••• Hold brush in the left hand with bristles upward between the thumb and the forefingers. ••••• Open the lid of the tooth paste with the thumb and the first finger while holding the same in the right hand ••••• Hold tooth paste tube in right hand and place the opening at end of the bristle ••••• Squeeze the tube so that tooth paste comes out and move it along the bristles taking care that the tooth paste does not fall on clothes or the ground. ••••• Replace the cap while holding the tube in right hand and replace the tooth paste to its original position. ••••• Shift the brush to the right hand and rinse the bristles with water ••••• Brush the teeth by moving the bristles up and down over the teeth and gums ••••• Wash the brush while holding the same in right hand and replace it to its original position ••••• Use left hand for taking water to the mouth for gargling and repeat it twice. Shaving technique is the same for both sighted and the visually impaired. However, the latter should be slow, more careful and observe the following precautions: ••••• Double-edged safety razor is more safe ••••• Downward movement of razor is advisable and the same pattern to be followed every time

199 ••••• Check with the hand if all areas of the face have been shaved properly ••••• Electric shaver is safe and convenient but very expensive Washing Clothes ••••• Gather material: soap, detergent, tub, brush, dirty clothes etc. ••••• Organize the material: place tub in the centre, dirty clothes on the left hand side, soap, detergent on the right hand side and source of water supply should be above the tub or nearby ••••• Apply soap on clothes, rub gently and soak in the tub ••••• Remove soap by rinsing clothes in water ••••• Squeeze and wring the clothes to remove water ••••• Clothes should be dried by spreading on a clean place or by hanging on a clothes-line Identifying Clothes ••••• By the material they are made of ••••• By design, tailoring style, pattern etc. ••••• By special markings in braille or otherwise which can be identified by touch ••••• By stacking at a particular place in a particular pattern Money Identification Coins: Coin /Paise Identification 5 Square 10 round with deep scallops on sides 20 Hexagonal 25 round, very thin, one centimetre diameter 50 perfect circle with plain circular boundary One Rupee perfect circle, bigger and thicker than the 50paise coin, circular boundary has a all central round groove

200 Currency Notes: It is generally difficult for a visually impaired person to identify the currency notes. In India, currency notes of one, two, five, ten, twenty, fifty and hundred are common. The rupee one and two notes are almost of the same size. Other currency notes are bigger. These notes can be identified by using the following methods: a. Notex: is a device developed by the NAB-Louis Braille Memorial Research Centre. It holds the currency notes in two flaps and the same is identified by the notches on the upper flap. b. Folding around the Wrist: This method is advocated by the officials of the National Association for the Blind, Rural Activities Committee. The visually impaired person can be trained to identify a currency note by folding it around his wrist and then determining the denomination by the extra length after the first fold. The width of the note is also considered. c. Spreading along the Palm: In this method the currency note is spread on the palm of the left hand from the wrist downward. The denomination of the note is determined by the point on the fingers at which the other end touches. The width of the note is also considered. d. Thickness of the Note: may also enable a person to identify the currency notes. The crispness is also considered. In case of old currency notes, this method may be misleading. Special Dot on Rs. 500 Note: The Rs. 500 currency note introduced during 1999 carries a round embossed dot at the periphery on the lower side of smaller arm. A visually impaired person can identify Rs. 500 note by locating this dot through finger movement on the outer side. A visually impaired person has to develop his own individualized sense of recognition based on the above. No blanket approach is viable or advisable. Pouring Liquids Pouring liquids requires good eye-hand coordination. A visually impaired person needs proper training to overcome the limitation imposed by blindness. a. Cold Liquids •••• Hold the tumbler near the tip of the jug containing cold liquid •••• Place index finger inside the tumbler

201 •••• Pour liquid slowly till it touches the finger b. Hot Liquids •••• Hold the cup near the tip of the tea-pot containing tea •••• Place index finger on the rim of the cup •••• Pour liquid slowly till it is sensed that the cup is full: by feeling the steam on the index finger, by realizing that the outside of the cup is hot, by feeling the difference in the weight of the cup, by hearing the change in sound associated with filling of the cup to the brim Making Open Fire In rural areas, the most common mode of making fire is an Angithi, Chullahor open space covered by bricks and mud. •••• Clean the open space •••• Pour kerosene on cow-dung cake or a dry wood •••• Stack small wood pieces over and around the cow-dung cake with air gaps •••• Light a kerosene lamp - the lamp generally has a metal or glass bottle for storing kerosene and lid into which a wick is embedded. One end of the wick protrudes outside and the other is soaked in the kerosene. •••• Make fire by taking burning wick of the kerosene lamp near the stacked wood and cow-dung cake which has been sprinkled with kerosene •••• Remove wood pieces or other like objects from near the fire place •••• Keep on adding wood or cow dung cake as required •••• After cooking, put off fire using water •••• Check by moving hand close to ash that no livecoal or burning wood is left. •••• As far as possible, no inflammable material should be kept near the fire place Lighting a Stove •••• Pour kerosene using a funnel and a standard bottle for measurement. •••• Difference in sound or weight would in dictate when the stove is almost full. •••• Wipe away any spilled oil to make the stove safer.

202 •••• Clean the burner nozzle using the stove pin. •••• Pour kerosene in the cup below the burner. •••• Use a safety match for lighting. •••• Use stove lighting ring, which is easily available in the market, for lighting the stove. •••• Operate the pump two minutes after lighting the ring to vaporize the kerosene and activate the burner. •••• Sound of the burner indicates intensity of fire. •••• Release pressure to reduce intensity of the fire or to put it off. Lighting Gas Stove For safety, the gas regulator which is mounted on the cooking gas cylinder should always be switched off. The knob of the regulator should be turned anti-clockwise till it touches the lower circle of the regulator. The following procedure is recommended while lighting the cooking gas stove: •••• Check that the knob of the regulator is in off position •••• Check that the rubber tube is well connected at both the ends, i.e. regulator as well as gas stove ends. •••• Check that the knob of the gas stove is in off position. •••• First of all, twist the knob of the regulator clockwise till there is click sound. •••• Hold the gas lighter in right hand, keep its front part on the gas burner and keep the thumb on the lighter knob •••• With the help of left hand, move the knob of the gas stove clock-wise, only one step to slow position, to start the flow of the gas. •••• Simultaneously, ignite the lighter by pushing its knob by the use of thumb of the right hand. •••• Move the left hand little above the gas burner to ascertain where the gas starts burning. •••• There is "Bhuup" sound when the gas is lighted.

203 Precautions: ●●●● Always keep the lighter on the right side of the gas stove, preferably stuck to the wall at a arm's distance. ●●●● Keep the regulator in switched off condition when gas stove is not in use. ●●●● If there is a foul smell which indicates gas leakage, move the knob of the gas stove anti-clockwise and close the regulator also. ●●●● Do not make fire till the smell persists. ●●●● While lighting the stove, the knob of the gas stove as well as lighter should be operated simultaneously to prevent flow of un-burnt gas. Switching off the Gas Stove: The following procedure is recommended for this purpose: ●●●● Move knob of the gas stove with the right hand anti-clockwise till the lower end. ●●●● Take left hand on the burner to ensure that fire has completely disappeared. ●●●● Move the knob of the regulator anti-clockwise till there is click sound and upper ring of the regulator moves downward. Eating ●●●● Avoid serving food by keeping the meals plate on the ground, if possible ●●●● If dining table is not available, use a stool or a raised wooden platform (chowki) ●●●● It is easier for the visually impaired person to locate food if it is always placed at the same spot and served in familiar utensils ●●●● It is more convenient and desirable to prepare the plate with vegetables, rice, chapati etc. ●●●● Serve food according to the dial of a clock as indicated below: The following hours of the clock positioning of various items of standard Indian meals is recommended. It may be suitably modified according to the menu and the individual needs: ●●●● Water glass should be on the left hand side outside the plate. ●●●● Vegetable bowl should be on the left side outside the plate. ●●●● It is easy for a person to feel what food he is eating and how much, if he eats food with his fingers. 204 Clock Position Item 1-2 O'clock Sweet/dessert 3 " Chapatti(bread) 4 " Curd 5 " Gravy 6 " & Centre Rice 7-8 " Pulses 9-10 " Vegetables 11 " Pickles 12 " Salad ●●●● The proper way to hold and use a spoon and a fork is the same for both the sighted and the visually impaired. Generally the fork is held in the lefthand and spoon in the right. ●●●● The system of coordination of fingers is the same for both the sighted and the visually impaired. ●●●● It is essential to maintain a proper posture while eating. ●●●● The local manners and customs which are to be observed while eating must be taught to the visually impaired. First Aid a. Definition: It is the first help given to an injured person or to those taken suddenly ill before taking them to a health centre or hospital. b. Objectives: ●●●● to save life ●●●● to prevent injuries becoming worse ●●●● to help recovery c. Importance: Many a times, while performing activities of daily living, travelling, moving around or in the course of employment, a visually impaired person may injure himself. Particularly when moving in an unknown environment, he may

205 bump into some obstructions, walls, household articles, parked vehicles etc. At such time, immediate medical care may not be available. If he is trained in First Aid, he will be able to take immediate measures and prevent injuries from becoming worse. d. First Aid Kit: should contain the following: ●●●● Bandage ●●●● Cotton swab ●●●● Scissors ●●●● Antiseptic material like Dettol, safeguard etc. ●●●● Band-Aid ●●●● Brunel ●●●● Simple medicine like Analgine, Metacin etc. e. Illustration: First Aid in case of bleeding ●●●● Apply steady and very firm pressure directly over the bleeding ●●●● Make the injured person lie down ●●●● Lift up the injured organ ●●●● When the bleeding slows, apply a pressure bandage over a pad f. Training: During training in Activities of Daily Living, 2-3 lectures on First Aid should also be included. A local physician, or qualified health worker or the officials of the Red Cross may be invited for this purpose. The field staff in turn should train the visually impaired person in First Aid. He should be encouraged to keep a First Aid Kit in the house or at the place of work. ●●●●

Nature of Training in Activities of Daily Living in Indian Conditions Irrespective of the age of the person or the different customs or the different economic strata a person may come from, there are certain common basic daily activities for everyone. It is possible to do classification according to age groups for providing training in the activities of daily living. It is, however, essential to consider the following aspects while planning training in activities of daily living: ●●●● Specific felt needs ●●●● Family back-ground

206 ●●●● Past experience ●●●● Physical potentials, and ●●●● Educational background of the individuals. It has been observed that it is essential: ●●●● to provide training in natural settings as simulating conditions may not be result oriented; ●●●● to support such training with relevant training in orientation and mobility and sensory perceptions; ●●●● the training should be considered an integral part of all subjects taught to the visually impaired; and ●●●● in case of a visually impaired child, it is essential to train the parents in basic skills so that they may in turn teach these skills to the child when he is at home.

The training needs can be classified

according to age groups. Age Group 0-16 Years a. Personal Hygiene ●●●● bathing ●●●● toilet training ●●●● oral hygiene: dental care, brushing teeth, keeping brush at proper place ●●●● nail cutting ●●●● cleaning ears b. Grooming ●●●● care of hair ●●●● shaving ●●●● putting on clothes, buttoning them properly ●●●● wearing footwear c. Social Graces ●●●● holding of meals plate, eating without spilling food ●●●● positioning of glass, drinking cold and hot liquids

207 •••• use of spoon, if applicable •••• table manners, proper posture and gait d. Cooking Activities •••• lighting of stove, making fire •••• general cooking skills, cooking vegetables, pulses •••• preparing tea, coffee and boiling milk •••• rolling and roasting chapati •••• using frying pan, kettle, utensils •••• boiling of rice e. Preparatory Kitchen Activities •••• washing and cutting of vegetables •••• kneading dough •••• setting curd and preparing butter milk •••• preparing salad f. House-Keeping Skills •••• scrubbing and cleaning utensils •••• drying and stacking utensils •••• cleaning, dusting and mopping floor •••• washing clothes in the house, at the pond and the canal •••• adjusting house-hold things •••• making and folding bed and bed linen •••• positioning and removing cots g. Home Economics •••• currency identification •••• counting of coins and currency notes •••• safe keeping of money, maintaining accounts •••• understanding barter system

208 •••• preservation of grains etc. h. School Activities •••• understanding and proper upkeep of the school uniform •••• maintaining proper posture in the school •••• playing common games: stick walking, carom, chess, playing cards •••• keeping pocket money carefully •••• proper handling of school bag, books and stationery •••• memorizing poems, songs and lessons Working Age Group 17-60 Years The visually impaired persons of this age group are in the prime of their life. They are expected to be the earning members of the family. They must be economically rehabilitated. Hence, the training in activities of daily living must focus at enhancing their earning capacity and their integration into the mainstream of society. The training in activities of daily living which is provided to visually impaired persons in the age group 0-16, as listed earlier, should be provided to the persons in this age group also with the exception of training in school activities. The additional components of training for this age group are listed below i. Social Graces •••• social manner, etiquette and graces •••• posture while at work and while talking •••• polishing and maintaining of shoes •••• sense of dressing according to the occasion •••• skills of developing inter-personal relations j. House Keeping Skills •••• washing floor, covering it with cow-dung and mud •••• pounding and grinding grains and spices •••• cooking handling, proper keeping and preservation of food articles, pickles, spices and like materials •••• fetching water from the well and storing the same in pots

209 •••• making open fire •••• boiling pulses in earthen pots •••• washing utensils at the pond •••• taking care of the children and the elderly •••• threading needle, elementary darning and mending of clothes; stitching of mattresses, quilts, pillows k. Shopping Techniques •••• purchasing vegetables and provisions from a nearby market or the weekly rural market •••• verifying quality of vegetables and fruits •••• safe keeping of money at proper place in the house l. Economic Activities •••• going to farm independently •••• learning to perform economic activity in terms of local crafts, trades or agriculture operations •••• buying of raw materials and selling of finished products •••• performing of social obligations •••• taking care of domestic animals •••• feeding, grooming, milking and grazing of milch animals Age Group: 60 Years and Above Due to physical constraints, most of the persons in this age group can- not undertake laborious work. Thus the economic and production activities have a very limited scope. It is, however, desirable to plan for their social integration. It is essential to actively involve the family members in the training process as their assistance would be of utmost importance later on. The training components as listed for age groups 0-16 and 17-60 years may also be provided to this age group also with the exception of school activities, house- keeping and kitchen activities. The persons of age group 60 years and above should be provided additional training as regard: •••• method of offering prayer, performing worship at the local temple;

210 •••• meeting other aged persons at public places and exchanging views; •••• special aspects of toilet training; •••• taking medicines whenever required; •••• taking care of children and ailing family members; •••• assisting in the family occupation; •••• becoming active member of the senior citizen club; •••• assisting other family members in house-keeping, home economics and other daily activities; and •••• training children in personal hygiene, social graces, school activities and home economics. ••••

Special Tips for the Rehabilitation Functionaries a. It is necessary to explain the causes of visual impairment to visually impaired person and community to eliminate prevailing superstitions. If the visual impairment is incurable, the person must be informed accordingly. He must be convinced to accept his visual impairment. b. Win his confidence; motivate him to take personal and keen interest in the training programme. c. Plan training in orientation and mobility and activities of daily living according to : •••• felt needs of the individual; •••• his interests and aspirations; •••• his physical potentials and educational background; •••• past experience, age at on-set of visual handicap and existing level of performing these activities; and •••• in consonance with his family background, occupation and economic status. d. Have patience and help the visually impaired person to: •••• touch the materials and equipment; •••• understand procedures and implications of each task; and

211 •••• permit him to touch the body of the fieldstaff to understand motion of performingthe activity. e. Demonstrate to him a particular activity, wearing a blind fold, to convince him regarding: •••• usefulness of activity; •••• ease of performance; and •••• possibility of performing activity in the absence of sight. f. Counsel the family in the following respects: •••• He is normal otherwise •••• Lend him assistance in performing these activities •••• Active participation in the training process. •••• He is not a burden and through proper training he may become independent and contribute towards family earning •••• His social integration and economic rehabilitation is essential g. Encourage fellow students to •••• accept the visually impaired child; •••• help him in studies and daily routine; •••• not patronize or overprotect him; •••• encourage him to perform daily activities independently; and •••• participate in school functions and social get-togethers. h. Convince the school teacher to •••• pay personal attention to such a student; •••• make him sit in the front row; •••• speak out whatsoever is being written on the black board; •••• encourage his acceptance among fellow students; •••• involve him in all class-room, sport and other co-curricular activities; •••• make adjustments, be patient, and not get irritated;

212 •••• give him plenty of opportunity to repeat what he has learnt; and •••• encourage him to modify these techniques or activities to suit his requirement. i. Consistent follow-up and evaluation is essential for enabling him to internalize the activity in his daily routine. Most Important: The list of activities of daily living provided earlier must not be considered an exhaustive one. It merely provides guidelines to enable the field functionaries to think of many more such activities depending upon the individuals, their needs and the environment. 3.6

Sensory

Efficiency- Importance and Procedures for Training Auditory, Tactile, Olfactory, Gustatory, Kinaesthetic Sences and Residual Vision

Sensory

Efficiency: Sensory efficiency addresses the use of residual vision,hearing, and other senses to enable or enhance accessto the environment.

For example, learning how to use touch and smell ratherthan visual cues to identify one's personal possessionsor

one's location, or using hearing and the other sensesto identify people one knows without visual cues, fits intothis area.Sensory efficiency skills are valuable lifelongtools. Theyhelp youths who are visually impaired increase their useof auditory and tactual information in order to makesense of the world. Sensory efficiency also involveslearning how to use any remaining vision?for example,students with low vision need instruction in how, andwhen, to use residual vision.All children who are visually impaired need to learn howto use their auditory, tactual, and/or visual senses tomaximize their environmental access.

Sensory efficiency skills must be practiced throughmeaningful activities in the home and community, not justat school.

Taking this into account,

TVIs support

sensoryat

school. Taking this into account, TVIs support sensoryefficiency instruction across a range of stimulating andrelevant environments. For example, young children canuse monocular telescopes to look at distant objects in avariety of motivating settings: fast- food restaurants, malls, neighbourhoods, or playgrounds. Youths who are blindneed opportunities to use their sense of touch to learnabout a wide variety of objects and materials. Thesetactile skills are necessary to develop foundationalconcepts which are prerequisites to using braille andtactile graphics at school.Orientation and mobility instructors (O&Ms) also play asignificant role in teaching and reinforcing sensory skills.For example, O&Ms might teach a student who is blind toidentify where he or 213 she is by listening for environmentalsounds and noticing surface changes.O&Ms might teach visual and auditory scanning for cars,visually following a shoreline, and when to rely on othersensory information instead of unreliable vision. Thesesensory efficiency skills will continue to be useful as thestudent moves to unfamiliar postsecondary, community,and work environments.As shown here, teaching students how to efficiently usetheir remaining senses gives them greater access to theenvironment as well as increased independence andability to function.

TVIs

and O&Ms must receive training in how to assess and support the development of sensory skills. They need to understand which sensory cues are more reliable than others and help students learn to use these kinds of cues. For example, some sounds, such as a bell tower's hourly chime, might be consistent whereas the sounds of the outdoor air conditioning unit or water fountain cycle on outdoor

air conditioning unit or water fountain cycle on and off. TVIs also need to be aware of potential issues in the area of sensory skills and how to accommodate for them, such as if a student is reluctant to touch different textures or if a student has a hearing loss. Throughout the day, TVIs, O&Ms, and others should reinforce these sensory skills. This can be achieved by describing different textures for the student as he or she feels them, or by pointing out distinctive visual features like the black tape on each step in the stairwell.

The visually impaired person enjoys the experience in independent travel when he has a good and efficient training in use of the remaining senses. The loss of sight compensated by the sense of touch and hearing. Sensory stimuli enable a visually impaired person to determine his position or direction. Such sensory stimuli are classified as 'clues'. Hearing plays a dominant role in mobility.

Sharpening of hearing means much in the perception of the world as developed by the visually impaired student.

The important areas required for sensory training may be branched off as follows: 3.6.1

Importances and Procedures for Training Auditory

Sense of auditory is essential as we rely on auditory information of the world consciously or unconsciously. The visually impaired student has to depend on this sensory training to a great extent. It overcomes the difficulties of the student suffering from lack of visual perception.

Hearing plays a very important part in the orientation process. To gain maximum advantage, the person must use it in a number of ways: Sound Discrimination: refers to selecting those sounds which are useful for orientation. For example, in a background of a variety of noises in a farm, he may want to separate noise of a bullock cart to get an indication of pavement direction.

214 Sound Localization: refers to locating the sound in terms of its direction, distance, source quality, variety, angle and whether the sound is moving or not. Once the position of the sound is established, he may decide to move towards or away from it. For example, on locating a sound of an engine of a tractor, he may move away from it for the reasons of safety; or move towards it for approaching the pavement. The sound discrimination and sound localization help the visually impaired in the following ways: •••• Identify objects from their sound •••• Relate the sounds to their sources •••• Discriminate between simultaneous sounds •••• Establish direction and source, whether moving or not, of the sound •••• Localize sounds for understanding spatial concepts •••• Get an understanding of spaces, places, terrains by sound discrimination. Mapping of Sound: Whenever sound is perceived in the hearing system, mind of an individual tends to create a map in the mind depending upon direction, distance, angle, quality, variety and pitch of the sound. Individual's mind tends to recognize the source and location of the source depending upon these factors and relating the same to past experience as regard nature of sound. A visually impaired person also experiences the same process. She requires inputs terms of recognition of these sounds and relating the same to the source. A visually impaired should: •••• be encouraged to retrieve maps of sound generator in brain; •••• relate quality of sound with the source; •••• locates objects using this process. •••• experience and remember variety of sounds; Echo Location: refers to detecting obstacles through the noises which are generated by an individual and reflected back from the obstacles. It has been established that most congenitally visually impaired people are able to detect obstacles through echo location whereas adventitiously visually impaired people can be trained to do so. Limitations •••• echo location ability deteriorates with age; and

215 •••• echo location is difficult: in noisy conditions; when there is strong wind; and when the obstacle is very thin. It is thus essential that every visually impaired person should be imparted adequate and appropriate training in the proper use of the sense of hearing. It is desirable to use an auditory map for orientation of the environment. 3.6.2 Importances and Procedures for Training Tactile

Exploration of an object is worth a thousand words used in explanation. Objects perceived through touch, determine the definiteness of the objects and help the individual to form neat conception of them. More than mobility, the sense of touch has a lot to do with reading of the

visually impaired

student. It has its limitations as large objects lie beyond tactile exploration. 'Wholeness' can be perceived by the child only when the object is within the reach of the non-seeing child's hands.

A visually impaired person can gain a great deal of information by his sense of tactile. Touch is essential for concept clarity and determination of the nature of the object. He can use his tactile sense to explore the environment in the following ways: Hands can be used to: •••• understand spatial quality, surface texture, resilience, temperature, pliability and weight; •••• establish the position and then identify objects; •••• trail along any object for maintaining contact for mobility; •••• avail information about the layout of the environment through tactile maps, models, embossed diagrams and relief maps; and •••• understand the diversity of various objects. Feet can be used to: •••• understand the position of various landmarks on the pathways; •••• understand the relative position of buildings and the direction and lengths of connecting roads; •••• feel changes in surface texture, slope etc.; and •••• understand terrain and geographical conditions.

216 Touch may pose a limitation as large objects and the environment in general are invariably beyond tactile exploration. 3.6.3 Importances and Procedures for Training Olfactory

A good nose voluntarily offers the information of the objects which can be smelt. These are sensible clues for a traveller. During his travel, the smell of a gutter, the smell of smoking in a chemical industry, smell of flowers in a garden or smell of a kitchen are sources of information for him to locate where he is.

Development of this skill speaks well of the chemistry laboratory of the child's school experience. This also helps in the day-to-day life of the individual. If the student has an 'educated nose', his surroundings can transmit enormous information to him. ••••

Smell is useful for orientation, both in the house and the outside, in the following ways: •••• Particular shops, factories or establishments can be identified by odour. •••• Smell from kitchen, store or dining room can be useful as a cue for direction. •••• Through smell, one can establish presence of particular animals in the vicinity. •••• Typical odour from sewers or open drains in the rural areas can be used as landmarks. •••• Sense of smell is useful for understanding one's relative position in an agricultural or a dairy farm or a garden. •••• To relate or associate different items from their smell. Limitations •••• Sense of smells may change with time and with change in circumstances. •••• Difficult to differentiate smells in crowded places. •••• The same smell may be coming from different directions and locations. •••• Difficult to use this sense in isolation, thus to be used in combination with other senses. 3.6.4 Importances and Procedures for Training Gustatory It has limited utility for sensory training in orientation and mobility

as it does not provide any information about the relative environment or unless the sense is provoked, sensing is not spontaneous. This

sense, however, needs to be nurtured for its utility. It helps a

217 visually impaired person to associate names of the particular substances with their particular taste: •••• sweet with sugar, candy, sweets •••• sour with citrus fruits, juices •••• bitter with medicines, herbs, plants •••• hot with tea, coffee, milk •••• cold with ice-cream, ice, cold water etc. The sense of taste is particularly useful for identifying the ingredients of food items, drinks, and dietary substances and like items. 3.6.5 Importances and Procedures for Training Kinaesthetic Senses

The feeling of the body in responding to external stimuli, otherwise the kinaesthetic sense enables the child to get certain information like cold, heat, breeze and elevation of surface. Mobility is guided by his

kinaesthetic sense. Changes of temperature on the face or body can be used to provide orientation information. For example, it is possible to recognize position of the sun by the part of the face which feels hot. The relative position can be understood by a change from the shade to the sun. The response of the body to external stimuli, termed as kinaesthetic sense enables a person to avail environmental information like heat, cold, rain and breeze etc. The receptors in the joints, muscles and tendons give information to the brain about the physical position of the individual in the environment. This mode of information is termed as the kinaesthetic sense. Through this information, a visually impaired person comes to know the type of ground or surface i.e. grass, road, mud he is walking. It is possible to remember and repeat particular body movements. Taking meals involves a number of sequential body activities which can be remembered and repeated when required. With practice, particular muscular movements can be produced automatically in a similar situation. It is possible to replicate the extensive body movements involved in walking from one place to another. Getting into a bus, going up the stairs or opening the door generally involves particular muscular movement which can be repeated time and again in a similar manner.

3.6.6 Importances and Procedures for Training Residual Vision

Assessment of the students 'residual vision' is the first step in teaching how, when and under what conditions such vision can be used effectively. The ability and visual

218 functioning of people can be assessed through series of graded visual experiences. It is better and easier to move smoothly through familiar environment to the child. Vision develops in rational sequence. The activities are hierarchical and logical rather than random. The child, who tries to see, first attends to the light source. Often the child is developing the skill of residual efficiency through various stimulating activity and colourful objects. Sensory input is to compensate for the lack of sensory which they are receiving visually.

The suggestions are how to help the student fill their sensory needs or various opportunities which are possible at home and school are listed below. They are to be practiced for a prolonged time to improve residual senses: Development of an interest in seeing: •••• Stimulate visual curiosity by exposing the child to various lighting conditions. •••• Encourage continually to maintain interest in seeing. Variety counts a lot here. •••• Encourage for seeing first, the inaccuracies may be mentioned later. Encourage discussions about what is seen. The child may be assisted in making associations between three dimensional object and two dimensional pictures, picture to picture. •••• Develop a vocabulary dealing with visual likeness and difference. Encourage attending: •••• Providing enough time for the child to observe the objects. •••• Using coloured lights in positions of gaze may help the child to fix his line of vision. •••• High interest objects for identification. Objects like balls or toys can be used for this purpose. Tracking following an object: •••• The teacher can draw diagrams or letters and ask the child to move his finger along drawn pathways. •••• The child may be asked to follow a light source. •••• As crayon pencils are used by children. The child of low vision too can follow the pencil. Recognition of objects: •••• Discrimination three-dimensional objects, blocks, sticks and stones.

219 •••• Teach graduation in size. Small medium and big should be graded by the child. •••• Two- dimensional presentations. •••• Teach names of colours. •••• Teach intensity concept. Mildness or thickness are some concepts to be developed in the child. •••• Colour intensity can be made complicated and the child should be asked while he has seen Visual memory games: •••• Flash card or object presentations and the child should be asked what he has seen. •••• Increase duration of memory. •••• Increase difficulty of stimulus. •••• Decrease time to exposure. •••• Increase number of stimuli. •••• Specify order or recall. •••• Call for categorizing. Visual integration: •••• Use complete range of forms taught for this purpose. •••• Have child make shapes from stubs, clay, card board, wood pieces. •••• Draw forms freehand. •••• Throwing or catching a ball. •••• Being related black abstract forms to familiar concrete objects in environment. •••• Reinforce vocabulary of difference. •••• Emphasize naming of objects. Visual closure: •••• The child must be asked to find the missing parts of concrete objects. •••• Present a series of diagrams in ascending or descending order with one diagram missing in between. Let the child complete it.

220 Form constancy object programme: •••• Concrete, familiar objects may be presented in various positions and the child must be exposed to those differences. •••• Two-dimensional pictures of the objects in various forms may be presented to the child for discrimination. Figure ground discriminations: •••• Pictures of different colours may be given on the same back ground and the child asked to discriminate. •••• The complexity of discrimination can slowly be increased. Eye hand: •••• Tracing lines, curves and other two-dimensional forms or shapes are useful activities. •••• Rolling balls, throwing, catching and bouncing are some activities for developing eye hand coordination of a child. •••• Weaving with plastic ropes and cardboard needles develop motor skills. Eye foot: •••• Placing a foot game on squares of paper or mats demand the eye foot coordination skill in the child. •••• Following a weaving line made by a rope is good for skill. The low vision condition demands more creativity in the teacher owing to individual differences in the extent of visual impairment, amount of residual vision and the temperament of the children. The teacher in his approach should bear in mind the following to make his efforts more fruitful: ••••

Visual skills instruction includes learning to use visual skills, such as tracking, scanning, and attending to visual stimuli. Visual efficiency refers to the extent to which an person makes the greatest use of the vision that is available to him or her. ••••

Attending, shifting gaze and visual pursuit skills will help prepare a student for learning as well as prepare them for safe and efficient travel. •••• Tracking and scanning skills are important for reading and writing activities as well as safe and efficient travel.

221 •••• Visual motor skills help coordinate eyes and feet as well as eyes and hands. This page lists possible activities to help develop visual motor skills including gross motor, fine motor, and eye-hand integration. •••• Visual discrimination is the ability to recognize details in visual images. •••• Activities practicing visual closure and figure ground can be more challenging for students with visual impairments. •••• Visual association and visual memory activities can be challenging for students with visual impairments. ••••

The development of tactual exploration and discrimination skills are necessary for future braille readers as well as for students who may not be able to learn formal braille, but can learn to discriminate objects by touch to help make sense of their world or to use for communication.

222 •••• All students need to develop strength and dexterity to complete everyday tasks. This is especially important for future braille learners in order to be able to use the braille writer and slate and stylus. It is important for students to manipulate materials and develop their fine motor skills. This page provides suggestions on ways to develop skilful hands. •••• Listening skills are important for everyone, but especially for students who are blind or visually impaired strategies in developing a student's auditory readiness, a skill needed to lay a foundation for listening skills. •••• Many students who have visual impairments will be print readers and will use print as their primary mode of communication. The teacher of student with visual impairments (TVI) will assess the student's functioning and determine what non-optical devices will assist a student in accessing print and instruct the student in the proper use and care of the devices.

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It is a misunderstanding to suppose that the loss of sight leads to extraordinary abilities in the other senses. In fact, the student lack of confidence in the remaining senses when blindness is abrupt. Unless the senses are attuned to the environmental demands of information, the abilities remain in halting positions. They must be provided with the opportunities to experience the use of senses and the utility should be noticed. For a child who has acquired the necessary sensory skills, orientation to environment becomes easier and this leads him to a greater level of confidence in mobility. 3.7

Techniques of

Teaching Social Interaction Skills, Leisure and Recreation Skills and Self Determination 3.7.1 Techniques of

Teaching Social Interaction Skills

Social bonds between children who are blind or visually impaired and their caregivers can be affected when there is lack of eye contact, possible lack of smiling, and frequent passivity or constant tactual exploration in less than ideal locations.

Providing students with fading assistance in social circumstances is key. Talking with the student about who is involved, what they are doing and why can help the student understand the social context. Although it may be difficult to provide, students need honest and sensitive feedback about their behaviour and the impact it may have on social interactions. You can then talk with the student about how they can make judgments about how to change their behaviour. Students must learn to communicate effectively with different people. They must also learn to accept and respond appropriately to suggestions and corrections (ex. show respect for their teachers and others in leadership positions). The strategies identified here may help the student develop appropriate and positive social skills. Help a student learn appropriate social skills by encouraging the student to: •••• identify conventional gestures used in social contexts. •••• use nonverbal behaviors to indicate interest in speakers and to communicate more effectively. •••• respect personal space of others. •••• make contact according to cultural norms. •••• turn face to speaker and maintain social interaction. Explain that this behaviour shows you are interested in what the other person is saying. •••• discuss facial expressions (ex. smiling, frowning, etc.) as feelings that occur throughout the day. Help students understand that their facial expressions convey to others how they feel.

224 •••• use a tone of voice that is appropriate to the setting. •••• recognize behaviors that can cause social isolation. There are various responsibilities which must be followed in social interaction, which also known as interaction tips or behavioural skills. These are as follows:

Adult Interaction Tips Students need to learn respect adults and to interact and respond to them differently than they would to a peer. Help the student have positive interactions with adults by encouraging them to: •••• respond to an adult's attempt to interact. •••• initiate interactions with an adult. •••• address parents or other familiar adults by name. (But by all means do NOT play the guessing game! It is unfair for the student to "Guess who it is.") •••• comply with simple directions and limits from adults. •••• demonstrate the ability to differentiate between familiar adults and strangers. •••• identify situations in which an adult should not be obeyed. Sadly, we live in a world where not all people can be trusted and not all people have good intentions. The student needs to be taught that it is OK to not listen or comply with some requests. **Peer Interaction Tips** It is important for students to learn how to interact appropriately with their peers. The following are strategies to use in order to help the student develop positive peer interactions: •••• When the student enters a new area, make certain that the student understands what other students are doing. •••• Particularly with younger students, describe the student's present and the activities in which they are engaged. •••• Remind the students to take a moment and listen to groups at play before they jump in with an intrusive question or comment. •••• Be prepared to answer questions about blindness simply and naturally. The other students will probably ask questions about a student with impaired vision.

225 •••• Remind sighted students to express their feelings with words. Remind them that the student that is visually impaired may not see their smile, frown, or other facial expressions. •••• If the student is learning Braille, consider having the student demonstrate reading and/or writing in Braille to the other students. •••• Encourage the student with visual impairments to use the names of others when talking to them. •••• Don't be afraid to let students with visual impairments know that they are expected to answer their friend's question or respond to their comment. •••• Talk about the importance of turn taking. This applies to game play as well as in conversations. Discuss the importance of listening to discussions and waiting for an appropriate time to comment or ask a question. •••• Assist the student in developing the important skill of initiating, continuing, developing and concluding conversations. •••• Encourage the student to demonstrate affection in socially appropriate ways, considering the person, place, and situation. **Courteous Behaviour** Students who are blind or visually impaired may not be aware of conventional courteous behaviors as they may be unable to visually observe them. For this reason, students will need to pay extra attention to environmental cues in order to know how to act in various situations. Modeling and practicing the behaviors including greetings, farewells and introductions in comfortable, familiar settings, will help the student in use the skill in new environments. In order to help the student develop courteous social behaviors by encouraging them to: •••• respond to farewells and greetings. •••• apologize to others when appropriate. A student may need support from an adult to help them understand the impact of their actions and how it offended or hurt others. •••• use people's correct names and titles when addressing them. •••• introduce self to others and introduce people to each other. •••• give appropriate compliments and praise to others.

226 •••• use acceptable language with consideration for the person or people present, the setting, and the social situation. •••• differentiate socially acceptable and unacceptable behaviors in a variety of situations. The student will obtain information from others about appropriate behaviour in unfamiliar settings. •••• recognize sarcasm, and respond in an effective manner. •••• use appropriate manners (e.g., please, thank you). ••••

follow classroom and school routines and procedures. Social Interaction Examples ●●●● Initiates/reciprocates greetings ●●●● Shows toys/items to peer ●●●● Plays game with peer ●●●● Requests assistance from peer ●●●● Invites peer to join play ●●●● Expresses empathy ●●●● Follows changes in conversational topic ●●●● Responds to nonverbal cues of listener

3.7.2 Techniques of Teaching Leisure & Recreation Skills

Leisure describes an individual's perception that one is to choose and participate in meaningful recreation. Individuals with developmental disabilities typically have an abundance of free time but do not usually use their leisure in constructive ways. Even so, leisure instruction for individuals with significant disabilities historically has low priority, and is often not taught. This may be due to the perceived difficulty associated with establishing and integrating leisure activities for individuals with significant disabilities. All human beings have the right to engage in leisure activities, and services that are provided to individuals with disabilities should offer opportunities to engage in these activities. Increasing the focus on teaching leisure skills has the potential to open new doors for students with disabilities. When individuals with severe disabilities develop leisure skills, it may enhance social, cognitive, domestic, language, and motor skill development. Specifically, individuals who gain leisure skills increase their activity level and social interactions and decrease their self-stimulatory behaviors (e.g., body rocking, hand flapping), due to being appropriately engaged in age-appropriate leisure skills that can be enjoyed across the lifespan that enable adults to experience an enhanced quality of life by increasing competence and self-reliance leading to an increase in opportunities to access least restrictive environments. These skills contribute to living a more self-supporting lifestyle and to achieving greater independence in life. The more skills adults acquire, the more enhanced their quality of life becomes. However, most individuals with significant disabilities are unlikely to learn leisure skills without systematic instruction, and even those that may acquire the skills are not likely to generalize to other environments or self-initiate without systematic instruction. Several studies have demonstrated effective methods for teaching leisure skills to individuals with significant disabilities.

Recreation and leisure are terms often used interchangeably. Both relate to what people choose to do in their free, unobligated time that is not otherwise used for work, school, or other activities like appointments and chores. Leisure time is any free time that can be used to pursue personal interests. Recreation is an individual's preferred pleasurable and enjoyable activities in which they engage during leisure time. Recreational activities can be sedentary in nature, like knitting, chess, playing musical instruments, or social networking in person or on the computer. It can also be active and enhance physical fitness and well-being. Examples of active recreation include walking, skiing, dancing, bowling, hiking, rock climbing, boating, bicycling, weight lifting, and goal ball.

Children with visual impairments, blindness, or deaf-blindness need systematic and purposeful instruction beyond the general education curricula to gain the skills necessary to be independent, productive, educated members of society. Recreation and leisure are some of the instructional areas that need to be addressed. Knowledge of recreation and leisure provides critical supports to a wide range of student capacities in the areas of social interaction, orientation and mobility, independent living, and self-determination. Developing recreation and leisure skills can have far reaching positive effects on the lives of people with visual impairments. Research has shown that recreation is an important factor in Recreation and Leisure and the Expanded Core Curriculum Back to: ECC Subjects and Skills

quality of life for everyone, including people with disabilities. People who engage in recreational activities will likely benefit by having improved cardiovascular function, better ability to sleep, improved self-esteem, increased stamina, and decreased stress levels, all of which not only improve quality of life, but also have positive benefits for other activities. Beyond the health and wellness benefits of physical fitness touted in the media, when one's body is more accustomed to the different types

of physical movements inherent in recreation and fitness activities, that person generally has better flexibility, strength, and stamina. With improved physical fitness, independent living skills are easier to perform and less stressful on the body. In addition, recreation is a highly social phenomenon organized around friendships or family groups, and these social interactions buffer the effects of stress on health. With this in mind, recreational activity that increases physical activity and improves fitness should be encouraged.

One's environment can be a determinant to stress reduction. Natural environments can be pleasant, relaxing, and stress reducing for many people, but large urban cities also provides the same experience. Having too much free time and limited access to various recreation activities of one's liking can produce stress. So, for those individuals living out in the country who have access to transportation, the joy of partaking in cultural events in the city on a weekly or monthly basis provides the opportunity for a stress limited lifestyle. The same can be said for people living in the city who recreate in the country. Social integration of children and adults with learning disabilities into community recreation programs offers the chance to develop a positive self-image through successful experiences and satisfying relationships with peers. McGill (1984) reports that integrated play opportunities are stimulating and highly motivating experiences for disabled children, offering them opportunities to imitate and model the play behaviour of nondisabled peers. Social integration also enhances relationships between family members. We've all heard of the old adage, "The family that plays together stays together." This adage infers that leisure experiences promote family satisfaction and stability. Recreation activities provide opportunities for couples and families to interact and negotiate individual and collective interests. Worthier and Mancini (1991) state some benefits to the family: Leisure experiences promote opportunities for developing equity. Unlike many other environments within which people interact, leisure experiences promote opportunities for each individual to maximize her or his own interests and minimize competition. It is during leisure time when husbands and wives, and parents and children, are most apt to practice by negotiating family roles and reaching new definitions of consensus. When individual interests are promoted over maximum joint interest, family bonds are weakened. Shared leisure experiences encourage opportunities to negotiate and improve the historical comparisons upon which subsequent negotiations are based. Benefits of leisure in social integration are also noted in people without disabilities. The chance to learn from and to socialize with nondisabled peers has been cited as one benefit for individuals with disabilities participating in integrated and fully inclusive 229 programs. Research in the 1980's determined that positive attitudes of children not having disabilities toward peers having disabilities were cultivated or increased when involved with an integrated recreation activity (Schlemiel & Ray, 1988). Recreation service providers also learn from this experience. Due to the Americans with Disabilities Act of 1990, all private, public, and non-profit agencies delivering recreation services to the public must supply accommodations and modifications within their programs to persons with disabilities. These professionals may not have any knowledge of providing accommodations and/or modifications to participants with learning disabilities. The person with learning disabilities, upon disclosure, thus needs to educate the professional about what accommodations and/or program modifications should be arranged to enable full participation in recreation programs. This social interaction not only contributes awareness of this situation to another person but also demonstrates how important it is for individuals with disabilities to participate in a particular recreation activity like everyone else. Often, the public and even some professionals who are knowledgeable about learning disabilities forget that everyone has a life after school and after work. Do not let the word learning impede any thinking that problems associated with learning disabilities will only surface during school or work. A person may read during leisure time, and that does not always mean a novel. A person reads directions to complete a craft project, instructions to play a computer game, a description of a recipe, and even the gate number on an airplane boarding pass. Dyslexia does not cease when one is playing Scrabble(R). Auditory perceptual ability does not suddenly improve because a child receives lower amounts of verbal instruction on the baseball field than in the classroom. Dyscalculia does not go away when playing a card game. Learning disabilities can affect every area of one's life, including participation in recreation activities. First, the person may only wish to participate in activities that reveal his attributes. For example, an individual who excels naturally in physical activities (e.g., basketball, volleyball, golf, tennis, etc.) may feel more comfortable playing in physical activities than a game of Scattergories, which requires the ability to hold information in memory, process written text quickly, recall accurately, and spell precisely. Even when a person excels in physical recreation activities, unexpected obstacles can appear. A few of these obstacles are reading and interpreting written game plays or formations (e.g., basketball, football, gymnastics, marching band, water polo, hockey, etc.), keeping track of a score (e.g., golf), and outmanoeuvring your opponent through replanted shots (e.g., racquetball,

230 volleyball, tennis). To, shown is a compilation of illustrations that describes how specific types of learning disabilities affect performance in recreational activities: ●●●● Dyscalculia. This can cause one to produce a sum that is incorrect, resulting in losing a game or in misplacement of ranking in golf. This also can cause difficulty in playing games such as dominos? Scoring bowling or in any type of card game? Casino gambling? Calculating dining charges, etc. ●●●● Dyslexia. This inability to understand written language poses a problem when reading craft instructions, theater programs, movie subtitles, travel itineraries, tour guide brochures, and interpreting the directions in learning a new game. ●●●● Auditory Acuity Difficulty. This may be the problem if, when playing a game of basketball, a player continually does not respond to a coach's directions from the bench or does not respond to a teammate's verbal playmaking messages. ●●●● Auditory Vocal Association Problems. The characteristic is displayed when a person hears what was said, is subsequently able to acknowledge the auditory stimuli in a correct manner, and yet proceeds to perform an incorrect or inappropriate action. In football, upon hearing the signal for an interception, a defensive back stop, turns, and begins to tackle opposing players rather than block. ●●●● Auditory Memory Deficit. This could be the problem if a person finds difficulty remembering directions or instructions that have been previously explained (e.g. Just before game or during halftime when new instructions were stated). In volleyball, a player does not remember alterations to a defines play made by the team captain at halftime. ●●●● Auditory Sequencing Problem. Here a student experiences the inability to recall a series of auditory instructions. During tap dance instruction the student performs a shuffle step beginning with her left foot instead of her right foot and before an eight count circle to her left. ●●●● Catastrophic Response. This can occur anytime when Catastrophic Response. This can occur anytime when the individual is overloaded with too much visual and/or auditory stimuli and results in high frustration. A scenario could be that the person misread or did not double check the time to return to the bus from an outing. This resulted in the person and accompanying friend missing the bus to return to their hotel. They are standing at the wrong bus station surrounded by hundreds of tourists. His friend is yelling, people are everywhere, and the person
231 shuts down for approximately one minute. ●●●● Cognitive Disorganization. With cognitive disorganization, a person may often miss or forget steps in a sequence. During a Cub Scout weekly assignment, 10yearold Bob never brings all of the materials required completing a project, or he constantly confuses the steps taken to achieve merit awards. ●●●● Crossing the Midline and Directional Problems: These problems become quite apparent during aerobic exercise or dance class, roller or ice skating instruction, driving small motorized vehicles (e.g., scooter, go-cart racing, bumper cars, boats, etc.) and locating a room in a hotel. This individual is unable to smoothly mimic the movements of the aerobic or dance instructor and experiences difficulty mirroring responses. Controlling the steering wheel, judgement of turns on a course, and going in the correct direction may require many practice runs before exhibiting adequate skills. ●●●● Disinhibition: A person exhibiting this problem often finds complications with "fitting in" groups, especially team recreation activities. Constant laughing at a teammate when the ball is dropped, always retrieving a shot within someone else's playing zone (e.g., volleyball), and continually talking loudly when silence is expected (e.g., opponent is putting in golf) could lead to dismissal from the team, if the individual is unable to correct these types of behaviors, or could result in peers not inviting this person to accompany them in a recreation activity again. ●●●● Intersensory Problem: Trouble using two senses at once could interfere with designing a piece of pottery or hand painting a ceramic dish and holding a conversation with a talkative person who is sitting in the adjacent seat. ●●●● Dilemma: Individuals exhibiting this dilemma may not complete the task or may make numerous mistakes during the process due to engagement in conversation. ●●●● Short term Memory Problem: A person with a short term memory problem does not remember the sequence of a turn taken during a table game, forgets to place a bet before the next poker round, and may not remember what he betted during the current poker round. ●●●● Visual Acuity Problem: A player does not exhibit the ability to see clearly and differentiate objects in his visual field. In bowling, the bowler experiences problems in lining the bowling ball up with the range finders on the runway.

232 •••• Poor Visual Coordination and Pursuit: Here the task of following and tracking objects causes distress. A person has trouble positioning him to catch a Frisbee or misjudges the landing of a spin on a tennis shot. •••• Visual Figure Ground Differentiation Problem: With this type of problem the person never identified where the object was from the beginning? She has an inability to distinguish between objects in the foreground and background. In soccer, a player has difficulty seeing her teammates when conducting a "throw-in" to continue the play of game. •••• Visual Motor, Spatial Form Manipulation Problems: An individual finds complications in successfully moving in space and manipulating three-dimensional objects with this problem. Examples are placing jigsaw puzzle pieces in their correct location within a puzzle, manoeuvring one's bicycle through an obstacle course, and even parallel parking one's car. It is common for persons with learning disabilities to employ survival strategies when learning a new skill or interacting in a group situation. Examples of these strategies are as follows: 1. Learn from doing. 2. Observe what others do. 3. Develop a buddy system. 4. Awareness of instructors' expectations: It is common in organized athletic teams that one person's wrongdoings or mistakes can jeopardize the entire team? Youngsters and adolescents respond quickly to peer pressure

How Do Teachers of Students with Visual Impairments (TVIs) Approach Instruction? Recreation for children with visual impairments cannot be learned by passively observing others at play. Recreation must be intentionally and systematically taught with disability specific techniques and safety in mind. The foundation for recreation can be learned in physical education (PE) courses with accommodations and adaptations. Children with visual impairments benefit from learning the components of recreation and fitness in PE because many other components of the ECC are also covered to some extent during the course of the year. By participating with classroom peers, students with visual disabilities learn the foundational sport and fitness skills that enhance the lives of all children. They are also empowered to make the self-determined decisions necessary to have control over their free time and make lifelong health choices. TVIs approach instruction in this area by providing students with specific information about recreation and leisure activities. They also collaborate with PE teachers and other professionals to determine how activities can be adapted for these students to maximize their opportunities

233 for independent participation and learning. For example, a tee might be used in softball instead of having the ball tossed to the student, or a beeper ball might replace the standard ball. For activities like basketball, things such as tape can be placed on the ground to mark the boundaries of the court, and a beeper can be placed on the basketball hoop to help the student identify its location. These students can also be introduced to sports that have been specifically created for those who are blind and visually impaired, such as goal ball and beep baseball. TVIs also support recreation by describing the activities in which the student's peers are participating. They model those activities for the student and school staff who work directly with the student in other areas. The TVI might teach the student how to play games that classroom peers are playing or show the student how the activities can be adapted. For example, braille might be added to playing cards or friends might read game materials to the student. The TVI can also orient the child to the school playground or PE field and show the child how to use various play areas and equipment. During direct instruction, TVIs or orientation and mobility instructors (O&Ms) describe the recreational activities in which people around them are participating. In addition to verbal descriptions, tactile maps and diagrams can be used to teach layouts of various activities. Examples include a tactile map of a baseball or football field that may indicate the different player positions. Even if youths who are blind and visually impaired choose to not participate in every sport or recreation activity on their own time, they should learn what the rules are and how to play them. Knowing the rules of different games and keeping abreast of sports offers a student with visual impairments opportunities for social interactions with peers. Remembering that recreation, fitness, and leisure skills encompass more than physical activities, students with visual disabilities should be introduced to a variety of hobbies they may find interesting. Even if a student chooses to not participate in a hobby over the long term, the student will have a greater understanding of how people spend their free time and be able to participate in conversations about these activities. The overall goal of the TVI is to help the student identify recreation, and leisure activities that he or she enjoys and can pursue throughout life.

As with all people, regardless of ability or personal interests, recreation, fitness, and leisure skills are an important ECC area that supports the sense of both wellbeing and quality of life for students who are blind and visually impaired. Because these students have difficulty seeing how others spend their free time, TVIs and O&Ms systematically and purposefully help these children discover and learn about activities they may enjoy. Participating in recreation, fitness, and leisure helps youths with visual impairments develop social, career, and problem solving skills.

234 Engaging in this ECC area also increases self-esteem, self-determination, and overall health. Students who are challenged and achieve goals they thought might be impossible, or too difficult, develop confidence which positively impacts all areas of their lives. To that end, TVIs should be aware of how to adapt a variety of recreational activities for these children and work with PE instructors to ensure that they are included in their PE classes. We do not want youths with visual impairments to be idle bystanders in life? They should be engaged in recreation and leisure activities alongside their peers to ensure they learn the skills necessary to make purposeful and self-determined life choices.

The student should be encouraged to: choose an object to play with or an activity when presented with options; play simple card, board and table games; identify various community activities and facilities; participate in clubs/activities; identify and choose appropriate leisure activities and hobbies; play age-appropriate games enjoyed by peers; and cooperate in team activities.

Before suggesting the leisure and recreational skills must be follows underneath factors: 1. Generalization data demonstrated these two participants successfully maintained the skill over time, as well as in other environments. 2. The selection of games is very important. The games should be aimed at the appropriate developmental level of child, and adaptations should be made 3. So they are suitable for a particular child, if necessary. Most importantly, the games should be playable with nondisabled peers. 4. In addition to using games that need no modifications, there are numerous adaptations that can be made to games that will allow blind and visually 5. Impaired children access to a wider range of recreation/leisure activities. 6. Some of these adaptations are: Divide sections of game boards with glue, or various textures. Add braille labels to sections of game boards. Use velcro in sections of game boards and on bottoms of playing pieces. Braille the instructions and the game cards Tape record game instructions. Braille regular playing cards or game cards such as Uno. Use textures or glue to mark differences in game pieces. Add brightly colored stickers to game pieces and game sections. Mark dice with braille labels or glue dots. Make a Tic-Tac-Toe board with a cake pan and magnet strips. Divide checkerboard with glue and mark red playing pieces with texture. Play Tic-Tac-Toe with pegs and pegboard. Use a large box lid to define playing space. And Keep score with peg boards, paper clips clipped to index cards or tokens dropped into a contain

Play

235 Play is the foundation for learning about the world. Through play, children learn to make comparisons between materials and develop preferences. Children learn many skills through play and also begin to develop social skills. Play is an important part of the Early Childhood curriculum, but children may need to continue to develop their play skills even as they elementary school. Playground The playground should be adapted for the student with visual impairments. It is important for a student to be oriented to a playground when it is quiet and when other students are not on the playground. In addition to learning where the equipment is located, students should have the opportunity to tactually explore the equipment to learn how it moves. Student should also be instructed to visually scan the playground and/or use auditory cues prior to moving from one area to another. Creativeness All children will naturally gravitate toward a preferred activity.

Of

course, students should be permitted to develop in their area of interest, but it is important to expose children to a wide variety of leisure activities to ensure the students are aware of a variety of leisure activities available. Students who are blind or visually impaired do not have the same opportunity to visually observe a variety of activities available. Factors such as cost and material adaptations will play a factor in what activities are accessible Bowling Students can learn basic bowling skills by playing with home-made or purchased bowling sets that can be used at home and school. A sound source can be placed behind the pins in order to provide an auditory target for the students. Many bowling alleys will provide bumpers, or portable bowling rails, upon request.

Word, Card & Board Games Playing games is a lifelong leisure time activity that fosters social interactions. In order to be accessible to a student with a visual impairment, they may need to be adapted. Although someone knowledgeable in braille can adapt card and board games, there are commercially available games that have been adapted with braille as well as large print. Large print cards can be purchased or made for students with low vision. Bicycling The foundation for bicycling can begin when a child is young. Providing opportunities

236 for students to play on riding toys is a good introduction. Older students can build endurance and experience physical activity by using a stationary bike. Students with low vision may be able to learn to ride a bike, but depending on their level of available vision, may need to ride alongside a sighted adult or peer who can warn the student of any dangers. Students who are blind may be able to experience biking using a tandem bicycle. Physical Games & Sports Simple games can be adapted easily, but it may be more challenging to adapt team sports. Although games can be adapted, students will need to acquire the motor skills necessary to fully participate in the games. Skills needed to play in games may need to be taught in isolation. It is important to be aware of the students are more at risk for retinal detachment. Also, some eye conditions can be aggravated by vigorous physical activity.

Practice different ways to cross the gym/playground: walking, tiptoe walking, galloping, skipping, hopping, and

running with a partner, jumping. Make it a game of walking up and down stairs in a "Teacher May I" game. Practice jumping up and down with jump rope or Chinese jump rope games. Practice keeping balance while walking along curbs or balance beam. Play games that incorporate throwing and catching balls. Encourage student to slide, climb on play structures, crawl through tunnels, and play on swings. Encourage students to create their own obstacle courses and challenge their friends. Students are able to use recess and gym time to gain an understanding of their bodies in space; improve their physical skills; develop language and concept development; and practice group cooperation. Many of the team games and athletics are excellent and appropriate for students with visual impairments.

In addition, however, these students need to develop activities in recreation that they can enjoy throughout their adult lives. Most often sighted persons select their recreation activity repertoire by visually observing activities and choosing those in which they wish to participate.

Perhaps nothing reveals so much about individuals as how they choose to play how they invest their time and energy for leisure time. Leisure is that time free from demands of school, work, or required activities of daily living. Everyone needs regular recreation that develops skills, promotes good health, relieves stress, facilitates social interactions, and provides a general joy for living. For recreation, choose activities at which can be successful. Good readers read. Athletes seek sports' activities. Musicians lose themselves in music. Visual artists paint or draw. Craftspeople create. Social individuals engage in group activities. Observers appreciate the efforts of others whether a basketball game, painting, fine

237 meal, or concert. Children, adolescents, and adults with learning disabilities may find themselves with limited opportunities to fully enjoy leisure time. A lack of perceptual, motor, memory, linguistic, or organizational skills may cause them as much difficulty for leisure as they have at school or work. Fear of failure may limit their reaching out to access recreational activities. Just as we teach children with dyslexia to read, those with math disabilities to understand math, those with linguistic problems to better comprehend and use language, we must teach skills and provide practice so individuals with learning disabilities can achieve some recreational proficiencies. When skills are not as well developed as necessary and compensations are not made, agencies, institutions, instructors, and coaches can be helped to make necessary accommodations. Satisfying leisure time for persons with learning and other disabilities is as important as accomplishments at home, school, and work. Simply because they can derive many benefits from recreation participation. One benefit is learning from the experience. When the recreation activity experience has captivated the participant, this individual brings particular personality styles of learning, motivation, and expectations about the experience to the setting. The person faced with a specific environment, interpreted by the person or not, promotes one or more learning experiences. These learning experiences can be motor learning, understanding game directions, or performing a skill, all to meet the demands of that setting. These experiences may come from involvement in a structured recreation program and may be exhibited as part of the information outcomes of participation. Researchers in the field of learning and educational psychology have discovered a variety of learning outcomes. The following outcomes can be present because of participation in recreation activities: behaviour change and skill learning, direct visual memory, information (factual) learning, concept learning, schemata learning, metacognition learning and attitude, and value. The physiological benefits of recreation participation were derived from studies where people engage in physical activity of some kind (e.g., exercise, cycling, swimming, walking, jogging, running, hiking, weight lifting, etc.). Specific results from involvement in a physical recreation activity are an increased lung capacity, reduced resting heart rates and lower blood pressure levels. Other benefits consist of decreased body fat mass, increased lean body mass, increased muscle strength, and improved structure and function of connective tissues (ligaments, tendons, cartilage) and joints. Weight bearing and strength building activities help sustain bone mass and reduce the incidence of trauma induced fractures. Moderate physical recreation activities are known to reduce the symptoms of mild or moderate depression and anxiety through improved self-image, social skills, and mental health. Noted psychological benefits of recreation activity are as follows: perceived sense of

238 freedom, independence, and autonomy, enhanced self-competence through improved sense of Self-worth, Self-reliance, and self-confidence, better ability to socialize with others, including greater tolerance and understanding, enriched capabilities for team membership, heightened creative ability, improved expressions of and reflection on personal spiritual ideals, greater adaptability and resiliency, better sense of humour, enhanced perceived quality of life, more balanced competitiveness and a more positive outlook on life. Involvement in recreation activities releases stress and tension from the perils of society. Braum (1991) recalls the findings of researchers that state, "Relaxation tends to alleviate many of the symptoms of stress. Activities that fill leisure time, performed within a group, strengthen social support ties known to negate stress". The idea of choice in leisure presents opportunities where one can recreate.

3.7.3 Techniques of Teaching Self-Determination

Self-determination and control over one's own life is critical for all individuals, including individuals with developmental disabilities (Kennedy, 1996). Self-determination provides the conceptual foundation for policy, vision, and social systems in the field of developmental disabilities. As the field has evolved from early assumptions about "handicap" and "disability" the central role of the individual has been captured by the construct of "self-determination." A need exists to link the vision with both existing empirical evidence, and overt description of the practices that will help us better realize a society in which self-determination represents the lifestyle of all citizens. Promoting self-determination has become best practice in the education of students with intellectual and developmental disabilities. The purpose of this practice guide is to review and summarize existing practices that enhance self-determination and the empirical support associated with those practices. Self-determination offers a broad vision with personal implications. It is a construct with multiple facets and as such there will be no single practice or package of practices for achieving self-determination that applies to all people or all contexts. A full discussion of the definitional and theoretical frameworks that supports the work of the Gateway to Self-Determination project can be found in Wehmeyer et al. (2010). In summary, approach self-determination within a social-ecological approach in which self-determination is a psychological construct that refers to self- (vs. other-) caused action-to people acting volitionally, based on their own will. Volition refers to the capability of conscious choice, decision, and intention. People who are self-determined, as such, are causal agents in their lives; they cause or make things to happen in their lives. They do that through self-caused action (causal agency) that has a clearly specified goal or purpose or through actions of others taken on one's own behalf, referred to as proxy agency. Core assumptions associated with this approach are:

- All people can engage in self-determination
- Disability or severity of disability does not preclude opportunities for people to become self-determined individuals
- Self-determination is a multidimensional construct
- Promoting self-determination for any person will require the unique combination or clustering of practices that meet the needs of that person.

Delivering the promise of self-determination will seldom involve one practice, and will typically require individualized application of multiple practices.

- Self-determination is affected by not only by the skills and beliefs of the individual but by the social and societal context in which they live. Within our social-ecological approach, activities to promote self-determination (e.g., interventions) might focus on building a person's capacity to perform actions leading to greater self-determination (problem solving, decision, making, goal setting, self-advocacy, etc.), focus on modifying the context or the environment in some way to better enable someone to make things happen in their own lives, or to provide supports (e.g., technology) that enhance self-determination. For purposes of understanding these activities, in addition to activities derived from the theoretical models described in Wehmeyer et al. (2010), we turn to The Developmental Disabilities Act of 2000, which defined "self-determination activities" as "activities that result in individuals with developmental disabilities, with appropriate assistance, having: (a) the ability and opportunity to communicate and make personal decisions; (b) the ability and opportunity to communicate choices and exercise control over the type and intensity of services, supports, and other assistance the individual receives; (c) the authority to control resources to obtain needed services, supports and other assistance; (d) opportunities to participate in, and contribute to, their communities; and (e) support, including financial support, to advocate for themselves and others, to develop leadership skills, through training in self-advocacy, to participate in coalitions, to educate policymakers, and to play a role in the development of public policies that affect individuals with developmental disabilities."

240 What is Self-Determination? Why is it Important? Self-determination is broadly defined as having abilities and opportunities to steer one's life in a direction that contributes to a personally satisfying life.¹ Equipping students with the skills, attitudes, and opportunities to play an active and prominent role in their learning and planning for the future is now considered a best practice in the field of special education. Research suggests students with disabilities who are self-determined may: ●●●● Be more academically successful and engaged in schoolwork ●●●● Contribute actively to their educational and transition planning ●●●● Experience more postsecondary involvement ●●●● Report higher quality of life and more positive experiences in early adulthood ❖❖❖❖

❖❖❖❖ What are Choice-Making Skills? Why are they Important? Choice making involves giving students opportunities to choose instructional activities, partners, and schedules. In each instance, students should be allowed to choose among several options based on their preferences. Giving students the opportunity to make choices enables them to develop skills of demonstrating control and responsibility in their environment. Incorporating choice making into the daily activities of students with intellectual and developmental disabilities has been associated with a higher level of task engagement and a lower level of problem behaviour. Example Strategies for Educators Provide two or three learning activity options and allow students to make a choice

241 based on their preferences. As students become more proficient with making choices, they can be given more options to choose from. For example, in a physical education class, a student could select from a variety of activities (e.g., kickball, jumping rope, or running) for a 30-minute period of free exercise time. Allow students to choose how they will demonstrate mastery of a specific curriculum topic (such as cultural awareness). For example, a list of choices could include a written report, poster presentation, slideshow, collage, native meal, dance, or customs overview. When appropriate, give students choices about how they will carry out particular learning tasks, such as where they complete their afternoon assignment or with whom the choice-making process to help students better understand how to make choices on their own. For example, a teacher could model how she chooses what to eat for lunch given select cafeteria options by thinking out loud and then have students make their own choice. For students who have difficulty making choices independently, give advance notice of the options they will need to choose from, visuals of the available options, or more information about each option ❖❖❖❖

❖❖❖❖ WHAT ARE DECISION-MAKING SKILLS? WHY ARE THEY IMPORTANT? Decision making involves analysing a situation to determine possible outcomes, choosing the best scenario for yourself at that particular time, and following through with your decision. Students who are more self-determined will consider how their decisions affect themselves and others. Decision making is especially important at the secondary level, when students are considering future career and postsecondary pathways they will take in adulthood. Decision making involves consideration of all alternatives, positive and negative consequences, and what is the best for oneself. This collection of skills is important for everyday life situations-both in and out of school-where students will be faced with the need to make wise decisions.¹² Example Strategies for Educators Incorporate opportunities to make decisions based on the full list of options, the costs and benefits of each option, and analysing any bias present in picking various options.¹³ For example, talk with students as they decide what they want to do after high school. Options might include finding a job, going to college, and/or volunteering. Encourage students to adopt the process of stopping what they are doing, thinking about the decision options they have, and acting upon the most appropriate option.¹⁴ Teachers or counsellors could allow students to practice using this process in "real world" situations, such as deciding whether or not to engage in an argument with someone. Before acting on their emotions, students should decide whether it would be most appropriate to defend their

242 perspective or walk away from the situation. Teach students how one decision can have multiple impacts, such as deciding whether or not they should volunteer with a school club or community organization. While the decision may allow them to gain valuable skills and experiences, it may result in them having less time for friends. Teach "group- think" decision activities based on role-plays, stories, and videos when students are first developing this skill. These activities allow students to practice decision making in a safe environment. ❖❖❖❖ WHAT ARE PROBLEM-SOLVING SKILLS? WHY ARE THEY IMPORTANT? Problem solving refers to the capacity to identify a problem, generate possible solutions, evaluate the effect of each alternative, and ultimately choose the best option.¹⁵ Often, students use problem-solving skills during activities, tasks, or situations that do not have an obvious or pre-determined solution.¹⁶ Problem-solving skills are especially useful as students encounter situations requiring independence and competence in school and community activities. Further, these skills can assist students in community-based and work settings, where they often are expected to engage in tasks independently. Problem solving can also help students navigate social difficulties with peers, teachers, family members, or other members of the community. Example Strategies for Educators Help students develop the ability to find an appropriate solution when faced with a challenge. For example, if a student forgets her homework, cheating or lying would be inappropriate solutions and could potentially result in negative consequences. However, using free time to complete the assignment again would be a better solution with more positive outcomes. Have students reflect on the way they solved a challenging situation and make adjustments for future situations so they may enhance their problem-solving skills. For example, after participating in a group activity, talk to the students about their role in the exercise and whether they worked well with others. Present and explain a limited number of solutions for younger students or students who struggle with solving problems effectively. For example, if a student leaves a necessary book at school, the student's parent might present possible solutions, including asking to borrow the book from a friend, calling the school to retrieve the book, or checking the local library. Teach students conflict resolution strategies for times when issues arise with their peers, co-workers, family members, or teachers. For example, if a student becomes frustrated with another teacher in the building, brainstorm ways the student could address the issue with that teacher in appropriate, respectful, and mutually beneficial ways.

243 ❖❖❖❖ WHAT ARE GOAL SETTING AND ATTAINMENT SKILLS? WHY ARE THEY IMPORTANT? Goal setting and attainment skills require students to identify something they wish to work toward and develop a plan to reach that particular objective. When learning how to set and attain goals, students should be faced with challenging yet feasible objectives that are aligned to their likes and dislikes. Learning how to set and attain goals may enable students to better understand and work toward what is most important to them. The attainment of these goals may be encouraging to students as they seek direction and independence in school and life endeavours. Example Strategies for Educators Work with students to develop plans that include steps to reach a goal and any necessary resources. It is important to support students in considering the process of reaching the goal and not narrowly focusing on only the end result. Help students set manageable and realistic goals that can be met in a short time period (e.g., a single class period, a day at school, or over the weekend). For example, a student might set a goal of reading a certain amount of pages in a 30-minute block of silent, sustained reading. The student can learn to track progress and adjust her goal over time. Display students' academic and personal goals publicly and positively, and have frequent discussions about the progress being made to reach the goals. Encourage students to set goals they might find less interesting or preferable (e.g., academic or organizational goals) in order to encourage the development of their work ethic. ❖❖❖❖ WHAT ARE SELF-ADVOCACY AND LEADERSHIP SKILLS? WHY ARE THEY IMPORTANT? Self-advocacy and leadership skills involve having the ability and confidence to stand up for oneself, as well as having the knowledge of what to advocate for in achieving one's goals. The ability to lead requires students to be assertive and negotiable, communicate effectively, and utilize interpersonal skills. These skills are important as students seek to promote their interests and goals in post-school employment and community involvement. As students communicate with peers and community members, their self-advocacy and leadership skills may assist them in being understood and supported by others. Further, learning to work in teams, either as the leader or a cooperative member, may be beneficial in school or work settings. Example Strategies for Educators Design role-play situations where students practice advocating for themselves in a safe

244 environment. These situations should reflect encounters students will likely face in everyday community and employment settings. Examples may include ordering a meal at a restaurant, volunteering for a community event, sending an email message, or interacting with co-workers. Encourage students to advocate for their own preferences, desires, or opinions when appropriate. For example, if a student has a different opinion than the rest of the class, encourage her to speak her mind. It may also be beneficial for students to practice these skills in advance of participating in IEP and transition meetings. Model differences between acting assertively and acting aggressively so students gain an understanding of socially appropriate interactions. Teaching students interpersonal communication skills may allow them to successfully voice their opinion without offending others. Pair students with an older student or adult "mentor" who has similar interests, strengths, or limitations. This older person may be able to offer advice and anecdotes from previous experience where they exercised self-advocacy and leadership. ❖❖❖❖

WHAT ARE SELF-MANAGEMENT AND SELF-REGULATION SKILLS? WHY ARE THEY IMPORTANT? Self-management and self-regulation skills involve students monitoring and assessing their own behaviour, time management, and learning. These skills build upon students' competencies in the development of choice making, decision making, problem solving, and goal setting. As students' progress through school and prepare for life in the community, they should turn less to teachers and others first and instead become more self-directed. By learning to manage and regulate their daily activities, students may achieve more positive and productive outcomes, such as academic success, job retention, and employer satisfaction. Example Strategies for Educators Help students learn how to reflect on their behaviors by having them create a journal of their daily academic, behavioural, and social goals. This allows students to explicitly set their own daily and weekly goals. Students should be encouraged to effectively manage and regulate their own behaviour to meet these goals. Offer supportive feedback when students are correctly self-managing their learning or social behaviors. When students are struggling to manage themselves, offer limited support until they are able to independently correct their actions. For example, if a student is continuously talking to her neighbour during an assignment, offer reminders of the importance of staying on-task and not preventing others from learning. Provide instruction to students on how they should deal with various behaviors and emotions, such as anger or sadness. Develop a procedure with individual students so they can appropriately calm down when upsetting

245 situations occur without interrupting instruction or distracting others. Support students in directing their own academic progress and instruction by reflecting on their learning preferences, academic strengths and areas for growth, and academic goals. ❖❖❖❖

WHAT ARE SELF-AWARENESS AND SELF-KNOWLEDGE SKILLS? WHY ARE THEY IMPORTANT? Students who possess self-awareness and self-knowledge recognize their own strengths, limitations, and abilities. Moreover, they can apply this understanding to improve on their previous experiences and accomplishments. Students should gain increasing awareness about how they best learn, communicate, and appropriately deal with their emotions. When faced with difficult situations in school, professional, or family settings, they may utilize these skills to focus on their strengths and achieve success. Example Strategies for Educators Emphasize to students that everyone has their own abilities and unique personalities. To help students understand how people can be different, design a class activity where students role-play as if they were someone else to accept various perspectives, prejudices, and stereotypes often held by others. Have students reflect on their strengths and limitations and write these down in a journal. Then talk individually with students to brainstorm ways to maximize their strengths and minimize their limitations in school, interactions with peers, future employment settings, and community activities. Provide case studies on situations students may encounter in and out of school. For example, analyse a narrative in which a student noticed others becoming frustrated with her. Work together to determine what actions on the student's part may have caused the other students' reaction. Have students reflect and write down how they would handle this situation and how this hypothetical encounter would make them feel.

6.6 Lets Sum Up Independent living skills make every person confident about own personality. Not only efficient people but also impaired person gets benefits from these. It helps for doing day to day's works smoothly without any hesitation. After got proper training every single of work disable child can able to do independently. Orientation and mobility skill make the child for capable of travelling anywhere at any time without any other's help. On the other hand daily living skill makes an impaired child self concern about their everyday living hood. Whereas sensory training prepare the child for using their remaining senses almost fully. And last of all every type of living skill help the child to overcome their

246 impairment and change their behaviour which match with their surroundings or can able for making easy adaptive nature as society want. Most of all it must be said that independent living skill help the impaired person being an individual socialized man.

6.7 Check Your Progress 1. What is independent living skill? 2. Write the difference between orientation skill and mobility skill? 3. What is sensory efficiency? 4. How you develop social interaction skill in visual impaired child? 5. Write down any one daily living skill's task analysis process.

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248 Unit - 4 □ Curricular Adaptation 4.1 Introduction 4.2 Objectives 4.3 Concept of Curricular Adaptation 4.3.1 Need and Importance of Curricular Adaptation 4.3.2 Scope of Curricular Adaptation 4.4 Process of Curricular Adaptation 4.5 Reasonable accommodation 4.6 Strategies of Curricular Adaptation for Different Subjects 4.7 Principles of Adaptation 4.8 Lets Sum up 4.9 Check Your Progress 1.10 Reference 4.1 Introduction The classroom offers a dynamic, productive space where ideas, values, information, knowledge are shared and conveyed. Organization of the class and interactions amongst its fundamental components i.e., the students, teacher and curriculum-transactions, create potential for the group to move from a state of not knowing to one of knowing. In light of the introduction of several educational innovations and initiatives, the attention drawn and the urgency to make classrooms better call for revisiting and revising practices. Creating an inclusive culture in classroom will involve attending to the curriculum. Curriculum includes the components of a course of study. These consist of the syllabus, textbooks and needed teaching learning materials, teaching strategies/processes and assessment and evaluation processes. In recent years, increasing focus on inclusion has brought significant attention from educators, policy-makers, researchers and economists, to schools and classrooms in India. Constitutional provisions, legal mandates such as the Right to Education (RTE)

249 Act, 2009, Persons with Disabilities (PWD) Act, 1995 and other measures have made improvements in India's education system. We can find that there is a changing nature of the student population and increased integration of students with special needs in mainstream education. It demands even greater flexibility in curriculum and creativity from teachers. The lack of specific curricular guidelines for students with special educational needs in post-primary schools, for students with mild general learning disabilities in special and mainstream schools and for students with severe and profound disabilities was identified as a significant shortcoming. Current research indicates that there is no simple answer to the provision of curriculum for special needs. In the present unit we will discuss the curriculum adaptations strategies needed to be carried out for children with visual impairment. We would also try to understand the role of teacher and other professionals of educational institution in curricular adaptation for catering specific needs of students with visual impairment. 4.2 Objectives: When you will complete

this unit, you will be able to:

- Explain the need and importance of curricular adaptation for students with visual impairment.
- Illustrate how curricular and lesson or unit adaptation could be carried out for students with visual impairment.
- Understand the role of teacher in curricular and lesson adaptation for catering needs of students with visual impairment.
- Demonstrate techniques of curricular adaptation for the students with visual impairment and related competencies.

4.3 Concept of Curricular Adaptation As discussed earlier that Right to Education Act, 2009 led to the changing composition of classrooms. Students with varying levels of abilities are now widely available in the classrooms. It also creates an obvious challenge for the education system, teachers and professionals to cater the wider range of specific educational needs. 'They cannot, and 250 should not, be taught in the same manner as with other children. The curriculum consists of all the learning experiences designed or encouraged to promote the educational aims and objectives of the educational programme of any institution. It sees curriculum development as a dynamic process, which is evolving rather than established. The curriculum assumes that institution or appropriate authority will adapt and interpret the curriculum where necessary to meet their own requirements. There is no fixed formula or procedure for adapting general education curriculum to meet each student's needs including children with disabilities. Each teacher, each student, each classroom has some unique features and requirements. Accordingly, adaptations are specific to each specific situation. Keep in mind also that curriculum does not always need to be modified. Some approach upholds the idea that one cannot create a modified curriculum for the specific cognitive development of groups of people, and that all that is needed is technical accessibility resources for these groups.

Another approach,

however, claimed that the development of the single curriculum, without any adaptations that take diversity into account, can reinforce the excluding practices, now under the form of abandonment and neglect of those students at "the back of the classroom", and lead to the dangerous labels of "learning difficulties". These colleagues argue that the fundamental thing is the creation of the "inclusive school", the one that is so flexible that it is open to receive everyone, and also the necessary curricular adaptations for everyone's needs to be met. They claim that the curriculum is unified, anyway, only that at the moment of implementing it, instead of a single strategy, adaptations are implemented. 4.3.1 Need and Importance of Curricular Adaptation National Curriculum Framework (NCF) 2005 underlines the significance of making curriculum "an inclusive and meaningful experience for children" stating "this requires a fundamental change in how we think of learners and the process of learning." Attending to curriculum to define the classroom culture and the approach to the teaching-learning processes is thus a significant aspect of teacher's work in fostering inclusivity in their work with students. It is important that the school should provide enabling experiences so that children with visual impairment experience success in learning and achievement up to their potential. This is only possible if the teachers respond to the specific needs of children in a classroom through curriculum adaptations. Without adaptations/ 251 modifications, some children in the classrooms would never be challenged to perform up to their potential, while others may not be able to ever experience success.

In order to meet the diversity, there is a need for adaptations of the regular curriculum, may be involving organizational modifications in the goals and contents, In the methodologies, in the didactical organization, in the temporality, and In the evaluation philosophy and strategies, making it thus possible to meet everyone's educational needs in the creation of knowledge.

Such adaptations need, necessarily, to involve the whole institution's team avoiding the transfer of responsibilities.

Curriculum adaptations require strategies for effective teaching in the classroom that takes into consideration the individual needs of all children including children with visual impairment. It has also been seen that adaptations if carried out effectively facilitate both academic and social participation in class activities and can be used across various settings to facilitate success. Adaptations can also help in creating partnerships where parents and teachers can work together to evaluate/ implement adaptations. 4.3.2 Scope of Curricular Adaptation As we know that curriculum is a comprehensive concept therefore, adaptation in curriculum also has several implications. We can also say that there is extended range or scope for implementing adaptation strategies from planning to content and classroom instruction to assessment. Broadly, adaptation could be understood in two categories. First is accessibility adaptation and second is pedagogical adaptation of the curriculum. Accessibility adaptation is about eliminating architectural barriers, whereas pedagogical adaptation is about changes in and methodological barriers in curricular area in children with disabilities.

252 Majorly of these types of adaptations are discussed in context of inclusion of students with special needs in regular classes.

On the accessibility dimension, it was stressed over accessibility and school permanence and do not necessarily assure knowledge acquisition and teaching quality directly. At different points it has been advocated that the students with disabilities are thrown into regular classroom without proper pedagogical preparation of the teachers or curricular adaptation. The worry highlights towards mere physical inclusion of the students with disabilities. How to teach the student with disabilities are together with the other students is the biggest "knot" and challenge of inclusive Education. Because, the point inclusion is no longer a philosophy, an ideology or a policy. Instead of that it becomes

a concrete action in real-life situations, involving individuals with specific difficulties and needs. 4.4

Process of Curricularisation In a classroom environment, quality education would depend upon a number of factors.

253 Crucial amongst these are understanding of special needs of learners, infrastructural facilities, modified environment that is warm, welcoming and inclusive, trained motivated teachers, flexible educational content, strategies for teaching and evaluation, sufficient teaching time, access of every child to teaching learning materials and continuous onsite support to the teacher by specialists if required. A curricular adaptation involves an activity or skill related with decision-making process. Attaining correct, proper and wider adaptation in curriculum is desirable. The following decision-making flowchart can be used to conceptualize the process of selecting and implementing curricular adaptations. It should be used as a tool for a team in determining the adaptation according to individual student's needs. 4.5 Reasonable Accommodation It is important to correlate adaptations with the classroom activities. In other words, we are not adapting for adaptations sake but, to meet the student's needs as identified. Therefore, accommodation is expected in all three areas i.e. teachers, students and learning materials: Teachers teaching content using diverse strategies: These include strategies like verbal, visual, kinesthetic, written, proceeding from simple to complex, concrete to abstract, step by step, scaffolding, group work, peer tutoring, using prior knowledge, brainstorming, dramatisation, giving extra time, giving alternative activities, drill activities, shortening assignments, organizing excursions/ trips, using large fonts, Braille or tacitly coded material, toys or blocks, real life experiences, real objects, children's literature, magazines etc. Students expressing learning in diverse ways: These include strategies like oral, written, tactual, gestures, drawing, acting, ICT, framing questions, paired reading, storytelling, song, rhymes, role play, discussions, debates, language games, flash cards, quizzes, graphic organizers, outlining passages, highlighting, and paper cutting/ folding, etc.

254 Using different learning materials: Learning materials like calculators/talking calculators, Taylor frame, abacus, Braille, geometrical kit, Tactile board, Tactile graph sheet (for bar-graph, histogram etc), 3-d blocks and figures, flash cards or pictures on paper, posters, chalkboard, projection screens, computers, books on tape and computerized text reader, screen readers, voice synthesis, scanners, daisy books, multimedia gadgets like CDs, MP3s, talking watches and talking clocks, videos/movies, modeling material like clay, textured objects/raised line paper, games and puzzles, etc, can help all children with visual impairment learn. 4.6 Strategies of Curricular Adaptation for Different Subjects Mostly children with visual impairment learn with the help of the non- visual modes viz, touch involving real, concrete materials; listening, smell and taste. In addition they exhibit the following needs across all subjects at elementary level: ● Visual stimulation; ● Experiential learning (observational/experimental/factual learning); ● Incidental learning (learning that happens naturally in the environment); ● Understanding of concepts like

laterality (localization), time, position, size, shape, association, discrimination, sequence, quantity, sensations, emotions, actions, colors (to the best visual ability), matching and classifying; •

Visual perception - learning from pictures, visual diagrams-maps, charts, graphs, tables, etc. and; • Slower cognitive processing in the earlier years till coordination of senses has developed. Based on the above consideration following strategies can be adopted for teaching different subjects to children with visual impairment: 4.6.1 Mathematics To make the child learn the concept of 'Time', several real life examples can be given. When one is teaching the concept of 'Volume', group activity can be conducted. For example, take water bottles of two different sizes and make the children fill the bottles with water. One bottle can be filled with, say, three glasses of water while the other 255 may just take two glasses to fill. Hence the capacity of the first bottle is more. Children can take turns in filling the bottles, counting and recording. The concept of 'Money' can be taught by first introducing notes and coins of different sizes. Then organize fun activity like arranging game of being shopkeeper and customers and ask them to purchase items with the money given to them. The child with VI can explore the notes and coins tactually and repeatedly to understand the difference. Make use of different senses for teaching mathematical concepts, for example, auditory (verbal descriptions) and tactual (converting visual figures into embossed tactile figures). 4.6.2 Social Sciences / Natural Sciences As much as possible real experiences are to be provided to the children with visual impairment. To explain 'Function of roots', children can be asked to touch a plant uprooted just then and then a plant which is kept uprooted for few days. The child can differentiate between plants that are alive or dead. To differentiate between different animals, apart from tactile pictures or models, VI students can also be introduced to the sounds of the animals. To make the children aware of different types of material like glass, gold etc., they can be asked to touch and feel different textures and then help them talk about it. Different role-play and other methods could be adopted for understanding of judiciary parliament, assembly and other concepts related with social science. Involve students in exploring the environment using other senses like smell and touch and organise excursions, trips and visits for the students to historical places. 4.6.3 Language To help the child to start 'making sentence' about him/her, she can be allowed to experience by touch the physical attributes to help make sentences. For example, child can be asked to touch a warm cup and asked to make a sentence: 'the cup is hot'. Similarly, auditory input can be given by different sounds. For a visually impaired child, pictures should be explained verbally in detail like—what, who, where and when. Based on the comprehension, help them to summarize, give oral answers. Experience for understanding can be enhanced by tactile and kinesthetic input. For example, differences or similarities between lassi and tea. Use of acting, dramatization and role play helps the child to understand better.

256 4.7 Principles of Adaptation Students with visual impairment learn concepts by using their auditory, tactile kinesthetic and olfactory senses, with appropriate modification and adaptation. Adapted teaching aids, course content and methodology involve special approaches and presentation styles to provide them optimal learning experience. It also helps students with visual impairment to understand concepts and to develop social interactions with other students. Mani (1992) suggested that the necessary adaptations could be made through processes of duplication, modification, substitution and omission without changing the instructional objectives. These four principles could be widely used for adapting course materials or, conversion of books in accessible formats. Duplication of the content or teaching materials should be carried out at most possible cases. It is just copying things with originality in accessible format (eg. Braille, Large print). When, duplication is not possible one can proceed for modification in the content. If modification is also not possible then content or material could be substituted with other which are as per needs of students with visual disabilities. Omission is last and least priority option to just remove or omit the content which is creating any hindrance in learning or could not be even substituted with other content or material. Duplication Degree of Participation

257 Ebeling, Deschenes & Sprague (1994) suggested nine types of adaptations in their publication 'Adapting curriculum and instruction' from Institute for the Study of Developmental Disabilities. These nine types of adaptation strategies could be used for children with visual disabilities are as follows: i) Input Input suggests adaptation in the way instruction is delivered to the learner. For example, planning more concrete and substitute examples; provide hands-on activities; place students in cooperative groups. ii) Output This area allows adaptation in how the learner can respond to instruction in an educational setting. For example: allowing verbal responses for children with visual impairment instead of written response; allow students to show knowledge with hands-on materials. iii) Size This suggests the adaptation of the number of items that the learner is expected to learn or compete in the classroom as well as home assignment. For example: reducing the number of science terms a learner must learn at anyone time. iv) Time Adaptation in time permits or encourages teachers, administrators to adapt the time allotted and allowed for learning, task completion or testing. For example: individualizing a timeline for completing a task. v) Difficulty Adapt the skill level, problem type, or the rules on how the learner may approach the work. For example: Allow a calculator for math problems; simplify task directions; change rules to accommodate learner needs. vi) Level of Support Increasing the amount of personal assistance with specific learner also desirable or, sometimes become essential for children with visual impairment. For example: assigning peer tutors or extended teacher support.

258 vii) Degree of Participation Adapting the extent to which a learner is actively involved in' the task comes under this principle of the adaptation. For example : in geography, have a student hold the globe, while others point out the locations. viii) Alternate Goals Adapting the goals or outcome expectations while using the same materials could also be opted when above all seven principles are unable to bring desirable adaptation. For example: In social studies, expect one student to be able to locate just the states while others learn to locate capitals as well. ix) Substitute Curriculum Providing the different instruction and materials to meet a learner's individual goals could also be adopted when one to seven principles are unable to bring desirable modification. For example: Individualize a timeline for completing a task; pace learning differently (increase or decrease) for some learners. 4.8 Lets Sum up We can find that there is a changing nature of the student population and increased integration or students with special needs in mainstream education. It demands even greater flexibility in curriculum and creativity from teachers. Students with varying levels of abilities are now widely available in the classrooms. They cannot, and should not, be taught in the same manner as with other children. The curriculum assumes that institution or appropriate authority will adapt and interpret the curriculum where necessary to meet their own requirements. There is no fixed formula or procedure for adapting general education curriculum to meet each student's needs including children with disabilities. NCF, 2005 underlines the significance of making curriculum "an inclusive and meaningful experience for children" stating "this requires a fundamental change in how we think of learners and the process of learning." Without adaptations/ modifications, some children in the classrooms would never be challenged to perform

259 up to their potential, while others may not be able to ever experience success.

Such adaptations need, necessarily, to involve the whole institution's team avoiding the transfer of responsibilities. Curriculum adaptations can evolve various strategies for effective teaching in the classroom that takes into consideration the individual needs of all children including children with visual impairment. Broadly, adaptation could be understood in two categories. First is accessibility adaptation and second is pedagogical adaptation of the curriculum. Accessibility adaptation is about eliminating architectural barriers, whereas pedagogical adaptation is about changes in and methodological barriers in curricular area in children with disabilities. Adaptation could also think as per needs or different subjects like mathematics, science, social science and language. The necessary adaptations could be made through processes of duplication, modification, substitution and omission without changing the instructional objectives. These four principles could be widely used for adapting course materials or, conversion of books in accessible formats. Ebeling, Deschenes & Sprague (1994) suggested nine types of adaptations are as follows: ● Input ● Output ● Size ● Time ● Difficulty ● Level of Support ● Degree of Participation ● Alternate Goals ● Substitute Curriculum

260 4.9 Check your progress Solve following problems : 4.9.1 Match the table: Curricular Adaptation Adaptation Action Principle Output Adaptation in time Time different instruction and materials Size Adapting the goals or outcome expectations Alternate Goals adaptation in the number of items that the learner is expected to learn Substitute Curriculum Adapting the extent to which a learner is actively involved Degree or Participation adaptation in how the learner can respond 4.9.2 Choose correct Answer: i) Pedagogical adaptation involves a. Use of assistive devices in the classroom b. Using White boards c. Using appropriate methodology d. Changing Course ii) 'Input' in curricular adaptation principle is about a. Adapting instruction b. Adapting student response 4.10 Reference • Lowenfeld, B. (1971). Our blind children: Growing and learning with them, Springfield, Charles C. Thomas • Aggarwal, J.C (2005) Curriculum development 2005. Delhi: Shipra Publication • Baratt, Sarah, H. (2008). The special education tool kit. New Delhi: Sage Publication

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262 Unit - 5 □ Curricular Activities Structure 5.1 Introduction 5.2 Objectives 5.3 Curricular activities - Meaning and Need

for Adaptation 5.3.1 Recreation, Leisure, Games and Sports in Curriculum 5.3.2

Need for Adaptation 5.4 Adaptation of Recreational Activities 5.4.1 Physical Education 5.4.2 Yoga 5.5 Adaptation of Games

and Sports 5.5.1 Indoor Games for Children with Visual Impairment 5.5.2

Outdoor Games for Children with Visual Impairment 5.6

Creative Arts for the children with visual impairment 5.7

Agencies/Organizations promoting Sports, Culture and Recreation 5.7.1 Indian Blind Sports Association 5.7.2 Chess

Federation of India 5.7.3 Paralympic Committee of India 5.7.4 Abilympics 5.7.5 World Blind Cricket 5.8

Let us sum up 5.9 Check your progress 5.9.1

Match the table: 5.9.2 Choose correct Answer: 5.9.3 Answer the questions: 5.9.4 Let's Explore 5.10 References

263 5.1 Introduction You must be aware with the term curriculum. Curriculum is the heart of any educational system. It refers to the all lessons, academic content taught and other activities carried out in a school or in a specific course or programme. The children with visual impairment should have access to the core curricular activities for which they need to learn expanded core curriculum, which are specifically designed to meet unique needs of children with visual impairment.

In order to master these subjects, and to eventually live and work independently, students with visual impairment must learn an additional set of skills under expanded core curriculum.

Essential life skills including social interaction, independent living, career education, and communication modes must be taught alongside basic academics. Recreation, leisure, games and sports are also key components of the expanded core curriculum for healthy life and overall development. Adapted physical education and creative arts also form a part of this domain. Certain curricular adaptations and modifications are required for students with visual impairment to access visually oriented ideas. In this unit you will be oriented with different recreational activities and necessary adaptation thereof for the children with visual impairment.

5.2 Objectives: We know that curricular activities under expanded core curriculum is important for children with visual impairment. In this unit we will explore the need, importance and facilities available for recreational activities including yoga, games and sports for children with visual impairment as part of curricular activities. When you will complete this unit, you will be able to:

- Sensitize about recreational activities for children with visual impairment as part of curricular activities.
- Demonstrate techniques of teaching functional recreational and physical education skills.
- Explain importance and components of recreational skills development for children with visual impairment.
- Illustrate how physical education and creative arts activities can be adapted for the children with visual impairment.

264 • Understand the role of organisations in promotion of games and sports among the persons with visual impairment.

5.3 Curricular activities - Meaning and Need for Adaptation You can envisage curriculum from different perspectives. What societies envisage as important teaching and learning constitutes the curriculum (

UNESCO, 2016). However, at classroom level curriculum may be altered through a range of complex classroom interactions, and what is actually delivered.

In some cases, people see the curriculum entirely in terms of the subjects that are taught, and as set out within the set of textbooks, and forget the wider goals of competencies and personal development. Further, a curriculum framework is important

to

sets the subjects within this wider context,' and shows how learning experiences within the subjects need to contribute to the attainment of the wider goals.

All these issues form a curriculum system

which works as guiding function for education agents and stakeholders. The involvement of stakeholders (especially of teachers) in the development of the curriculum is of vital importance for ensuring ownership and sustainability of curriculum

activities (UNESCO, 2016). The activities pertaining to the school curriculum may be referred to as curricular activities.

Such activities are part and parcel of the instructional and other educational programmes entirely handled by the school staff. Curricular activities include all activities of classroom interaction for improving knowledge, physical education for fitness and recreational activities for harmonious integrity of mental and physical energy of the children. Curricular activities including all co-curricular activities are equally important for all round development of the students.

Children with visual impairment need systematic and purposeful instruction beyond the general education curriculum to gain the skills necessary to be independent, productive, educated members of society.

Recreational activities are one of the important aspects of curricular activities for students with visual impairment.

Although planning is necessary to include students in the recreational programme as it is an important component of the standard curriculum. In order to make the programme accessible to students, there are adaptations and specialized equipment. These may need to be employed to ensure access with full enjoyment of the recreational programme. Prior to determining appropriate adaptations, it is also important to first understand the functional vision of the student.

However, there should be effort to make instructional component as organized as possible for students with any visual impairment.

265 5.3.1 Recreation, Leisure, Games and Sports in Curriculum Recreation and leisure both terms are used to represent what people choose to do in their free, unobligated time.

Leisure time is any free time that can be used to pursue personal interests whereas recreation is an individual's preferred pleasurable and enjoyable activities in which they engage during leisure time (Expanded Core Curriculum Advocacy, 2016).

Recreation is a highly social phenomenon organized around friendships or family groups, and these social interactions buffer the effects of stress on health.

Recreational activities can be sedentary in nature, like knitting, chess, playing musical instruments,

and even

social networking in person or on the computer devices.

It can also be active and enhance physical fitness and well-being.

Recreation, fitness, and leisure are some of the instructional areas that need to be addressed. Knowledge of recreation, fitness, and leisure provides critical supports to a wide range of student capacities in the areas of social interaction, orientation and mobility, independent living, and self-determination. Developing recreation, fitness, and leisure skills can have far reaching positive effects on the lives of persons with visual impairment. Research has shown that recreation is an important factor in quality of life for everyone, including people with disabilities (

Expanded Core Curriculum Advocacy, 2016).

Participating in recreation, fitness, and leisure helps children with visual impairment develop social, career, and problem solving skills. Engaging in this area also increases self-esteem, self-determination, and overall health (

Dignan, 2012). Even if children with visual impairment choose not

to participate in every sport or recreation activity on their own time, they should learn what the rules are and how to play them (Lieberman, 1996). Knowing the rules of different games and keeping well-informed of sports offers a student with visual impairment opportunities for social interactions with peers.

Do you know? How Game is different from Sports? A game involves more than one person and a sport pertains to only an individual's skills and performance. In a sport, it is the sportsperson or the individual who determines the outcome.

Whereas, an individual's talent does not much determine a game. It is the entire

266 performance of the players that determines the winner in a game. Another difference is that sport is based on physical energy and the game is based on mental strength. How Leisure is different from Recreation? Leisure is the spare or rest time in the daily life of a person when he is not occupied by work, studies, sleep etc. Recreation is indulging in thrilling and exciting activities, to derive some pleasure and have fun in one's leisure time. While some people just take rest, sleep, watch TV, or play video games on computer in their leisure time, there are many who like to go out for recreation and indulge in activities like cycling, hiking, sailing, surfing, swimming, fishing, etc to have some fun.

5.3.2 Need for Adaptation You might be aware that the core

curriculum designed for children is generally appropriate for visually impaired children. However, some adaptations to the learning materials and the teaching approaches have to be made so that the learning needs of visually impaired children can be met.

Similarly, adaptation in recreational activities is important and hence recreational materials and strategies to be modified by considering needs of children with visual impairment. To teach recreational skills to children with visual impairment, we should adopt a consistent, realistic and flexible approach in extended core curriculum planning and implementation.

Due to limitation in visual sensation

recreation and fitness for children with visual impairments cannot be learned by passively observing others at play or by imitation.

Recreation must be intentionally and systematically taught with disability-specific techniques and safety in mind. The foundation for recreation can be learned in physical education,

games or, sports period with necessary accommodations and adaptations.

The teaching of recreation and leisure skills to blind and

visually impaired students must be planned and deliberately taught, and should focus on the development of life-long skills.

5.4 Adaptation of Recreational Activities As with other students, students with visual impairment need to be actively involved in recreational activities that teach lifelong skills to maintain their health. In order to make the activities accessible with full enjoyment necessary adaptations are required in the activities. Prior to determining appropriate adaptations, it is important to first understand the student's functional vision. The adaptation could be carried out in individuals; the

267 activities and rules; and the equipment for the recreational activities. Always begin with the smallest amount of adaptation that will ensure desired performance and success (Lieberman, 1996). Following issues need to be considered when making adaptations at different level:

- The Individual
 - o Involve the individual in determining adaptations
 - o How does the person ambulate? (Try to explore)
 - o Is the activity age appropriate? (Try to explore)
 - o What are the individual's characteristics and preferences? (Try to explore)
 - o What are the individual's favourite recreational activities? (Try to explore)
 - o Limit or add responsibility
 - o Modify demands on the student
- The Activity
 - o Make the area larger or smaller
 - o Make visible boundaries
 - o Orient the individual to the activity area
 - o Change the rules of the game
 - o Increase the tactile cues
 - o Change the number of players
 - o Decrease time of activity or add rest periods
 - o Slow the pace
- Playing Object
 - o Make the object bigger or smaller
 - o Make it softer or harder as per need
 - o Make it audible or bright as per need
 - o Change the texture of the object
 - o Make the object heavier or lighter as per need
 - o Increase the size of the target (like Basket of Basketball)

268 • Other Considerations

- o What to make the student more successful? (Try to explore)
- o Will the individual achieve success with minor adaptations? (Try to explore)
- o How can you add a cognitive component to the game? (Try to explore)
- o How can you ensure peers or siblings will also enjoy the activity? (Try to explore)

The instruction of recreation skills should be planned and deliberately taught. Often students who are visually impaired do not experience the same opportunities for recreation that students with no vision loss have in the early years. Recreational and leisure activities can provide an avenue for the development of motor skills, social skills, language skills, and fitness. It is important to expose the students to as many age- appropriate recreational activities as possible. This will best prepare the student for future inclusion and independence. There must be the inclusion of students with visual impairment in group activities. It should make sure that students play and talk with classmates rather than sit on the sidelines. During games, they should be allowed to buddy-up with other partner (preferably, a sighted partner). The visually impaired student should be able to participate in most recreational activities except for those that require good visual acuity. A student with a disability has an equal right to membership of the same group as all other students (NCF, 2006).

5.4.1 Physical Education In institutionalized school education, generally the main goal has been developing childrens' cognitive capacity in the sense of learning knowledge in academic disciplines. Physical education as part of education provides the opportunity for all children to learn about physical movement and engage in physical activity. Physical activity has also been associated with psychological benefits

269 in students by improving their control over symptoms of anxiety and depression. Similarly, participation in physical activity can assist in the social developing of students by providing opportunities for self-expression, building self-confidence, social interaction and integration. It has also been suggested that physically active young people more readily adopt healthy behaviours and demonstrate higher academic performance at school (WHO, 2008).

Students who are blind or visually impaired also need to experience physical activity. The visually impaired student with additional disabilities should experience a programme designed to improve

to improve their fitness levels by participating in various games, activities and exercises.

A regular physical activity programme will improve fitness and give the student with visual impairment

confidence to move through space without instructions. It can also develop motor skills needed for daily living and mobility (

Letcher, 2006).

5.4.2 Yoga

You might be aware with the term Yoga. Now, we will discuss the ancient Indian exercise system 'Yoga' and its implications for children with visual impairment. The word "Yoga" is derived from the Sanskrit root word 'yuj' which means 'to unite'. According to Yogic scriptures, the practice of Yoga leads to the union of individual consciousness with universal consciousness. It is now established as an art and science for healthy living. Yoga emphasizes stretching muscles and working to increase each individual's range of motion. Yoga is essentially a spiritual discipline based on an extremely subtle science which focuses on bringing harmony between mind and body. It also refers to an inner science comprising a variety of methods through which human beings can achieve union between the body and mind to attain self-realisation. The aim of Yoga practice is to overcome all kinds of sufferings that lead to a sense of freedom in every walk of life with holistic health, happiness and harmony (Ministry of Ayush, 2015). Yoga for Children with Visual Impairment Yoga is uniquely appropriate for people with visual impairment as it requires no or very less equipment. Yoga emphasizes stretching muscles and very useful to increase range

270 of motion in children with visual impairment. After some postures and stretches are learned, the children with visual impairment can work alone at home or continue with a class. Yoga may have a positive long-term impact on their life and living. Yoga improves the body posture and body awareness of children with visual impairment. It also increases body strength, flexibility and balance as well as confidence. Old habits of movement (mannerism) may also change by improved body awareness. As it has been discussed earlier that Yoga not only works for body but it also enhances body-mind unity. Concentration on the breath and movements is a concrete experience in mental focus. Hence, it induces ability to understand the self in a better way. Teachers should make a conscious effort to create a supportive approach with each individual student to learn yoga. There should be no competition or comparison between class members. In order to teach yoga successfully to people with visual impairment, the usual teaching methods is to be without depending on strictly visual demonstrations.

5.5 Adaptation of Games and Sports

You have found that the adaptation in games, sports and other recreational activities are important. We can discuss adaptation under two groups 1) Indoor Games and 2) Outdoor Games.

5.5.1 Indoor Games for Children with Visual Impairment

There are several indoor games available for Children with Visual Impairment including Chess, Playing Cards, Musical Toys and Computer Games etc. a. Chess Chess is a game of mind. It

is about boosting the self-esteem and the confidence of the persons with the visual impairment. Chess is available with few physical modifications in the chessboard and pieces. All the black squares are raised (about 3-4 mm) above as comparison to the white squares. Each of the chess pieces has a downward projection at the base to fit into the squares

271 on the Board having a hole in the centre of each square. All the black pieces have a pin fixed on their heads. The touch of the pin on the pieces helps the player distinguishing a white piece from a black one. The player is therefore able to play chess with having a clear picture in his mind of the position on the Board.

b. Playing Cards Playing cards is a very popular indoor game across the world. Playing cards can be enjoyed by persons with visual impairment with minor adaptation. The specific code could be created in Braille at left upper corner of each card. Playing cards can be enjoyed with similar intensity as by any other person.

c. Computer Games There are several computer games which can be enjoyed by the children with visual impairment with the help of screen readers. Many learning recreational tools facilitating leaning with fun are also available for these children.

5.5.2 Outdoor Games for Children with Visual Impairment

You can also find several games available for Children with Visual Impairment including Cricket, Gymnastics, Martial Arts, Running and Tug-of-war etc. a. Cricket Cricket in India is very popular and visually impaired in this country are no exception. The visually impaired are equally passionate about cricket.

Blind Cricket is a version of the sport of cricket adapted for blind and partially sighted players.

The sport that is being played since the 1920s.

The rules of blind cricket are based on the standard laws of cricket with some essential modifications.

In terms of playing equipment, the major adaptation is the ball.

National Institute for the Visually Handicapped (NIVH), Dehradun, developed the audio ball that is now accepted as the international standard. This ball is made of hard plastic with ball bearings inside.

The stumps are made of hollow steel pipes welded into one set, to enable totally blind players to touch it in order to correctly align himself when batting or bowling also to produce a sound when struck by a ball.

272 (

Picture Source: World Blind Cricket Council)

5.6 Creative Arts for the Children with Visual Impairment

Art is important for children especially during their early development. Research shows that art activities develop brain ,capacity in early childhood. As children progress into elementary school and beyond, art continues to provide opportunities for brain development, mastery, self-esteem and creativity. Creativity is expressing one's own idea, trying new things, and experimenting with changing materials. The best way to develop creativity is to provide a variety of materials, and give children time to create on their own. Art activities for children introduce them to new tools and materials, and possible ways to use them.

People tend to think that creating art is a purely visual process. Whereas, blind or visually impaired children take part in art class on equal terms with their sighted classmates.

Children express how they feel and think about the world through their art, which gives them a way to express the feelings and ideas that they don't have the words to talk about. Art helps children to develop a sense of their own individuality, a sense of self-respect, and an appreciation for others' work. As children draw, paint, and make collages, they are learning about the world (colour, shape and size of objects). When they use paints, glue, and markers, children are planning,

273 experimenting, and problem solving. As children mix paint, they learn to understand cause and effect. Art gives children chances to make decisions, and to learn from the experience of making choices about their art work

(Mincemoyer, 2016). 5.7 Agencies/Organizations promoting Sports, Culture and Recreation There are several organisations across the world working for betterment of sports facilities for persons with disabilities. Here you will find some major organisations and agencies working for promotion of sports and recreational activities among persons with visual impairment. 5.7.1 Indian Blind Sports Association Indian Blind Sports Association (IBSA)

is the largest national level sports body devoted to the promotion of sports among the visually challenged in the country.

The Association was established in April 1986 through the initiative of the Blind Relief Association, Delhi (BRA).

The Association is recognized by the Indian Olympic Association and affiliated to the International Blind Sports Federation

and

the

Paralympic Committee of India. Indian Blind Sports Association has been organizing National Sports Meets for the

Blind once every two years. These National Sports Meets, which include athletic events like races, long jump, javelin and discus throws, shot put, swimming along with indoor game event of chess. 5.7.2

Chess Federation of India

The All India Chess Federation (AICF) is central administrative body for the game of chess in India. Founded in 1951, the federation is affiliated to Federation Internationale des Echecs (FIDE), the world body for chess.

Its current headquarters is in Chennai.

The All India Chess Federation for the Blind (AICFB) is the national body for the game of Chess among visually impaired in India.

AICFB is also affiliated to All India Chess Federation (AICF) which is recognized by Government of India.

The All India Chess Federation for the , Blind (AICFB) was established in 1997 with the objective of promoting the game of chess among the visually impaired all over the country.

The AICFB is affiliated to the International Braille Chess Association (IBCA).

274 5.7.3

Paralympic Committee of India

The Paralympic Games is a major international multi-sport event, involving athletes with a range of physical disabilities and intellectual impairment.

This includes athletes with mobility disabilities, amputations, blindness, and Cerebral Palsy.

All Paralympic Games are governed by the International Paralympic Committee (IPC). The International Paralympic Committee (IPC) is the global governing body of the Paralympic Movement. Its purpose is to organise the summer and winter Paralympic Games and act as the International Federation for nine sports, supervising and coordinating World Championships and other competitions. It was founded on 22 September 1989 as a non-profit organisation, it is based in Bonn, Germany and aims to develop sports opportunities for all people with an impairment from the beginner to elite level.

Paralympic Committee of India (PCI) is the body which is responsible for selecting athletes to represent India at the Paralympic Games and other international athletic meets and for managing the Indian teams at the events. The organisation was founded in 1992 as the Physically Handicapped Sports Federation of India. 5.7.4

Abilympics

Abilympic are vocational skill competitions for persons with disabilities to enable them to showcase and enhance their talent. Abilympic empower the contestants and help create public awareness about their abilities. The

title "Abilympics" was coined from the phrase "Olympics"

of Abilities." The first international abilympic was held in Tokyo in 1981 to International Abilympic Federation commemorate the United Nations' International Year of Disabled Persons. During this second international abilympic at Colombia, it was proposed to establish an international organization in order to promote the international abilympic and to hold it on a regular basis. Hence, the International Abilympic Federation (IAF) came into existence during the third international abilympic held in Hong Kong. Since then, the international abilympic has been held in Perth, Australia (1995), Prague, Czech Republic (2000), 275 Delhi (2003), Shizuoka, Japan (2007), Seoul, Korea (2011) and Bordeaux, France (2016). 5.7.5 World Blind Cricket Council is an administration of blind cricket to manage cricket for persons with visual impairment

at international level. The WBC was established in September 1996 WM (when a meeting was held in Delhi to promote and control the blind cricket globally. George Abraham

from India was the founding chairman of WBC. 5.8 Let us sum up

Curriculum refers to the all

lessons, academic content taught, other activities in a school or in a specific course or programme. The activities pertaining to the school curriculum may be referred to as curricular activities. Curricular activities include all activities of classroom interaction for improving knowledge, physical education for fitness and recreational activities for harmonious integrity of mental and physical energy of the children. The children with visual impairment should have access to the regular core curriculum for which they need to learn an expanded core curriculum, which are unique to visual impairment. Essential life skills including social interaction, independent living, career education, communication modes and recreational activities are key components of the expanded core curriculum. Recreational activities are one of the important aspects of curricular activities for students with visual impairment. In order to make the programme accessible to students, there are adaptations and specialized equipment. Prior to determining appropriate adaptations, it is important to first understand the student's functional vision. The adaptation could be brought out in three domains first in the individual and second in the game rules or activities and third in the playing equipment. Physical education and yoga as part of education provides the opportunity for all children to learn about physical movement and engage in physical activity. Yoga is a spiritual discipline based on an extremely subtle science which focuses on bringing harmony between mind and body. Yoga is uniquely appropriate for people with visual impairment as it requires no or very less equipment. Yoga improves the body posture and body awareness of children with visual impairment. It also increases body strength, flexibility and balance as well as confidence. There are several indoor games (including Chess, Playing Cards, Musical Toys, and Computer Games etc.) and outdoor games (including Cricket, Gymnastics, Martial Arts, Running and Tug-of-war etc.) available for Children with Visual Impairment. Several organisations across the world are working for promotion of sports and recreational 276 activities among persons with visual impairment.

Indian Blind Sports Association (IBSA)

is the largest national level sports body devoted to the promotion of sports among the visually challenged in the country. The

All India Chess Federation for the Blind (AICFB) is the national body for the game of Chess among visually impaired in India.

Whereas,

World Blind Cricket Council is an organisation of blind cricket to manage cricket at international level. 5.9 Check your Progress 5.9.1 Match the table: Organization Place World Blind Cricket Council Chennai International Paralympic Committee (IPC) Delhi All India Chess Federation (AICF) Germany Indian Blind Sports Association (IBSA) UK 5.9.2 Choose correct Answer: i) Cricket ball for visually impaired is a. Red and Solid b. Black and Hollow c. White & with Sound d. Black and with Sound ii) Chess is a game related with a. Hearing ability b. Kinesthetic skill development c. Speaking d. Mental orientation 5.9.3 Answer the questions: i) What are the adaptations made in cricket for visually impaired?

277 ii) Enlist various indoor and outdoor games for children with visual impairment with their advantages and limitations. iii) How could Yoga be beneficial for children with visual impairment? iv) Give detailed description about role of organization or institutions in promotion of recreational facilities for children with visual impairment. 5.9.4 Let's Explore i) How is physical education different from yoga? ii) What is difference between Recreation and Sports? iii) Plan to adapt a new game for children with visual impairment. iv) Make a plan for teaching yoga to children with visual impairment and execute it in small group. 5.10 References Dignan, K. C. (2012).

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280 Notes

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mission?

Any system of education which ignores Indian conditions, requirements, history and sociology is too unscientific to commend itself to any rational support. — Subhas Chandra Bose C-13 (V.I.) CURRICULUM , ADAPTATION CURRICULUM , ADAPTATION AND STRATEGIES FOR TEACHING AND STRATEGIES FOR TEACHING EXPANDED CURRICULUM EXPANDED CURRICULUM

B. Ed. Spl. Ed. (M.R./H.I./V.I.)-ODL CURRICULUM, ADAPTATION AND STRATEGIES FOR TEACHING EXPANDED CURRICULUM

C-13 (V.I.)

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The Self Instructional Material (SIM) is prepared keeping conformity with the B.Ed.Spl. Edn.(MR/HI/VI) Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session.

AREA - C DISABILITY SPECIALIZATION COURSE CODE - C-14 (H.I) INTERVENTION AND TEACHING STRATEGIES

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Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA -

C C-14 (H.I.) : INTERVENTION AND TEACHING STRATEGIES

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7 Netaji Subhas Open University AREA -

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H.I) : INTERVENTION AND TEACHING STRATEGIES C-14 (H.I) □ □ □ □ □

INTERVENTION AND TEACHING STRATEGIES UNIT - 1 : NEED & STRATEGIES FOR EARLY INTERVENTION OF HEARING LOSS 9-44 UNIT - 2 : AUDITORY LEARNING (AUDITORY VERBAL THERAPY AND AUDITORY TRAINING) AND SPEECH READING 45-85 UNIT - 3 : SPEECH INTERVENTION STRATEGIES 86-107 UNIT - 4 : COMMUNICATION AND LANGUAGE TEACHING STRATEGIES 108-137 UNIT - 5 : EDUCATIONAL INTERVENTION STRATEGIES 138-189

9

Unit - 1

Need & strategies for early intervention of hearing loss Structure 1.1 Introduction 1.2 Objectives 1.3 Parent-infant programmes for children with HI: 1.3.1 Overview 1.3.2 Need 1.3.3

Requirements 1.3.4 Plan of action 1.4 Preschool training programmes: 1.4.1 Overview 1.4.2 Need 1.4.3 Requirements 1.4.4

Plan of action 1.5 Individual Speech and Language Therapy Program 1.5.1 Overview 1.5.2 Need 1.5.3 Requirements 1.5.4 Plan of action 1.6 Impact of early intervention on school outcomes. 1.6.1 Schooling Outcomes 1.6.2 Academic problems faced during classroom situations 1.6.3 Early stimulation, at pre-school age 1.7

Intervention of late identified children with hearing impairment : Challenges & Strategies

10 1.7.1 Challenges of

intervention 1.7.2 Habilitation Strategies 1.7.3 Traditional Approach 1.7.4 Wedenbery Approach 1.7.5 Ling's Approach 1.7.6 Ski-Hi Approach 1.8 Let Us Sum Up 1.9 Check Your Progress 1.10 References 1.1 Introduction An early intervention is very important aspect for management of any diseases or disabilities and the success of early intervention depends primarily on early identification of the disease or disability. The term early intervention is about taking action as soon as possible to tackle problems for children and families before they become more difficult to reverse. Early intervention involves identifying children and families that may be at risk of running into difficulties and providing timely and effective support. Generally early intervention is important for children to develop better social and emotional skills, communication, the ability to manage their own behaviour and mental health, a stronger foundation for learning at school, an easier transition into adulthood, better job prospects, healthier relationships and improved mental and physical health. Like other disabilities early intervention of hearing impaired children is also an important to develop better communication skill, better social and emotional skill, a stronger foundation for learning at school. The eventual language learning and educational success of any child with any type and degree of hearing loss whether unilateral or bilateral, depends on early diagnosis, early amplification, and early intervention. These three EARLY's must be all before age 2! Without these, children are at risk for both language and learning delays. Today's technology available has made it more easy to deaf and hard of hearing children than ever before. Having the ability to hear speech does not automatically ensure the development of good spoken language. However, there is much training that must take place over a period of time.

Parents and the special educator of HI children must take advantage of the prime "critical

11 age for learning language" of the first three years of life to give their children an auditory- oral approach to the development of spoken language. This includes using listening and speech - not signing - to develop the families' mother tongue. 1.2 Objectives Children born with any type of developmental delay are at risk for falling behind in their educational potential. When hearing loss is diagnosed, it is very important to begin the planning process for child's educational future. That is where early intervention services come in. Early intervention services are designed so hearing impaired children receive the early intervention or other services they need in a timely manner so they can enter preschool and elementary school ready to succeed. Studies have shown that the following three goals are vital to any early intervention plan: A service plan developed as early as possible after the child's diagnosis. Heavy involvement by families in the development and execution of the plan. A highly structured plan that provides clear and measurable goals. A child's brain is programmed to learn foundational language skills during the first six years of life, the first three years being the most critical.

After age 6, it is increasingly difficult for the human brain to acquire language and speech skills. Therefore, families who choose listening and spoken language for their children with hearing loss need to recognize that their child will need some degree of educational and (re)habilitative intervention, and then start taking steps in that direction as soon as they suspect their child has a hearing loss. The earlier the intervention, the easier it will be for the child to acquire listening and spoken language. As with every aspect of raising the child, parents full commitment and involvement in an early intervention plan is vital to the success of the child. Even with regular speech therapy, the vast majority of child's learning will take place with the parents at home. 1.3 Parent-infant programmes for children with HI 1.3.1: Overview The advancement

in hearing screening technology makes it possible to identify hearing- impaired infants

soon after birth and therefore increases the opportunity for early intervention. To provide services for families of hearing-impaired infants, the Parent Infant Program (PIP) was established. The importance for parent infant programme 12 emerged from the concept that, the most important learning environment for a child during the early years is the home and

during these early formative years, the child's most important relationships are with their parents and other primary care-givers, such as siblings, grandparents and other family members.

The children come out to the best of their abilities when their emerging speech, language and auditory skills are reinforced by their parents and other family members at home. The emphasis of PIP is a home-based, family-centered, parent-guided, child-specific, natural approach to learning. The parent infant program brings together children from infancy through pre-school age, their parents, family and a variety of early intervention professionals to work as a team and offer services to assist families in communicating and bonding with their children in the child's natural environment. Parents are encouraged to network with other parents. PIP helps hearing impaired children and their parents to develop their potentiality in primary areas and helps the child to develop his language, literacy skills, and growth in world awareness, positive self-esteem, and personal responsibility.

1.3.2: Need The Parent Infant Program offers parents and caregivers the skills and confidence they need to help their young children learn to listen and talk. Individualized sessions provided at home or in childcare settings are guided by teachers of the deaf and focus on auditory habilitation and speech/language development. The aims of parent infant programme are as follows:

- 1) To understand their child's deafness Parents must understand the basic of hearing mechanism and hearing loss. The information regarding hearing loss includes type and degree of hearing loss. Children with sensory neural hearing loss will have more adverse effect on language development than the conductive hearing loss. Degree of hearing loss also plays important role. Sever to profound degree of hearing loss will have great difficulty in developing language than mild or moderate degree of hearing loss. Even children with unilateral hearing loss may have some problem in the early stage of their life.
- 2) To monitor growth in their child's listening, speech and language skill. The Parent infant program also provides auditory habilitation services to the child which include fitting of appropriate hearing aid, to show parents how to use the hearing aid, and auditory training to develop listening skill with the parents so that the child learns to respond through hearing and increases his/her receptive and expressive language. Baseline audiological and language data on the children also helps to monitor the growth of listening, speech, and language skill of the child.
- 3) To help the parents to coordinate their child with medical personnel, equipment dealers, and school systems. The parents infant program is also designed to help parents to cordinate with medical personnel, mainly with Otorihnolaryngologist for any ear check up as and when required and with Paediatrician for general chek up. It also helps to cordinate with equipment dealer mainly with hearing aid dealer for after sale services of hearing instrument. Cordination with school system for mainstreaming of the child to normal school.

1.3.3: Requirement Early identification: Early identification and intervention with family support are important factors which determine the success of parent infant program for children with hearing impairment. Therefore whenever a hearing problem is suspected immediate action is imperative. Hearing impairment not only affects the child's speech and language development but also impedes the child's social, educational and personality development. If hearing impairment is identified early, these adverse effects due to hearing impairment in the child can be minimised. Drugs and surgery are useful in treating middle and outer ear problems. In case where the hearing impairment is irreversible, hearing aid fitting is recommended. Significant hearing loss is one of the most common major abnormalities present at birth. If undetected, it will impede speech, language and cognitive development. Significant bilateral hearing loss is present in 1 to 3 per 1000 new born infants in the well-baby nursery population. It is an established fact that if hearing loss is present it should be detected and remediated before the baby is 6 months old. A two-stage screening protocol is projected, in which infants are screened first with otoacoustic emissions (OAE). Infants who fail the OAE are screened with auditory brainstem response (ABR). Early intervention is about taking action as soon as possible to tackle problems for children and families before they become more difficult to reverse. The rehabilitation process includes training to make the best use of residual Hearing, speech reading instruction, speech-language stimulation and therapy and the services of special educators. Amplification devices: When babies are born, they are still developing their ability to use their senses, including hearing. Babies who can use at least some of their residual hearing will benefit from early chances to listen, provided by devices like hearing aids

14 or cochlear implants. Using these devices infant hears sounds louder and clearer. Not every baby born with a hearing loss can benefit from amplification, but most can. Parents need to make decision, what kind of hearing aid to select, and whether or not to consider a cochlear implant. To make any of these decisions, information may be gathered from many sources: professionals, other parents, and the Internet. Using of ear mould with the amplification devices are mandatory. A team of professionals: Parent infant programs require involvement of a team of professionals along with the parents. These include an audiologist, speech and language therapist, primary care physician, Special educator etc. From special educators, audiologist, speech/language therapist, parents can learn to see that the hearing aids are functioning optimally, care and maintenance of the hearing aids, can learn how to call baby's attention to sounds and what they mean. Parents also can learn how to make speech as audible as possible, and how to encourage infant to listen to his or her own voice as well as parents

Ensure hearing aids are used by the child. The professionals also advice parents to talk to the child most naturally preferably in a slightly slower manner ensuring that the child is looking at them, consciously label the things around the infant,

converse on all the incidents and activities going around him.

Team of professionals understand the emotions of parents therefore help them to make difficult decisions about their children's communication. Parents and other family members including caregiver play the main role in the team for a successful parent infant program. All children learn from their environment. Babies absorb language, thinking skills, and social skills as they experience the world with their caretakers and others. Most children acquire skills, especially language, effortlessly, because others are fluent in the language and use it all the time. Children who are deaf or hard of hearing can usually acquire language in the same way as hearing children, but they will not know that people around them are using language unless they have a teacher and parent/family members who can help them access the language environment. Once the baby is diagnosed as hearing impaired, it's the parents who have to take all the decisions from amplification device, mode of communication to be used to school placement. They have to develop the listening skill of their baby, they have to provide adequate language and stability of their child and so on. Appropriate listening situation: Parents can make their house a good listening environment. If possible one of the room can be made acoustically appropriate for the hearing impaired infant where formal way of training can be done by the parents. Finding appropriate amplification is just the beginning, however. Because hearing aids and cochlear implants work differently than glasses, or ears with normal hearing, infant will

15 need parents to guide those early listening experiences Training materials: Training materials include toys and books, tools for listening training such as different noise makers and instruments generate different frequency tone. 1.3.4: Plan of action It is possible to identify hearing-impaired infants at birth with advances in hearing screening technology therefore enhancing the opportunity for early intervention. The Parent Infant Program (PIP) was established to provide services for families of hearing-impaired infants. It is assumed that children advance to the best of their abilities when their emerging speech, language and auditory skills are reinforced by parents during early years and there the enthusiasm for PIP emerged. The most important learning environment for a child during the early years, is the home.

During these early years, the child's most important relationships are with his or her

parents and other primary care-givers, such as siblings, grandparents and other family members.

Therefore, the emphasis of PIP is a home-based, family-centred, parent-guided; child-specific which is a more natural approach to learning. The parent infant program brings children from infancy through pre-school age, Parents, other family members and early intervention professional work as a team and offer services in communicating with their children in the child's natural environment. Parents are encouraged to network with other parents. Parent infant program helps hearing impaired children and their parents to develop potential in primary areas and nurture the child to develop language skills, better social and emotional skills, the ability to manage their own behaviour and mental health, a stronger foundation for learning at school, an easier transition into adulthood, better job prospects, healthier relationships and improved mental and physical health.

Language development is vital as it is the basis of communication. It is the most important factor in the all-round development of a child. It is the basis of most learning, not only in the formal aspects of education, but also in the development of character, emotional state and social relationship of the children. The questions are 'who should develop language and how it should be taught to the children'. In order to answer both these questions the simplest thing is to recollect how hearing babies have acquired language. The hearing baby acquired or learnt it from the parents and the family members around them through constant exposure and interaction. Parents unconsciously teach and reinforce the language. It is an established fact that the hearing impaired child also has the same innate capacity to learn language as a hearing child but the reason that he has not learnt it, is because he has not heard the language around him.

16 Parents of a hearing impaired child may therefore interact and talk to him as naturally as they would do with hearing children.

Action plans are designed based on short term and long term goals. Parents of a hearing impaired child should interact and talk to their child

as naturally as they would do with hearing children. They should remember

To see that

hearing aids are used by the child. That the hearing aids are functioning optimally. Talk to the child most naturally preferably in a slightly slower manner ensuring that the child is looking at you. Consciously label the things around him. Converse on all the incidents and activities going around him. Throughout the day there are plenty of ideal moments to give a hearing impaired child an opportunity to acquire language, these are: getting up, washing, bathing, dressing, undressing, cooking time, meal time, going out to the market garden or zoo, visiting friends, playing, going to bed etc.. These are the times when the phrases used have real meaning and so the parents could

plan to help in developing

vocabulary, meaningful language structures and communication skills in the hearing impaired child.

The following examples of the action plan will describe some of the ways to help parents and their family at home. Work with parents and other family members to identify priority needs for the child and family. Evaluate the child's strengths and current developmental skills. This information will be used as base line of PIP Plan. This document is like a road map. It will guide parents and specialist for learning and growing of the baby. Work closely with family to address priority goals you have set for yourselves and for the baby. Specialist will work with parents to evaluate the progress you are making and to set new goals. Support parents in communicating with their baby and encourage in baby's development through natural daily routines. To provide support and resources as families work to cope with and understand the diagnosis of hearing loss. Assist parents and family members in identifying sources of support, if this would be of help to them.

17 Recognize expertise of the parents and other family members and develop a comfortable and effective partnership with them. Become a resource to parents and other family member as they search for answers and how best to help their baby to learn Help parents and their family to choose the best methods of communicating with their baby, provide support in evaluating how the child is responding and in making decisions about communication approaches. Not all children with hearing loss learn in the same way. Watch as parents interact naturally with their baby, pointing out the many positive things parents already do to support their baby's learning and suggests additional techniques to encourage the baby's listening, babbling, watching and learning. 1.4 Pre-school training programmes 1.4.1 Overview: Children born with hearing loss are at risk for falling behind in their educational potential. When hearing loss is diagnosed, it is very important to begin the planning process for the child's educational future. Children receive the early intervention or other services they need in a timely manner so that they can enter pre-school and elementary school with an ease. The pre-school program starts for children from three to approximately five years of age. The school provides a language intensive program with a curriculum especially designed for children with hearing loss. It is designed with the aim of intensive small group language/listening teaching. The speech pathologists, classroom teachers and teaching assistants work as a team to track the children's vocabulary, listening skills, speech, syntax, and discourse skills. Children alternate between small group language lessons and larger group content specific lessons. The aims of pre-school training program are as follows: Children will be using complex sentences by the time they are ready for mainstreaming.

Children's receptive and expressive language ages will be within one year (or less) of their chronological ages Children will develop oral narrative skills Children will develop Theory of Mind skills

18 Children will continue developing pre-reading skills Children who meet age requirements to attend kindergarten will have their readiness skills assessed If the gap between language age and chronological age is closed, the children only need to keep up when they get into mainstream, and not catch up. The pre-school training covers all essential areas of early childhood development like self-help, cognitive, motor, and social with special emphasis on language skills development. The pre-school training programme is backed with development and on-going up gradation of the curriculum for training in different skill areas and in different languages. It Supports for successful mainstreaming of children passing out of pre-school and follow-up services. Pre-school training program also helps to develop of varied innovative teaching-learning aids for pre-school children for skill training in different areas (visuals, manipulative models, educational play materials, and interactive multimedia materials). Apart from providing preparatory services to children with communication disorders, preschool is also involved in capacity building of important stakeholders involved in education of children with communication disorders like trainees from related professional fields and caregivers.

1.4.2 Need: The ultimate goals of pre-school functions are of catching children with communication disorders early and provide all-round development, as well prepare them for mainstreaming. With this intention, the pre-school aspires to: Provide early stimulation and developmental training in all areas of early childhood development. Provide effective pre-school training that prepares children with communication disorders for successful schooling, especially in mainstream learning environments. Provide stimulating learning environment appropriate for young children with communication disorders with ideal adult: child ratio. Empowering caregivers of children with communication disorders through Practical training for diploma, undergraduate and post-graduate students from the fields of speech and hearing, and special education. Training for parallel teaching, side by side with teaching in pre-school. Periodic orientation programmes for enriching parent knowledge and skill on various topics related to training children with communication disorders. Practical training in developing special teaching learning material for children

19 with communication disorders. Provide space for manpower training in related fields like speech and hearing, and special early childhood education among others.

1.4.3 Requirement: The pre-school should be equipped to enable communication as well as all-round development of children including assistive listening devices such as different class room amplification devices like group hearing aids, FM hearing aids; audio-visual aids like multimedia projector, 52" television; elaborate outdoor play equipment that facilitate therapeutic and academic training; and several computers along with wide range of educational CDs and software for developing multimedia educational materials. Following are the requirement for a successful preschool program.

Amplification devices: Children must use individual amplification devices whether hearing aids or cochlear implant. Children who can use at least some of their residual hearing will benefit from early chances to listen, provided by devices like hearing aids or cochlear implants. Using these devices children hear sounds louder and clearer. Parents need to make decision, what kind of hearing aid to select, and whether or not to consider a cochlear implant. Using of ear mould with the amplification devices is mandatory. Children also use different class room amplification devices in the class for their group activities.

A team of professionals: Pre-school training program for hearing impaired children requires involvement of a team of professionals along with the parents. These include an audiologist, speech and language therapist, primary care physician, Special educator etc. From special educators, audiologist, speech/language therapist, parents can learn to see that the hearing aids are functioning optimally, care and maintenance of the hearing aids. Parents also can learn how to make speech as audible as possible, and how to encourage children to listen to his or her own voice as well as parents ensure hearing aids are used by the child. The professionals also advice parents to talk to the child most naturally preferably in a slightly slower manner ensuring that the child is looking at them, consciously label the things around the infant, converse on all the incidents and activities going around him.

Team of professionals understand the emotions of parents therefore help them to make difficult decisions about their children's communication.

While these activities are continuously going around at home parents should pay sufficient attention to the following:

20 Take the help of special teachers to plan out the educational programme of the child.

Be a part and parcel of his/her daily lessons at school and inculcate listening, speech reading and reading skills. Meet the school teachers as often as possible to carry over and to follow up classroom teaching. Learn the techniques used by the teachers in the class-room to teach language and follow them at home. Discuss about your queries and doubts with the teachers. Also discuss any intimate daily happening, celebrations, outings within the family so that there is a carryover of the same in the class-room teaching. Be more supportive to the child in his success as well as in failures. Be a teacher and facilitator for learning and make the child independent and self-sufficient. Motivate the child to interact with everybody around him. Inculcate good values and develop a sound moral character in the child. Help the children express themselves freely and involve them in all family interactions. Participate as equal partners in the education of your - children.

Appropriate listening situation: The pre-school training set-up should have a good listening environment for the hearing impaired children. If possible all the rooms can be made acoustically appropriate for the hearing impaired children where formal way of training can be done. If induction loop systems are used as assistive listening device proper steps must be taken to avoid any spill over effect. Training materials: Training materials include toys and books, tools for auditory training such as different noise makers and instruments generate different frequency tone. Audio-visual aids like multimedia projector, ; elaborate outdoor play equipment that facilitate therapeutic and academic training; and several computers along with wide range of educational CDs and software for developing multimedia educational materials.

1.4.4 Plan of action

Class room activity

Pretend Play Children who are deaf have normal intelligence and can study just like other children. However, in the initial years, they struggle with many issues including language and communication. Activities for the classroom are suggested to help a child build up language, communication and social skills. Pretend play is a normal part of child development. Most children pick up dolls, talk to them, and play with them. Children with sign language use signs instead of talking. Provide opportunities for the child to pretend play. Provide materials, time and space for a child to practice communication skills with dolls and imaginary friends. If the child is not doing it on their own, you may need to model it and involve the child till he or she learns.

Classroom Responsibilities In the classroom, children who are deaf should also be given some responsibilities. Responsibilities can be as simple as making sure the board is clean before they leave, or opening the windows in the morning. These responsibilities help the child feel important and valued and helps build up their confidence to work independently.

Story Time Story time is a great way to develop language skill in children with hearing impairment. Activities should use short stories with pictures and few words per page. Read the words, and explain them during the story. Get the children to sign some of the words used in the story with you. Also, use the story to talk about other things related to the same topic. Even if you have an integrated classroom, the other children will enjoy learning and practicing signs at story time. Allow children to look at books that you have read to them at their own pace.

Music Children who cannot hear miss out on learning to appreciate and enjoy music. However, you can make this possible by helping them understand vibration. Use drums and other vibrating instruments in your classroom for activities. Allow children to play with instruments and feel the vibrations. You can also play a drum while allowing the child to feel the rhythm with one hand, and follow the rhythm with the other hand on another drum.

Paired Activities Children who cannot hear find it difficult to work with others, especially other children who can hear. Pair up a child who is deaf with another child to do an activity together. The activity can be a craft activity, or even going to the garden and getting some materials for the lesson. Start with more structured activities that require only the sharing of

22 materials, and slowly involve the child in more unstructured activities that require planning and communication. All of these various activities will help a deaf child develop necessary communication skills. Parent Activities for Children with Hearing Loss Having a child with any disability is overwhelming. Hearing loss is no exception. Having a typical child is an enormous amount of work, as any parent can tell you, so the stress of having a child who requires extra work is understandable. For parents who choose listening and spoken language for their children with hearing loss there are some things that will help in developing speech, language and listening skills. Read to your child every day: For young children the goal is 10 books a day. As kids get older, at least 30 minutes. When kids learn to read, still read to them every day and try and read things that are a little more difficult than they can read themselves. Sing to your child every day: Parents don't have to be really good, they just have to be able to carry a tune. Singing provides a good sense of rhythm and the tone helps them recognize the melody in speech. Rhyming games: As kids get older, play rhyming games. Rhyming is very helpful in building phonics skills which is critical for reading. Play rhythm games: Clapping out rhythms is fun and a good skill to learn. Clap out a variety of different rhythms starting from something short (DaaDaDa) and building to more complex rhythms. Language of math: Math is really a language activity. For kids to succeed in math they need to learn the words of math problems. How do you know if the activity is an addition, subtraction, multiplication or division problem? How much more, howmany fewer etc., may be difficult to figure out. Many parents are not comfortable with math and may avoid doing math activities. Point out words: on packages, on signs, and around the house. Play "sound out the word" games when you see words that could be sounded out. Watch the sound in your house: Turn off the TV or radio during dinner. Don't have the dishwasher running while you are trying to talk. Background music is not helpful unless it is parent directed. Try to have everyone take turns speaking. It is hard to hear when two people are talking at the same time. Turn off the TV: Kids do not learn language from watching TV. They learn by interacting with people. So just spend time with them and talk talk talk.

23 Make hearing technology fun: It is not easy to be different. If we think about hearing aids as ear jewelry, pretty ears. etc. we will help kids have a positive view of their technology. Let them choose a color (my hearing aids are purple, not boring beige). If a child chooses a color or puts sparkles on his or her hearing aids, he will more likely become invested in it. Talk, Talk, Talk, Talk: Talk all day long. It is a lot of work, but it makes all the difference in the world. There is a lot of research that shows that the number of words a child has at age 4 is directly related to the number of words a child has heard. Since even with the best technology, a child with hearing loss will not be hearing everything, they need more input. So just talk talk talk talk talk. Describe everything you are doing. "I'm cutting up the tomatoes, cut, cut, cut. Now I am putting them into the frying pan. I am going to cook them. I am stirring. Would you like to stir?" It can definitely get exhausting, but keep trying to remember that what you put in is what will come out of your child. 1.5 Individual Speech and Language Therapy Program 1.5.1: Overview Individual speech and language therapy program helps in the identification, screening, assessment, and rehabilitation of individuals with hearing loss. Speech and language therapists have the specialist skills and training to address communication effectiveness, disorders, differences, and delays that result from a variety of factors, including those that may be related to hearing loss. They provide individualised assessment, diagnosis and intervention to the child and also help the parents to make the choices regarding communication mode and habilitation approach. Individual speech and language therapy program accelerate language development in order to reduce and/or eventually close the gap between the child's chronological age and language age. Individual speech and language therapy program helps to make the choice of mode of communication of the child such as auditory-verbal communication, Aural oral communication, cued speech, sign language or total communication. It helps parents to select hearing devices (analog hearing aids, digital aids, bone anchored hearing aids, cochlear implants) suitable for their children and teaches parents how to maintain and troubleshoot their child's hearing device(s) in order to get the best sound possible. Individual speech and language therapy program provides family-centred therapy that focuses on the child's learning needs and potential which helps the child to develop Skills and sub-skills for learning speech and language.

24 1.5.2: Need Children with hearing loss needs speech and language therapy because of the adverse effect of auditory deprivation on communication. Therefore an early intervention on speech, language development is important because of critical period for language learning and brain reorganisation. Children learn the following aspects of speech through the Individual speech and language therapy program. 1) Vocalization and its meaningful use 2) To improve the usage of meaningful vocalization more spontaneously. 3) Proper use of intensity and pitch in vocalization. 4) To improve on speech imitation skill. 5) Proper use of respiration and tongue. 6) Maximum use of residual hearing for production of Speech. 7) To teach the child to use visual and tactile clues for learning language. 8) Proper articulation of vowels and consonant sound in syllables, words and sentence level. 9) Spontaneous use of language at phonetic level. 10) Satisfactory use of language for effective communication.

1.5.3: Requirements Amplification devices: Children must be fitted with individual amplification devices whether hearing aids or cochlear implant based on their degree of hearing loss. Children with their residual hearing and amplification devices will be benefitted from early chances to listen. Using these devices children hear sounds louder and clearer. Parents need to make decision, what kind of hearing aid to select, and whether or not to consider a cochlear implant. Using of ear mould with the amplification devices is mandatory. Appropriate listening situation: Individual speech and language therapy program should have a good listening environment for the hearing impaired children. If possible the room can be made acoustically appropriate for the hearing impaired children where therapy program can be done. Training materials: Training materials include toys and books, tools for auditory training such as different noise makers and instruments generate different frequency tone. Audio-visual aids like multimedia projector, ; elaborate outdoor play equipment that facilitate therapeutic and academic training.

1.5.4: Plan of action In the recent times, there has been increasing support of intervention occurring within the child's and family's functional and meaningful routines and experiences dispersed throughout the day rather than in tightly planned and executed activities. This shift away from traditional, clinical models for services for young children and their families is aligned with the federal mandate to provide services in natural environments and is responsive to the success of parent-implemented interventions. The use of routines and everyday activities as a context for embedded instruction involves (a) identifying the sources of learning opportunities occurring regularly in family and community life; (b) selecting, with the parents and caregivers, desired participation and desired communication by the child in the routines; (c) mapping motivating aspects and the child's interests within the routines; and (d) identifying facilitative techniques that will be used to maximize the learning opportunity. Organization of the ever-expanding research base on effective intervention approaches and strategies in early intervention is challenging for a variety of reasons. The focus of intervention may be the parent or caregiver, the child, the dyadic interaction, the environment, or combinations of these factors. The agent of the intervention may be the SLP, another team member, a family member or peer, or varying combinations. The intervention may be in small or large groups, individual or massed, or distributed opportunities throughout the day. Much of the empirical data collected to date have been on preschoolers rather than infants and toddlers, and the quality and preponderance of the evidence are lacking for some intervention practices. However, there are intervention approaches and strategies for the SLP and team to consider that have some evidence to support their use by professionals and parents in both home and community settings for young children with a variety of disabilities.

Goals of Early Intervention Receptive language Expressive language Auditory perception Speech development

26 Strategies with promising evidence fall into one of three groups: responsive interaction, directive interaction, and blended. Responsive approaches include following the child's lead, responding to the child's verbal and nonverbal initiations with natural consequences, providing meaningful feedback, and expanding the child's utterances with models slightly in advance of the child's current ability within typical and developmentally appropriate routines and activities. Responsive interaction approaches derive from observational learning theory and typically include models of the target communication behavior without an obligation for the child to respond. Among others, specific techniques include expansions, extensions, recasts, self-talk, parallel talk, and build-ups and breakdowns. Directive interaction strategies include a compendium of teaching strategies that include behavioral principles and the systematic use of logically occurring antecedents and consequences within the teaching paradigm. Blended approaches, subsumed under the rubric of naturalistic, contemporary behavioral, blended, combination, or hybrid intervention approaches, have evolved from the observation that didactic strategies, while effective in developing new behaviors in structured settings, frequently fail to generalize to more functional and interactive environments. The emphasis on teaching in natural environments using strategies derived from basic behavioral teaching procedures has been broadened to include strategies for modeling language and responding to children's communication that derive from a social interactionist perspective rooted in studies of mother-child interaction. The core instructional strategies are often identical to those used in direct teaching (e.g., prompting, reinforcement, time delay, shaping, fading) but also may include strategies that come from a social interactionist perspective (e.g., modeling without prompting imitation, expansions, recasts, responsive communication). Naturalistic language interventions may be used as the primary intervention, as an adjunct to direct teaching, or as a generalization promotion strategy. Monitoring intervention. Because young children often change very rapidly, and families respond differently to their children at various periods in development, systematic plans for periodic assessment of progress are needed. The three broad purposes of monitoring are to (a) validate the conclusions from the initial evaluation/assessment, (b) develop a record of progress over time, and (c) determine whether and how to modify or revise intervention plans. Thus, the evaluation/assessment and intervention processes can be viewed as a continuous cycle of service delivery. Monitoring includes attention to both the child's IFSP as well as broader aspects of the child's development and behaviors, such as

27 participation in routines, play, social interactions, and problem behaviors, to determine appropriate goals in these areas. For children in early care and education programs, attending to their levels of engagement in activities can help determine whether changes are needed in their classroom environment.

1.6: Impact of early intervention on school outcomes.

1.6.1 Schooling Outcomes

Children with hearing impairments are at risk for serious difficulties acquiring and developing literacy skills. Among children with severe to profound hearing impairment, low literacy rates have frequently been reported in the literature. Numerous studies with children who are deaf show that literacy development and proficiency has been challenging for this population (Spencer et al., 2003). Literacy difficulties can impact the child's academic, social and emotional success. When hearing children learn to read, most are competent language users and map their existing phonological, syntactic, semantic and discourse skills onto the newly acquired task of reading. The deaf child approaches the reading task with an incomplete spoken language system and, because reading is a speech based system, this significantly increases the difficulty of the task. As a result, this may facilitate and improve development of speech perception skills in children with hearing impairment (Watson, 2002).

1.6.2 Academic problems faced during classroom situations

Unmanaged hearing loss can result in lagging behind at least 1 grade level. If untreated by 4th grade these students are at least 2 grades below level. Compared to peers with normal hearing-10xs greater risk for academic failure. Cannot "overhear" others' conversations therefore misses passive learning opportunities. Cannot hear soft/distant voice and described as "daydreaming" or "not trying" 50-75% of information missed in classroom situations. Articulation and syntax deficits as well as limited receptive and expressive. Distinguishing and understanding speech in classroom environment (even when

28 presented in the "good ear") Distinguishing soft/distant speech Responding to subtle cues in conversation Rapid-paced information/transitions Distinguishing grammatical markers (possessive, plural, verb tense forms, etc.) Localizing source of sound and filtering speech in noise Not as confident and more dependent on others as compared to peers with normal hearing. 1.6.3 Early stimulation, at preschool age Schooling outcomes, which range from the number of years completed to academic performance, were some of the most widely studied in the evaluations of interventions from early childhood on later outcomes. There are a number of possible pathways through which early childhood interventions could affect schooling. For instance, improved cognitive development could result in increased scholastic achievement, while healthier children are better able to attend classes. A 2003 systematic review of the effectiveness of comprehensive early childhood development (ECD) programs in the United States revealed significant improvements in school readiness, achievement, and retention rates among enrolled children (Anderson and others 2003). Additional long-term studies demonstrated that children who attend these programs were less likely to repeat a grade and more likely to graduate high school when compared with their peers who had not been enrolled (Schweinhart 2007). Two decades after children participated in Chicago's Child-Parent Centers, they demonstrated lower rates of grade retention, a lower likelihood of being enrolled in special education programs, and a higher percentage of high school completion (Reynolds and others 2001). At age 28, their schooling achievements translated to labor market gains and reduced arrest rates. Evidence exists that early childhood interventions can successfully promote on-time enrollment. The most widely studied educational outcome was years of schooling completed, and the evidences suggest that over time, various intervention types could positively affect this indicator. Attendance and completed schooling are important measures, but they do not necessarily indicate if students are learning. children with early intervention are more likely to be in mainstream education, including a special unit within the school (75 to 95 per cent), than in a school for the deaf (five to 21 per

29 cent); second, children with early intervention are less likely to be in schools for the deaf (five to 21 per cent) than profoundly deaf children without early intervention (29 to 46 per cent). Over half of the children in the early intervention group scores within the average range for their age, when compared with hearing children. Factors such as higher nonverbal intelligence, higher socio-economic status, female gender and onset of deafness (later as opposed to earlier) were all associated with reading competence. In children with normal hearing, language skills and literacy are highly interdependent and progressively develop throughout the elementary school years (Watson, 2002). During the initial stages of reading (from birth to six or seven years of age), the child develops the knowledge that words are made up of individual sounds and there is a relationship between each letter and its' sounds (Spencer et al., 2003). During the later stages of reading (from seven years of age to approximately fourteen years of age), the literacy demands increase. Children are expected to develop both "top down" (i.e., meaning to print) and "bottom up" (i.e., print to meaning) processing skills to aid in comprehension (Spencer et al., 2003). It is hypothesized that early intervention provides the child with the ability to utilize phonological ("bottom up") strategies therefore allowing them to decode unfamiliar words. Stimulation, whether through home visits or preschool, can positively affect children's academic performance. Evidence suggests that the persistence of effects over time varies by outcome domain, and longer exposure to some programs can be beneficial. 1.7 Intervention of late identified children with hearing loss A hearing loss in a child, regardless of type, can lead to a variety of consequences like significant delay in language development or disorder in speech perception and production or an interference with both receptive and expressive language. Other effects include effects on cognition, educational attainment, social development and family child interaction. 1.7.1 Challenges of Intervention: The first premise is that it makes sense to

begin intervention with children who have hearing loss when they are very young

because of the research on particular sensitivity of the brain's neural pathways to auditory input prior to the age 3 (Sharma et al., 2005) as well as because of the verbal and academic deficits often seen in

30 children whose audiological and educational management begin later (Geers & Moog, 1989; Nicholas & Geers, 2006). The second premise is that it makes sense to help these children learn to listen and talk in order to keep as much as the world open and available to them as possible. The third premise is that it makes the most sense to help the parent help the child learn spoken language through listening.

The idea is to maximize the child's development through optimizing the family's capacity to address the child's needs.

Working in partnership should result in the most effective intervention with very young children (Bromwich, 1981; Yoder & Warren, 1998, 2002). The fourth premise is that in

acquiring spoken language through listening, a child with a hearing loss will generally follow a normal developmental path.

The pace may be somewhat slower, and there may be some asynchronies in learning related to difficulty in hearing particular aspects of language (Estabrooks, 2006; Tye- Murray, 2003). 1.7.2 Habilitation Strategies: Often with children, aural rehabilitation services would more appropriately be called habilitative rather than rehabilitative. Rehabilitation focuses on restoring a skill that is lost. In children, the skill may not be there in the first place, so it has to be taught- hence, the services are habilitative, not rehabilitative. Specific services for children depend on individual needs as dictated by the following: The current age of the child The age that the hearing loss started The age at which the hearing loss was discovered The severity of the hearing loss The type of hearing loss The level of hearing loss The age at which hearing aids or assistive devices were introduced The aural habilitation plan is also influenced by the communication methods the child is using. Examples of communication methods include the following:

31 Auditory-oral American Sign Language Total communication Cued speech Manually coded English One of the most serious concerns of a hearing loss beginning in childhood is its disruption to learning speech and language.

The combination of early detection and early use of amplification has been shown to have a dramatically positive effect on the early language abilities of children with a hearing loss. In fact, infants identified with a hearing loss by age 6 months can be expected to reach language development similar to hearing friends. Aural habilitation/rehabilitation services for children typically involve the following: Training in auditory perception. This includes activities to increase awareness of sound, identify sounds, tell the difference between sounds (sound discrimination), and attach meaning to sounds. In the end, this training increases the child's ability to tell one word apart from another using any remaining hearing. Auditory perception also includes developing skills in hearing with hearing aids and assistive listening devices, and learning how to handle easy and difficult listening situations. Using visual cues. This goes beyond separating sounds and words on the lips. It involves using all kinds of visual cues that give meaning to a message, such as the speaker's facial expression, body language, and the context and environment in which the communication is taking place Improving speech. This involves skill development in the production of speech sounds (by themselves, in words, and in conversation), voice quality, speaking rate, breath control, loudness, and speech rhythms. Developing language. This involves developing language understanding (reception) and language usage (expression) according to developmental expectations. It is a

complex process involving concepts, vocabulary, word knowledge, use in different social situations, narrative skills, expression through writing, and understanding rules of grammar

Managing communication. This

involves the child's understanding the hearing loss,

32 developing assertiveness skills to use in different listening situations, handling communication breakdowns, and modifying situations to make communication easier.

Managing hearing aids and assistive listening devices. Because children are fitted with hearing aids at a young age, early care and adjustment are done by family members and/or caregivers. It is important for children to participate in hearing aid care and management as much as possible. As they grow and develop, the goal is for them to do their own adjustment, cleaning, and troubleshooting of the hearing aid and, ultimately, to take over responsibility for making appointments with service providers. CARHART (1947) Includes both childhood and adulthood procedures. It has 4 stages. It is based on the belief that since listening skills is normally learned early in life, the child possessing a serious hearing loss

at birth or soon after will not move through the normal developmental stages important in acquiring these skills.

Development

of awareness of sound The child has to recognize when a sound is present and attend to it. The child should be surrounded with sounds that are related to daily activities and that are clearly audible. Development of gross discrimination Initially involves demonstrating with various noisemakers that sounds differ. Training at this level involves discrimination of several parameters of sound, such as intensity (loud versus soft) duration (long versus low)

Development of broad discrimination among simple speech patterns By now the child is aware that the sound differs and is ready to apply this knowledge to the understanding of speech. Familiar meaningful phrases that is sufficiently different to minimize confusion. Development of finer discrimination for speech. Fine discriminations of speech stimuli in connected discourse and integrating an increased vocabulary to enable him or her to follow connected speech in a more rapid and accurate fashion.

33 Carhart also felt that the use of vision by the child should be encouraged in most auditory training activities. 1.7.3

Traditional approach: Hirsh 66, Ling 76, has described 4 levels of audition that contribute to the perception of conversational speech, detection, discrimination, identification and comprehension. Detection requires only the child should be able to distinguish between the presence and absence of sound. Discrimination: involves differentiation of speech sounds. Identification: requires the child to recognize the speech signal and to be able to identify.

Comprehension: involves understanding of the message on a cognitive and linguistic basis. Erber and Hirsh 78 suggested an auditory training program in which increasingly complex speech stimuli are presented for processing through 4 levels of audition.

Speech Syllables Words Phrases Sentences Connected discourse Detection(+/-) Discrimination (same/diff) Recognition(identification) Comprehension(understanding)

The first 2 stages are not usually done. The suprasegmental part is not included here; it taps only long term memory.

Mastery of the lower levels of detection and discrimination is considered to be the pre requisite for successful performance at the higher level of identification and comprehension. Children should progress through the four levels and the various stimulus complexities at their own rate and to the extent dictated by the status of their residual hearing. The detection level in the matrix does not correspond to the awareness stage as proposed by Carhart, because it focuses on speech reception rather than awareness of the sounds in general.

In addition, there is no corollary in the Erber and Hirsh paradigm for the development of gross discriminations of non speech sounds as proposed by Carhart.

34

Acoupedics: The term coined by Dr. Henk. Developed by Pollack (1964)

Principle: Early training using audition only, avoidance of lip reading and other cues, and use of normal speech pattern.

Pollack

proposed a unisensory approach toward education and habilitation of hearing impaired children. Pollack's procedures exclude the use of all visual cues, such as speech reading during early training. She emphasizes only on audition and said that audition gets hampered when attention is divided between two or more sensory inputs. The acoupedic approach is also called as the unisensory approach and its recommendations are: - Hearing impairment should be detected early in life. No age is suggested. - Binaural hearing aids should be selected as soon as the hearing impairment is diagnosed. - The child must be given the fullest opportunity to use his residual hearing; hence visual stimuli are not provided initially in other words, lip reading cues available to the child are kept minimal. This does not mean that the child never has the opportunity to see the speakers face. It means that no formal lip reading instruction is employed and the child is expected to develop his auditory capacity in preference to his visual skills in developing speech and language. - Normal patterns of language are stimulated through the visual auditory channel eliminating the need to present language visually. - A favorable attitude must be established for auditory learning. In short, the people who are involved must believe that the child can hear and learn to communicate normally. - Parents must become the primary teachers, assuming responsibility for providing intensive auditory stimulation more or less continuously. - A special educational environment must be avoided. The goal is for the child to be educated with normally hearing children. The following are the listening skills to be worked on: - Awareness of sounds, loud then quiet sounds. - Attending to sounds, increasing the range

35 - Responds to sounds. - Localizing to sounds. - Discrimination of sounds. - Developing auditory feedback mechanism. She emphasized on the development of language through the auditory feedback loop, which is demonstrated and referred by repeated imitation of auditory stimuli. Pollack does not suggest an age but says introduction of the acoupedic approach beyond 7yrs of age may not be feasible, but the procedures are designed for infants and toddlers. 1.7.4 Wedenberys

Approach (Wedenbery 1951): It is an early approach to auditory training, used with children with severe to profound hearing loss. It was first described by Wedenbery. His training also served to exploit whatever residual hearing a child possesses. His approach was eventually labeled as unisensory, since he advocated that speech reading should not be consciously emphasized until the child developed a proper listening attitude. His program was directed towards increasing the Child's attention to the sound. Both environmental and speech sounds were used in the early stages, which he referred to as "ad concham amplification". This involved speaking directly into the Child's ear at a close range (1/2 inches) rather than having the child use hearing aids. Exercises, which helped the child become aware of and attend to sound at increasing distances, were used. These included presentation in isolation vowels & voiced consonants whose formants were thought to be within the hearing impaired Child's audible range. Syllables were used in a variety of formal therapeutic activities, as well as informal settings at home. Combining individual vowels and consonants learned in isolation resulted in perception of a limited number of words. At this point Wedenbery advocates part time use of hearing aid. Later, training progresses to short sentences formed by words already recognized by the child acoustically. Although not given direct focus, speech reading could be used as a supplement. His method directed towards development of auditory, speech and language skills in children with either a congenital or prelinguistic hearing loss. Of severe to profound proportion.

Similar auditory training methods were proposed by Goldstein 39, Watson 61, and Whitehurst 66.

36 Verbotonal: Peter Guberina 1952 It is

effective for establishing good spoken language and listening skills. Based on a developmental model of normal hearing children

Guberina's concept is based on that low frequency of spoken language don't mask high spoken frequencies.

He believes that amplification of auditory cues below 500 Hz to include rhythmic patterns and sound fundamentals can help HI to perceive higher speech frequencies. 1.7.5

Ling's approach: Training programme is based on: - Acoustic characteristic of speech - Emphasis on listening aided by amplification - Involves segments as well as supra segmental - Recognizes need to attain vocal system, respiration, motor control and coordination. Prior to use of speech in meaningful contexts. Ling emphasized that speech should be taught at phonetic level rather than phonological level. Child's ability to detect all six sounds demonstrates that ability to detect all aspects of speech.

Auditory Verbal Practice The goal of Auditory Verbal Practice is that children who are deaf or hard of hearing can grow up in regular learning and living

environment enabling them to become independent, participating and contributing citizens in mainstream society.

Principles: Auditory verbal practice (Pollack, 1970, 1985, 1997) have been incorporated by AV I.

To detect hearing impairment as early as possible through screening programs, ideally in the new born nursery and throughout childhood. -

Prompt detection is critical in that any auditory deprivation can lead to delay in language development. - Lowered the age of candidacy for CI. 1) To pursue prompt and vigorous medical and audiologic management, including

37 selection, modification, and maintenance of appropriate hearing aids, a cochlear implant or other sensory aids. - Appropriate well defined hearing technology in conjunction with AVT can lead to the development of spoken communication. 2)

To guide, counsel, and support

parents and caregivers as the primary models for spoken language development and

to help them understand the impact of deafness and impaired hearing on entire family. 3) To help children integrate listening

in to

their development of communication and social skills. 4) To support children's auditory verbal development through one to

one teaching. 5) To help children monitor their own voices and the voice of other in order to enhance the intelligibility of their spoken language. 6) To use developmental patterns of listening, language, speech, cognition to stimulate natural communication. 7) To continuously assess and evaluate children's development

in above areas

and through diagnostic intervention, modify the program when needed. 8) To provide support services to facilitate children's educational and social inclusion in regular education classes.

The listening environment: AVP encourages the maximum of hearing in order to learn language and stresses listening rather than watching. Listening environment can be enhanced by following conditions. - Parents / therapist sitting beside child, on the side of better ear - Speaking close to child's hearing and / or CI microphone - Speaking in quiet voice at regular volume - Minimizing background noise - Using speech that is repetitive and rich in melody, expression and rhythm. - Using acoustic highlighting technique to enhance the audibility of spoken language.

38 (Auditory Verbal Techniques) includes - Education - Guidance - Advocacy - Family support - It is a part of ongoing, individual, diagnostic evaluation of child's and parent's progress. - Sessions are generating conducted jointly by AVT therapist and parents. - Child learns to listen to his or her own voice. The voices of others and sounds of environment in order to communicate effectively and naturally through spoken language. - Most AVT offers weekly therapy session, lasting for 1 to 1.5 hours. - Mere therapy may or may not be advantageous and depends on many variables. - It is parents / care givers who need to apply targets from each session in natural language contents throughout the day. - Auditory verbal therapist demonstrates parent and the child practice and interaction are discussed. - Auditory verbal therapist outlines specific goals to work towards at home and suggests ways through which they may be achieved. Auditory Verbal Techniques 1) Using acoustic highlighting 2) Using auditory closure 3) Recording 4) Asking "what did you hear?" 5) Providing alternatives 6) Pausing 7) Repeating a previous strategy 8) Waiting

39 9) Rephrasing 10) Labeling by category 11) Asking for providing a definition 12) Changing the task from open set to closed set 13) Providing rhyming words 14) Suggesting opposites 15) Providing a visual clue and putting the stimulus back into hearing 16) Moving closer to the child 17) Directing the child to listen closely 18) Repeating part of the story message containing the answer 19) Using the often misunderstood technique and hand cue 1.7.6 Ski-Hi Approach Clark & Walkins (1985) - Which is a comprehensive identification and home intervention treatment plan for HI infants and children. - This program explains all auditory skills in four phases. - As skill level changes, auditory behavior becomes more complex. Phase I: 4-7 months - Attending - Early vocalization Phase II: 5-16 months - Recognizing - Locating - Vocalizing with inflection Phase III: 9-14 months - Hearing at distance and levels

40 - Producing some vowel and consonants Phase IV: 12-18 months - Environmental sound discrimination and comprehension - Vocal discrimination - Speech discrimination - Speech initiation and uses speech meaningfully Developmental approach to successful listening II (DASL- II): This approach is highly structured and used with preschool and school age children using hearing aids or cochlear implant. The hierarchy used in this approach is: Sound awareness: includes detection, discrimination of both environmental and speech sounds. Phonetic listening: the fundamental aspects of speech perception like duration, intensity pitch and rate are emphasized. In this stage development of discrimination and identification of vowels and consonants in isolation and inwards are kept in mind while planning the activities. Auditory comprehension: comprehension of complex verbal messages in everyday settings is considered. Other communication strategies:

Sign Language: Signs in ASL are created using handshapes, facial expressions, body posture and movement. Some examples are:

o

Handshape - a spread-out hand, as in a "high-five" or a pointing handshape o Fist movement - how you move your hands in space, such as from left to right or in a circling or a bouncing motion, o Facial expression - raised eyebrows when asking a question and smiling when signing about something that is fun to do. Visual Attention: People with hearing can hear voices even when they cannot see who is talking. People who communicate in ASL need to look at the person who is signing to them. It is important to make sure your child is looking and paying attention when you are signing.

41

Eye contact: Eye contact is very important when you are signing in ASL. If you have eye contact with your child, then you can be sure that you are paying attention to each other. Fingerspelling: Fingerspelling began as a part of ASL. Fingerspelling spells words by forming each letter using the hands and fingers. Very young children do not need to know how a word is spelled to understand fingerspelling. Instead they learn fingerspelled words by the shape and movement of the hand. Spoken English Spoken words: Spoken words are formed using the vocal cords (voice) and mouth and are made of speech sounds such as vowel and consonant sounds. Auditory training and listening: Auditory training teaches a child or an adult to rely on listening to communicate. It takes advantage of a person's residual hearing. That is the amount of hearing that a person with a hearing loss still has, even if it is very minimal. Many children who are deaf have some residual hearing. Speech: Speech uses the mouth, lips, tongue, and vocal cords to produce sounds for communication. Speech and auditory training (or listening) are often used together. Different speech sounds can make a difference in the meaning between two words. For example, the only difference between the two words "big" and "pig" is in the first speech sound ("b?" rather than "p?"). Speech reading: In speech reading (also known as "lip reading") a person who is deaf or hard of hearing watches a speaker's mouth and facial expressions to understand what is being said. Speech reading is also used along with other building blocks, such as listening, to communicate. English Coding Systems English coding systems use visual methods to express the spoken English language. Coding systems are not a language of their own. Instead of using speech and hearing, coding uses signs borrowed from ASL to represent the English language. English grammar and word order are used.

Manually Coded English (MCE): Manually Coded English, or MCE, is made up of signs (hand shapes and hand motions) that represent English words. You might have heard of Morse code. Morse code is a system of dots and dashes that can be tapped out to form English words and phrases. MCE is a code for the English language. Many of the signs in MCE are borrowed from ASL. However, the grammar, word order, and sentence structure used in MCE are those 42 of the English language. MCE does not use the grammar, word order, and sentence structure of ASL. Finger spelling: Finger spelling began as part of ASL. Finger spelling is the spelling of words by forming each letter using the hands and fingers. It is used with English coding systems, as well as in ASL. Other communication tools: The remaining three building blocks can be used for communication and language. These three building blocks are cued speech, simultaneous communication, and natural gestures. Cued Speech: Cued speech, or cueing, can help people who are deaf or hard of hearing understand speech. Cued speech is not a language or a representation of a language. Instead, it is a system of hand signals used by the speaker to help the listener tell the difference between certain speech sounds. Some speech sounds are hard to tell apart using speech reading alone. (One example is the difference between the sound of "b" and the sound of "p"). Cued speech consists of eight hand shapes representing consonant sounds. These are placed at four locations near the mouth to represent vowel sounds. Cued speech must be used in combination with speech reading. Conceptually Accurate Signed English (CASE): Conceptually Accurate Signed English, or CASE, is sometimes used by people who are deaf or hard of hearing to communicate with one another. Sometimes it is called PSE, or Pidgin Sign English. CASE is a mix of English and ASL. CASE is not a language. It is a form of communication that varies depending on the experience and preferences of the people using it. Simultaneous Communication: Simultaneous communication is a technique that can be used with MCE. The person signing speaks and signs at the same time. The person listening and watching uses speech reading, hearing, and MCE or CASE to understand what is being said. Natural gestures: Natural gestures are body movements and facial expressions that you often use to help others understand your message. For instance, if you want to hold a child, you can simply stretch your arms towards the child. Or, when you put your index finger over your mouth and nose you are telling someone to be quiet. These are examples of natural gestures.

43 1.8

Let Us Sum Up Regardless of culture, children around the world with untreated hearing loss tend to experience: problems with speech development, language, and communication skills (especially if severe hearing loss occurs at birth or before speech and language is acquired) emotional difficulties and low self-esteem learning and behaviour problems in school Children, who have their hearing loss treated, enjoy many life benefits including: closer relationships with their family and friends better feelings about themselves and higher self-esteem improved mental health, greater self-confidence, independence, and security learning skills equal to children with normal hearing Having a hearing loss brings with it many characteristics that affect the learning of the student. However, the hearing loss alone is not necessarily accompanied by such characteristics as visual-perceptual problems, attention deficits, perceptual-motor difficulties, severe inability to learn vocabulary and English structures, consistent retention and memory problems or consistent distractive behaviors or emotional factors. If any of these kinds of behaviors characterize the student who is deaf or hard of hearing, then an investigation into the possible influencing factors should be requested.

1.9 Check Your Progress 1. Discuss the Parent-infant programmes for children with HI 2. Discuss the goal of early intervention 3. Write notes on early intervention responsive approaches directive interaction blended approaches 4. Discuss the academic problems faced during classroom situations

44 5. Discuss the challenges and strategies used for late identified children with hearing loss. 1.10 References Chaffee CA, Cunningham CE, Secord-Gilbert M, Elbard H, Richards 1. Screening effectiveness of the Minnesota Child Development Inventory expressive and receptive language scales: sensitivity, specificity, and predictive value. Psychological Assessment: A Journal of Consulting and Clinical Psychology. 1990;2: 80-85 Gottfried A W, Guerin D, Spencer JE, Meyer C. Validity of Minnesota Child Development Inventory in screening young children's developmental 37. Tomblin IB, Shonrock CM, Hardy JC. The concurrent validity of the Minnesota Child Development Inventory as a measure of young children's language development. J Speech Hear Dis. 1989; 54: 101- 105 Fenson L, Dale P, Reznick J, et al. MacArthur Communicative Development Inventories: User's Guide and Technical Manual. San Diego, CA: Singular Publications; 1993 Shepard N, Davis 1M, Gorga MP, Stelmachowicz PG. Characteristics of hearing-impaired children in the public schools: part I-demographic data. J Speech Hear Dis. 1981; 46: 123-129 Watson BU, Sullivan P, Teare J, Thompson R. Intellectual evaluation. In: Osberger, MJ, ed. Language and Learning Skills of Hearing-Impaired Children. ASHA Monogr. 1986; 23:32-37 Pappas DG. A study of the high-risk registry for sensorineural hearing loss. Arch of Otolaryngol HeadNeckSurg. 1983; 91:41-44 Mauk GW, White KR, Mortensen LB, Behrens TR. The effectiveness of screening programs based on high-risk characteristics in early identification of hearing loss. Ear Hear. 1991; 12 :312-319 Stein L. On the real age of identification of congenital hearing loss. Audiology Today. 1995; 7: 11 Harrison M, Roush 1. Age of suspicion, identification, and intervention for infants and young children
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Unit -2 Auditory Learning (Auditory Verbal Therapy and Auditory Training) and Speech Reading Structure 2.1 introduction 2.2 Objectives 2.3 Concept of Auditory Listening: Unisensory and Multisensory Approaches: 2.3.1 Human Communication System 2.3.2 Communication Model 2.3.3 Auditory Perception: Unisensory Approach 2.3.4 Visual Stimuli in Communication 2.3.5 Multisensory Approach of Speech Perception 2.4 Auditory Training: Importance, Types and Stages 2.4.1 Importance of Auditory Training 2.4.2 Different Approaches of Auditory Training 2.4.3 Stages of Auditory Training 2.5 Auditory Verbal therapy 2.5.1 Principles 2.5.2 Importance of Auditory Verbal Therapy 2.5.3 Role of a Teacher 2.6 Auditory Training and Auditory Verbal Therapy 2.6.1 Prerequisites 2.6.2 Challenges 2.6.3 Similarities and Differences 2.7 Speech Reading 2.7.1 Concept 2.7.2 Importance 46 2.7.3 Prerequisites 2.7.4 Challenges 2.7.5 Role of Teacher 2.8 Let Us Sum Up 2.9 Check your progress 2.10 References 2.1 Introduction Development of communication skills is the primary need of any child. There are many terms used to refer to bring about these skills in the child with hearing impairment. Among these, Audiologic habilitation, (ASHA, 1974), Rehabilitative audiology (Dyer & Frankmann, 1975) and Aural Rehabilitation (Ross, 1972, O'Neill & Dyer, 1973, Schow & Nerbonne 1980; Sanders 1982) are common. Audiologic habilitation or rehabilitation is defined as such professional efforts that are designed to help a person with hearing loss. These include services and procedures for lessening or compensating for

a hearing impairment involving facilitation of adequate receptive and expressive communication (ASHA 1984 & ASHA 1982). There is a distinction between 'habilitation' and 'Rehabilitation'. 'Habilitative' treatment is applied when early onset of hearing impairment has prevented the initial development of language and other communication skills (Prelingual hearing impairment). 'Rehabilitative' treatment focuses on the restoration, the maintenance and in some cases the expansion of communication skills developed prior to the onset of hearing impairment (i.e. post lingual hearing impairment). The main objective of this process involves assisting the persons with hearing impairment to attain full potential by using personal resources to overcome difficulties resulting from the hearing loss. There are other closely related important services for the persons with hearing impairment but distinct from audiologic habilitation or rehabilitation process. These are Medical intervention and Education of the children with hearing impairment. After thorough audiological evaluation and completion of medical treatment, aural rehabilitation is generally started. Education of the children with hearing impairment generally begins and simultaneously continues with the rehabilitation process. Management of these conditions is dependent on the individual needs of each child with hearing impairment and these include:

47 1. Hearing aid selection and fitting. 2. Auditory training. 3. Speech and language stimulation. 4. Speech reading training. 5. Enrollment in proper educational setting. A child with hearing impairment should depend upon his or her residual hearing and need to develop his auditory listening capacity to acquire verbal language skills. There is a well established relationship among hearing or auditory listening ability, language acquisition and speech development. For development of speech and language or verbal communication skills one has to depend on his auditory listening capacity. Such kind of rehabilitative management is guided by the professionals working as a Team. The Team: In audiologic rehabilitation process all aspects of the management are not performed by one person. In fact, professionals from several different disciplines are often involved, including Special educator, Psychologist, speech language Pathologist, social workers and rehabilitation counsellors. Nevertheless, the Audiologist is often considered the major provider of such services with specific goals as needed by the child with hearing impairment. Goal: Although primary and secondary prevention of the hearing loss can be initiated through different awareness and immunization programme and proper medical treatment, the major goal of aural rehabilitation is the improvement of communicative abilities in the persons with hearing impairment. Early identification, proper audiologic evaluation and management are essential to the remediation of hearing handicappedness which is dependent upon some factors. Factors: The important factors relating to audiologic rehabilitation include: 1. Degree of Hearing impairment. 2. Time of Onset. 3. Type of loss. 4. Auditory Speech recognition abilities.

48 5. Parental involvement. 1. Degree of Hearing loss: The prime factors for aural rehabilitation are the person's loss of hearing sensitivity or degree of hearing loss (vide table 1). Depending on the residual hearing along with the other factors the communication options can be selected. Classification Hearing level (dB) 1.

Normal hearing sensitivity 0-25 dBHL 2.

Mild Hearing loss 26 - 40 dBHL 3. Moderate Hearing loss 41 - 55 dBHL 4. Moderately severe Hearing loss 56 - 70 dBHL 5. Severe hearing loss 71 - 90 dBHL 6. Profound hearing loss 91

dBHL or more. Table 1. Classification of Hearing Sensitivity; Goodman 1965 However, the category of hearing impairment can be broadly classified into two types: i) Deaf and ii) Hard of hearing. The term Deaf is used to denote any person whose auditory channel is sufficiently damaged to preclude the auditory development and comprehension of speech and language with or without amplification (Ross 1977). Generally, when hearing loss measured by pure tone average (PTA) and speech recognition threshold (SRT) are poorer than 80 to 90 dBHL, a person is considered to be audiometric deaf (Schow 1989). Hard of Hearing : Hard of hearing child is such child with hearing loss who is more like the normally hearing child and primarily uses the auditory channel for speech and language and social development. They can be divided into two groups: i) Hard of hearing I (HOH-I): These children with hearing loss of mild to severe degree uses their hearing aid in their daily routine and academic vocabulary fair to excellent. They sometimes use full sentence and their parents are involved with them. ii) Hard of hearing II (HOH-II): These children with hearing loss are of mild to moderate degree and they never use amplification by any means. Their parents

49 are unaware about it. Their language is usable but immature. They are easily getting bored, inattentive and frustrated.

2. Time of onset: According to the onset of Hearing loss there are two categories of deaf persons: i) Pre-lingually Deaf: These persons were either born without hearing (congenitally deaf) or lost hearing before the development of speech and language i.e. 3-5 years of age. ii) Post-lingually Deaf: These persons were those who became profoundly deaf after the age of 5 - 10 years i.e. the development of speech and language.

3. Type of Loss: Hearing impairment can be of five types: such as i)

Conductive hearing loss: damage in the outer and middle ear. ii) Sensorineural hearing loss: impairment in the inner ear and nerve of hearing. iii) Mixed hearing loss : Combination of conductive and sensorineural. iv) Central auditory processing disorder (CAPD): v) Functional hearing loss (nonorganic) or Pseudohypacusis. Generally conductive hearing losses are treated with medical intervention whereas sensorineural hearing losses are primarily aided through audiologic rehabilitation. In case of sensorineural losses auditory speech recognition or hearing clarity is usually affected. This is also the case in difficult listening situations for those with central auditory processing problems.

4. Auditory Speech Recognition Abilities: The terms speech detection, speech discrimination or word discrimination, Speech recognition or identification and speech intelligibility are used with signal as the stimulus. It is the major goal to communicate with verbal language. The speech recognition ability in an individual who is hard of hearing typically is better than a person who is Deaf. Person who are deaf are generally considered unable to comprehend conversational speech with hearing alone whereas those who are hard of hearing can use their hearing to a significant extent for speech perception. But Ramsdell (1978) pointed out that however some minimal auditory recognition may be present in a person who are deaf even if verbal speech reception is limited; since a person may use hearing for alarming purposes or simply to maintain communication with the auditory environment. Nevertheless, auditory recognition ability and degree of hearing loss are somewhat independent.

50 In adult person, a mild degree of loss sometimes may be accompanied by very poor speech recognition. This is referred to as phonemic regression and is not usual in hearing losses among elderly persons who show some degree of central degeneration. Disparity in degree of loss and speech recognition ability is also possible in young persons with hearing impairment. For example, a child may be considered deaf in terms of sensitivity but not in terms of auditory recognition or educational placement. Some children with a degree of loss that classifies them as audiometrically deaf (PTA = 90+ dB) may have unexpectedly good speech recognition. Thus speech recognition also is an important variable in describing hearing loss.

5. Parental Involvement: The parents of the child with hearing impairment should understand the needs of the child and provide a normal happy environment in which they enjoy the activities and experiences of the hearing child. The needs for these children with hearing impairment are: i) Regular use of the hearing aid and importance of improving listening. ii) Effective speech and language stimulation. iii) Training of the other senses like vision and tactile to aid learning. Parents should help the child with hearing impairment to accept the hearing aid and taking care of it in terms of checking and maintenance. They can provide Role model to the child for speech and language stimulation and create an optimal listening environment and carrying out activities at home that will facilitate good listening habits. All the daily events which create sounds can be converted into listening activities. Parents provide the child various opportunities for language stimulation and make every daily routine activity into an interesting language learning experiences. Parents must speak to their child naturally and clearly. They can create every opportunity to present meaningful language to the child. Mother can talk on behalf of the child as well as herself. They can play, sing and dance with the child and encourage the child to talk and explain when he attempts to express himself. They can involve other siblings in various activities and play with noise making toys. Parents can give children opportunities for sorting, making various objects, feeling the objects and guessing them. These activities also provide ample opportunities to the child with hearing impairment to learn language auditorily for mainstreaming.

51 2.2 Objectives The primary objectives of Auditory Learning is - 1. to use their even minimal amounts of amplified residual hearing. 2. to listen to speech and learn to speak using their amplified residual hearing. 3. to grow up in regular learning and living environment through developing the ability to listen to and to use communication with their family and mainstream community. 4. to develop personality and emotional adjustment. 5. to open up vocational opportunity.

2.3 Concept of Auditory Listening: Unisensory and Multisensory approaches: 2.3.1 Human communication System: In prehistoric period human being used to vocalize or signing with his fingers or made marks on sand or caves to share their thoughts with others. With the evolution of the auditory system human being developed and refined their communication system. The structure of language is unique to the human beings although researchers have demonstrated that signed symbols and other visuals language forms can be taught to chimpanzees and believe that the beginnings of true language are evidence in these primates (Gardner and Garner, 1969; Premack and Premack, 1972; Savage- Rumbaugh et. al. 1980). Today we possess the most advanced communication system among all creatures of the universe because

we have developed the auditory system and vocal mechanism through which language is customarily learned and communicated.

The interdependence of the ear and speech is found in the direct relationship between the frequencies that make speech intelligible and differential sensitivity of the human ear which is most sensitive precisely at the frequencies of speech. The human baby appears to be born with "preexistent knowledge" of language - specialized neural structures in the brain that await auditory experience with language to trigger them into functioning. These structures which are termed as Language acquisition device (Chomsky, 1966) which is dependent on auditory stimulation for

52 their emergence provided all other factors are normal. The auditory linked acquisition of language is further unique to human beings because it is a time locked function related to early maturational periods in the child's life. The longer the auditory language stimulation is delayed, the less efficient will be the language

facility. The reason is that critical periods exist for the development of biologic functions and language is one of the biologic functions of humans (Chomsky 1966, Lenneberg 1967). If a child is deprived of language stimulation in his critical age period they will never attain his or her best potential language function due to hearing impairment or lack of language experience. Therefore, it is urgent to prevent the hearing problems of children with all skills and knowledge.

The prevention of hearing loss in children protects the right of children to their essential humanity which lies in optimal language function. 2.3.2 Communication Model: Generally the ability to communicate meaningfully has been considered a prime factor in differentiating humans from other forms of life. Human communication can take a variety of forms, involving the conveyance of various stimuli to one or more of our sensory modalities. The form of communication most often used to express oneself, oral communication, involves utilization of speech. This creates an extraordinary dependence on the sense of hearing in order to receive and perceive adequately the complex network of auditory stimuli which comprise speech. The sense of hearing, therefore, is crucial to the process of verbal communication. Most of the time we are dependent on our ability to receive and interpret auditory stimuli presented during oral communication, though a portion of the communication that normally takes place between individuals is nonverbal as gestures, sign, facial expression etc. Successful oral communication involves a number of key components that originate with a source or speaker who has both a purpose for communication and the ability to properly encode an articulate the thought to be conveyed. The actual thought to be expressed is termed as message which is made up of auditory stimuli organized in meaningful linguistic units. Visual cues are also provided by the speaker in conjunction with the production of the auditory message. An important component of the encoding process is the feedback mechanism, made up primarily of the auditory system of the speaker, which makes it possible to monitor and if need be, correct the accuracy of the intended message. The communication situation in which the message is conveyed is referred to as the environment. The final major component of the communication process is the receiver or listener who is charged with the responsibility of receiving and properly decoding and interpreting the speaker's intended thought.

53 The basic components of the oral communication process and their sequence are found in figure 1. All the major components are equally important in accomplishing the desired end- communication. Disruption or elimination of any one part may result in partial or complete failure of the communication process. Feedback Message (Auditory and visual) ENVIRONMENT Figure 1. A simple oral communication model. 2.3.3 Auditory Perception: Unisensory Approach Our ability to communicate verbally with others depends to a great extent on the quality of our auditory perception of the various segmental (individual speech sounds) and suprasegmental (stress, rate, rhythm, intonation) elements that comprise speech. Auditory perception of speech and nonspeech signal involves only one sensory system i.e. Hearing or auditory system. Therefore, it is called as unisensory (uni means single) approach of auditory perception. Perception of Non-speech Stimuli: In terms of signal processing the human auditory system has sophisticated perceptual capabilities though it is limited, to some extent, in terms of the signals it can process. Optimally, the normal human ear is capable of perceiving auditory signals comprising frequencies between about 20Hz and 20000Hz. Stimuli made up entirely of frequencies below and above these limits cannot be detected. Intensity limits vary as a function of the frequency of the auditory signal. The maximum range of intensity we are capable of processing occurs at 3000 - 4000 Hz. and varies from about 0-140 dB SPL. Signals with intensity less than 0 dB SPL are generally not perceived; in contrast, signals in excess of 140 dB SPL produce the sensation of pain rather than of hearing. In addition to the detection of acoustic signals, the human ear is also able to discriminate different stimuli on the basis of only minor differences in their acoustical properties. Source (speaker) Receiver (Listener)

54 Our ability to discriminate differences in auditory signals has based around three parameters of sound; namely, frequency, intensity and duration. Results of such investigations have revealed a complex interaction among these variables. Thus, our ability to discriminate changes in the frequency, intensity or duration of a signal is influenced by the magnitude of each of the other factors. Stevens and Davis (1938) estimated that the normal ear is capable of perceiving approximately 340,000 distinguishable tones within the audible range of hearing. This total number was based only on frequency and intensity variations of the stimuli and it suggests that our auditory system have amazing discrimination powers. Perception or Comprehension of Speech: The organization and production of the segmental and suprasegmental elements of speech into a meaningful oral message by the speaker and the accurate reception of this dynamic signal by the listener represent a highly complex, sophisticated process. However mere reception of the speech stimuli by a listener does not result in proper perception of the message. Speech perception implies understanding and comprehension and the reception of speech signals by the auditory mechanism is only a first step in its perception. In its most basic form, the perception or comprehension of speech may be thought of as involving a number of components. Among these are: DETECTION : This aspect of auditory perception involves experiencing the awareness of sound. Our ability to detect speech is influenced by our hearing acuity and the intensity level of the speech signal. DISCRIMINATION : Speech discrimination refers to the ability to distinguish among the individual speech stimuli (phonemes, syllable etc.) of our language. How accurately we perceive the individual elements of speech is relevance. IDENTIFICATION : The ability to identify or label what one has heard by repeating pointing to or writing a word or sentence. ATTENTION : A fundamental ingredient in the perception of speech relates to attending to or focusing on the speaker and the message being conveyed. The degree and quality of the listener's attention will influence how well speech is perceived. MEMORY : A key component in speech perception is the ability to retain or store verbal information for relatively brief periods or in some instances, extended lengths of time. Memory is also fundamental to other components of speech perception and enables us to combine individual speech units for the purpose of deriving meaning from an entire verbal message, rather than from each individual unit of the message.

55 CLOSURE: The speech elements which are received properly discriminated and retained for further processing must be brought together into a meaningful whole. This is a difficult task at best, but when we do not adequately receive all the contents of verbal message, as often occurs with a hearing loss, closure can still occur through a process when missing information is deduced by the listener on the basis of the available context. SPEECH PERCEPTION AND HEARING LOSS The persons with hearing impairment cannot perceive the speech signal as they are not able to receive and process the coded acoustical information of the speech signal like the person with normal hearing. The effects of different physical properties of speech, redundancy and constraints on speech perception have an effect on their perception of speech. Physical properties of Speech: Speech contains energy from roughly 50 - 10000 Hz and is normally presented at average intensity levels of around 45 dBHL; it is well within the sensitive range of the normal human ear. But person with hearing impairment cannot do so. No longer are the intensity and frequency ranges of the impaired ear always sufficient to provide total perception of the speech signal. One or both of these stimulus parameters may be limited such that it becomes difficult to hear specific speech sounds adequately for identification of speech sounds. For vowel perception, Owens, Benedict and Schubert 1971 studied that most persons with hearing impairment experiences only minimal difficulty. Specifically, they found that the vowel phonemes /e/ and /o/ were found to have the highest probability of error. Only when the degree of impairment is severe to profound does the perception of vowels become significantly altered (Erber, 1979). Consonant perception is more difficult for the person with hearing impairment. Owens (1978) found phonemes such as /s/, /p/, /k/, /d/, and /th/ to be among the most frequently misarticulated by adults with sensorineural hearing loss. He also found that they have more discrimination problem in phonemes in the final position of word than in the initial position. The most common errors in consonantal phonemes discrimination occur with the place of articulation feature (Boothroyd, 1978; Byers 1973, Owens 1978) followed by the manner of articulation. Errors in the perception of nasality and voice among consonants are generally far less frequent.

56 Regarding perception of consonants, Owens et al. (1972) examined the relationship between the configurations of the audiogram and the specific consonant perceptual errors made by a group of persons with hearing impairment. The /s/, /S/, /tS/ /dz/, /t/ and /th/ in the initial position only were found to be difficult for listeners with slopping audiogram configurations. The authors also noted that these phonemes became increasingly difficult to hear accurately as the steepness of the slopping high frequency hearing loss increased. Correct recognition of /s/ and the initial /t/ and /th/ were found to be closely related to hearing sensitivity above 2000Hz whereas perception of /s/, /ts/ and /dz/ was very dependent on sensitivity between 1000Hz and 2000Hz. These findings point out the crucial role of hearing sensitivity in these frequency region plays in the perception of several consonant phonemes. Authors pointed out that these information concerning phoneme errors is useful in establishing audiologic rehabilitation strategies for persons with hearing losses of this type.

Redundancy and Noise: The perception of speech is a highly complex process that involves more than the acoustics of speech or the hearing abilities of the listeners, even though these are important variables. For oral communication to be successful, sufficient information must be present in the message of interest for it to be perceived. The amount of information available for a given communication situation is closely associated with the concepts of redundancy and noise. The degree of redundancy in oral communication varies from one expression to the next, so the extent to which a listener can predict what was said will also vary. Basically, the more redundant a message, the more readily it can be perceived by the listener, especially in difficult listening situations. A number of factors present in a given communication situation can influence the amount of redundancy. Among the many factors associated with the redundancy or predictability found in conversational speech for the listeners to use for perception are structural, semantic and situational constraints. Structural constraints relate to the predictable manner in which linguistic units are chained together according to the rules associated with a particular Language. The selection and use of phonemes and words in an utterance are strongly influenced by these rules, making it easier for the listener to predict what is to follow after having heard only the initial portion of the sentence. Such syntactic clues can be used in conjunction with another factor related to redundancy, namely semantic constraints to be used based on the general semantic content of the expression. When the topic of conversation is food, for example, the listener can expect to hear a rather restricted range of vocabulary peculiar to that particular topic. Use of this small range

57 of words will increase the redundancy in what is said. Situational constraints also create redundancy. Our conversational partner, the location of the conversation, the time of the day it takes place and other similar factors all influence what we say and how we say it, which can make conversational speech somewhat predictable. All of these types of constraints, along with other factors collectively produce the redundancy that makes the perception of speech easier for us all. Noise in oral communication refers to a host of factors that can actually reduce the amount of information present for the listener to use. In this context, "noise" refers to a variety of variables that can be counterproductive to communication, not just competing auditory noise associated with oral communication with which the listener must contend. Each of these factors may reduce the amount of information in a spoken message, thus reducing the amount of redundancy or predictability which is available for the listener to use in perceiving speech. Thus the degree of information available for the listener to use in perceiving a message is influenced in a positive or negative manner by a number of related variables that are part of oral communication. For the listener, particularly one with hearing impairment, the importance of each of these variables to the process of speech perception cannot be overstated.

2.3.4 Visual Stimuli in Communication: During conversation we tend to rely primarily on our hearing to receive and subsequently comprehend the message being conveyed. In addition, given the opportunity, we look at the speaker in order to obtain further information related to the topic of conversation. The speaker's mouth movements, facial expressions and hand gestures as well as various aspects of the physical environment in which the communication takes place, are potential sources of useful information. Humans beings learn to use their vision for communication to some extent, even though most of us enjoy the benefits of normal hearing and find it unnecessary in most situations to depend on vision to communicate effectively. The person with hearing impairment on the other hand is much more dependent on visual cues for communication. The degree to which persons with hearing impairment need visual information when conversing is proportional to the amount of information that is lost due to hearing impairment. In other words, a person with a severe hearing loss is likely to be more dependent on visual information to communicate than an individual with a mild auditory impairment.

58 Visual information may be transmitted by means of a manual or an oral communication system. In oral communication, the listener uses visual cues by observing the speaker's mouth, facial expressions, and hand movements to help perceive what is being said. This process is referred to as many terms, such as lip reading, visual hearing, visual communication, visual listening and Speech reading. These terms seem to imply the use of only visual cues for purpose of identifying various articulatory gestures. However, since the use of vision for communication involves more than watching the speaker's mouth, it is preferably called as Speech Reading which is called by the lay person as Lip reading. When the speech reader uses tactile cues for speech perception by placing the fingers and hand on the speaker's lips, face and neck, it is termed as TADOMA. This method has proven successful with some individuals with both deaf and blindness (Reed, et al., 1985). Manual communication or "Sign Language" also depends on a visual system. Manual communication is transmitted via special signs or a symbol made with the hands and is received visually. This complex form of communication allows for transfer of information via the visual when both the sender and the receiver are familiar with the same system of symbols.

2.3.5 Multisensory Approach of Speech Perception: Apart from hearing sensitivity, some parts of speech can be perceived by other sense organ like vision and tactile. Multisensory means inclusion of more than one sense organ. Therefore the approach which includes other sense organ for perception of speech is termed as Multisensory approach. It can be included in the second major classification of oral methods named as auditory-visual-oral (AVO) methods. In AVO programs emphasis remains on auditory stimulation, with the addition of training in lipreading and presentation of language in print, either through natural approaches or structural approaches. Some individuals categorized Finger spelling under multisensory oral approaches. The use of finger spelling has been incorporated into many different names including Visible speech and Rochester method.

2.4 Auditory Training: Importance, Types and Stages The major component of the audiologic rehabilitation process has been considered as Auditory training which is actually a systematic training of the residual hearing for the improvement of auditory abilities of the person with hearing impairment.

59 Definition:

Numerous attempts have been made to define auditory training in the past.

The most commonly referred to definition of Auditory training is attributed to Carhart (1960).

According to him Auditory training refers to the process in which hearing impaired persons learn to take full advantage of sound clues still available to him. According to McCarthy and Alpiner (1982) Auditory training can be defined in terms of three (3) activities: i) Learning to recognize auditorily those speech sounds which are incorrectly discriminated. ii) Improving adjustment to learning aid fitting. iii) Recommendation for strategies or assistive devices to resolve the client's specific situational communication problem. Erber (1982) described Auditory training

as

the creation of spectral communication conditions in which teachers and audiologist help the children with hearing impairment

acquire many of the auditory perception abilities that normally hearing children acquire naturally without professional intervention. 2.4.1 Importance of Auditory Training;

The primary goal of Auditory training is usually to maximize receptive communication ability by using audition. Achieving this basic goal can result in other important achievements; i. It improves listening skills of the persons with hearing impairment. ii. Learning to maximize the use of auditory and other related clues available for the perception of speech. iii. Adjustment, acceptance and orientation to facilitate the optimum use of amplification such as hearing aids, cochlear implant and tactile devices. iv. It creates better understanding of the spoken language and improves Speech and Language and communication skills with better clarity. v. Increase tolerance for loud speech and environmental sounds. vi. The training creates Educational and vocational advancement vii. Successful psychosocial coupling and orientation to the hearing world. viii. To improve dynamic range of hearing.

60 2.4.2 Different approaches of Auditory training: The earliest efforts in Auditory training date back to the 18th century. Throughout the 1800s, European used auditory training with the persons with hearing impairment and noted success in some cases. Influenced with their achievements Goldstein (1939) introduced the Acoustic method which is centered around systematic stimulation with individual speech sounds, syllables, words and sentences to improve speech perception and to aid deaf persons in their own speech production. Early applications of auditory training were directed almost exclusively toward children with severe to profound hearing loss in a deaf education setting. In recent times, however use of auditory training has been expanded to include those with less severe impairments, as well as the inclusion of auditory training activities in the rehabilitative management of the hard-of-hearing adults and children. With the improvements of hearing aids and cochlear implants, growth in the use of auditory training increased following World War II and the interest shown by Audiologists in maximizing the use of residual hearing in persons with varying degree of hearing loss as a part of the audiologic rehabilitation process. Therefore all approaches can be divided into two categories: I. Traditional Auditory training Methods: Wedenberg Methods: Wedenberg (1951) described a systematic process of auditory training which serves to exploit whatever residual hearing a child possesses. This approach is a unisensory approach as

speech reading does not consciously emphasized until the child developed a proper listening attitude.

The preliminary efforts in this auditory training program were therefore

directed towards increasing the child's attention to both environmental and speech sounds

at an early stage. Wedenberg introduced 'ad concham amplification' - which involves

speaking directly into the child's ear at a close range rather than having the child use

a hearing aid. This type training also included exercises which helped the child with hearing impairment

become aware of and attend to sound at increasing distances. Vowels and voiced consonants whose formants were thought to be within the hearing impaired child's audible range were presented in

isolation.

Syllables were used in a variety of formal therapeutic activities, as well as informal settings at home. Combining individual vowels and consonants learned in isolation resulted in perception of a limited number of words. At this point, Wedenberg advocated part time use of hearing aid. Later, training progressed to short sentences formed by words already recognized by the child acoustically. Here speech reading could be

utilized by the child to supplement the information derived through the auditory channel. Wedenberg's method, then was directed toward development of auditory, speech

61 and language skills in children with either a congenital or prelingual hearing loss of severe to profound

proportions. In these respect it was similar to other auditory training methods proposed by Goldstein(1939), Whietehurst (1966), Watson (1961) and others. However his emphasis on management of the deaf child made Wedenberg's rehabilitative methods unique. Until World War II, the primary focus of auditory training was its use with severely / profoundly deaf children in effort to facilitate speech and language acquisition and increase their educational potential. Carhart Auditory Training Programme Raymond Carhart (1960) was among the earlier audiologist to develop auditory training for both children and adults and continued to expand auditory training after world war II. Carhart made one of the first extensive attempts to describe the role of auditory training in audiologic rehabilitation. His auditory training program is based on the belief that in case of pre-or perilingually hearing impaired children, since listening skills are normally learned in early life, the child may not move through the normal developmental steps important in acquiring these skills. In case of adults, when a hearing loss occurs, the auditory skills may become impaired even though they were intact prior to onset of hearing.

CHILDHOOD PROCEDURE: Carhart viewed auditory training for children as an aid in: - Developing a command of language. - Instructing the child to speak. - Encouraging better adjustment to the hearing world. Carhart auditory training outline for children consisted of four major stages of development. Stage 1. Development of Awareness of sound. Stage 2. Development of Gross sound discrimination Stage 3. Development of broad discrimination among simple speech patterns. Stage 4. Development of finer discrimination for speech. Stage 1. Awareness of Sound: The major goal of this stage is to recognize the presence of sound and attending to it with its importance in the child's world. The

62 child's attention is focused on loud sounds which he is likely to encounter in everyday situations. Stage 2. Gross sound Discrimination: This stage involves demonstrating with various noise makers that sounds differ. The main aim is to differentiate auditory signals that grossly differ produced by noise makers like bells, drum, tumbler, cymbals, horns, whistles etc. Special attention is given to developing the child's ability to perceive finer types of discrimination task that include variation infrequency, intensity, duration and sound composition of stimuli used. Stage 3. Broad Discrimination among simple speech pattern: The child moves to this stage only when he has demonstrated skill in recognizing the presence of sound and perceiving gross differences between environmental signals (non verbal stimuli). Here the activities are directed towards learning gross discrimination from speech signals. The child is trained to distinguish differences between vowel sounds with grossly dissimilar phonetic elements (i.e. /u/ vs /i/) and between short phrases which are closely related to everyday experiences such as "wave bye- bye" and "where's mommy?" Stage 4. Fine discrimination of Speech: This is the final stage which focuses on repeated drills which train the child to recognize subtle differences between similar vowels and consonant sounds as well as integrating his expanding vocabulary to permit quick and accurate understanding of speech.

ADULT PROCEDURES: As the adult person with hearing loss retains a portion of their original auditory skills, Carhart recommended that auditory training with adult focus on re-educating a skill diminished as a consequence of the hearing impairment.

Initially, Carhart felt that it was important to establish "an attitude of critical listening" in the individual. This involves being attentive to the subtle differences among sounds and can involve a considerable amount of

drill work on the perception of phonemes that are difficult for the adult with hearing impairment to perceive. List

of matched syllables or words which contain the troublesome phonemes, such as 'she'- 'fee', 'so'- 'tho', 'met' - 'let' or 'mash' - 'math' are read to the individual, who repeats them back.

Such training should also include phrases and sentences with the goal of developing as rapid and precise a recognition of the phonetic elements as is possible within the limitations imposed by the person's hearing loss. Speech reading combined with a person's hearing was also encouraged by Carhart during a portion of the auditory training sessions.

63 Carhart recommended auditory training sessions for adult should be conducted in three situations as follows: i) Relatively intense background noise. ii) The presence of a competing speech signal iii) Listening on telephone. According to Carhart the use of hearing aids is vital in auditory training and he recommended that they be utilized as early as possible in the

auditory training programme. ERBER (1982) APPROACH: A flexible and widely used approach to auditory training was designed and described by Erber primarily for use with children. This adaptive method is based on a careful analysis of

a child's auditory perceptual abilities which takes into account two major factors: 1. The complexity of the speech stimuli to be perceived (ranging from individual speech elements to connected discourse) and 2. The form of response required from the child i.e. i) Detection of sound, ii) Discrimination of sound, iii) Identification of sound and iv) Comprehension of sound.

Once the child's auditory capabilities are determined, an auditory training program is outlined by establishing goals and beginning points for therapy.

Erber also described three general styles which the clinician may use during auditory training, depending on the communication setting. 1.

Natural conversational Approach: This approach describes as I.

The teacher eliminates visible cues and speaks to the child in as natural a way as possible, while considering the general situational context and ongoing classroom activity. II. The auditory speech perception task may be chosen from any cell in the stimulus response matrix, for example sentence comprehension.

64 III. The teacher adapts to the child's responses by presenting remedial auditory task in a systematic manner derived from any cell in the matrix. 2. Moderately structured Approach: I. The teacher applies a closed set auditory identification tasks, but follows this activity with some basic speech development procedures and a related comprehension task. Thus the method retains a degree of flexibility. II. The teacher selects the nature and content of words and sentences on the basis of recent class activities. IV. A few neighboring cells in the stimulus response matrix are involved (for example, word and sentence identification and sentence comprehension) 3. Practice on specific tasks: I. The teacher selects the set of acoustic speech stimuli and also the child's range of responses, prepares relevant materials, and plans the development of the task- all according to the child's specific needs for auditory practice. II. Attention is directed to a particular listening skill, usually represented by a single cell in the stimulus response matrix (for example phrase discrimination).

Recent Approaches to Auditory Training The basic intent of auditory training is to maximize the communication potential by developing to it's fullest the auditory channel of the person with hearing impairment.

The current approaches to auditory training vary considerably. According to Blamey and Alcantara (1994) it is possible to categorize them into four general categories, based on the fundamental strategy stressed in therapy. ANALYTIC

APPROACH: This approach attempts to break speech into smaller components like phoneme, syllable and word and incorporates these separately into auditory training exercises. 1. SYNTHETIC APPROACH: It emphasizes a more global approach to speech perception, stressing the use of clues derived from the syntax and context of a spoken message to derive understanding. Training synthetically involves the use of meaningful stimuli (words, phrases and sentences). 2.

PRAGMATIC APPROACH: It involves training the listeners to control communication variables such as the level of speech, the signal to noise ratio and the context or complexity of the message in order to obtain the necessary information via audition for understanding to occur.

65 3. ECLECTIC APPROACH: It includes

training that combines most or all of the strategies previously described. Any auditory training programme must have analytic, Synthetic or pragmatic

tendency which can be learnt

described as eclectic since more than one general strategy for the training of the hearing channel

typically is used with a given child or adult. Individual

and Group Auditory Training Auditory training conducted with a single person with hearing impairment is called as Individual auditory training and the training session conducted with more than one person or in a group with common problems is termed as Group Auditory training. There is some advantages and disadvantages of both individual and group auditory training. Oyer (1966) has cited many advantages and disadvantages of individual therapy Advantages of Individual Auditory Training : 1. Audiologists have more time with the client for repeated trials. 2. They have better situations in which to discuss adjustment problems. 3. Here a close personal contact between the hearing therapist and the hearing impaired child exist. 4. The therapist can give the child personal attention for long period of time. 5. It is easier to plan auditory training session's materials and activities. 6. Surrounding environment will be quiet and relatively free of distractions. 7. Easy to attract and maintain one child's attention as he is within arm's length. 8. Signal to noise ratio is improved. 9. It allows the teacher to maintain objects. 10. It may possible to solve perplexing auditory problems that otherwise might take weeks to diagnose and or resolve. Disadvantages of Individual Auditory Training: as Oyer cited as: 1. Lack of peer evaluation. 2. No psychological support from peers. 3. No opportunities to compare and contrast individual efforts with others.

66 4. No opportunity to perform socially in a practice environment. 5. Expensive way to teach for long periods of time to an individual. 6. It is exhaustive for both teacher and the child. 7. In this set up fearful children have problems. Advantages of Group Training; 1. In a Group Auditory training sessions child with hearing impairment learns- i) Sense of cooperation. ii) The importance of keeping quiet while someone else is listening, iii) How to behave socially during an interactive group conversation. 2. Here children with impairment can help one another, by offering suggestions, prompts, strategies or encouragement that might not be as motivating if providing by the teacher also. 3. It can simply an interactive teaching in some situations, during a breakdown in communication, the teacher may have more options, such as requesting a responsive from another child if persistent difficulty occurs. 4. Shy persons improve their personality in this system. Disadvantages of Group Auditory Training: i) In a group auditory training the homogeneity of the group is questionable. The children with hearing impairment differ in their degree of impairment, type of hearing loss, Age of onset, presence of other disorders , parental cooperation etc. Therefore, if a group is not homogeneous, a child's performance can be influenced by another child's activity. ii) Individual attention cannot be given in this type of training session. 2.4.3 Stages of Auditory Training Hirsch (1966), Ling (1976) and Erber (1982) promoted step by step Traditional approach. The stages of the auditory training is described below 1.

Awareness or Detection of Sound : It is the basic process of determining whether the sound is present or absent.

Child can be taught to associate the sound and its source. It helps to remain in contact with the surrounding acoustic world.

67

Administration Procedure: The child should be

instructed to raise the hand when a sound is heard or keep a peg on the ear and put it in a box. The child can be given practice for doing this with the teacher sitting in front of the child

at a distance of 3feet. Each sound should be given at conversational level and with mouth covering position. Visual clue may be provided. If the child is unable to hear the sound from 3 feet distance, present the sound from near the child's ear. If the child hears all the 6 sound from 3 feet go to a distance of 5feet and administrate the sound. Note the result of each case. 2. Discrimination of Sound: In the second stage of auditory training the children with hearing impairment have to perceive the difference between sounds in terms of acoustic qualities, intensities and duration. Administration

procedure: By presenting two or three sounds one after another and the child has to say whether they are 'same' or 'different'. Begin with the

sounds that are very different from each other and then go step by step to sounds which differ more finely from each other. 3.

Identification of Sound: This stage involves labeling or naming of what has been heard. Identifying a sound by pointing to the sound, pointing to a picture associated to the sound, pointing to a written word or sentence or repeating whatever is heard. Identification of speech stimuli is related to the child's developing awareness that objects have names and these names have acoustic representations.

Administration Procedure: Child has

to indicate which sound he/she heard. This could be done by getting the child to point out to the sound written on paper or by repeating it if

the child can say all sounds.

68 If the child has not yet learned to read, toys or pictures depicting the sounds can be used as: - A train sound for the sound / u/. - A baby doll crying for / a /. - A car for the sound / i /. - An aeroplane for / m /. - A snake for / s / sound. - A pressure cooker sound for / S / sound. 4.

Comprehension of Sound: It is the final stage of auditory training which involves understanding the 'meaning'. It depends on language skills. It implies that the child can acquire new information through hearing and can act appropriately on that basis.

This programme incorporates 'speech' as a stimulus. All the children may not reach the 'comprehension' level but the teacher should train their residual hearing allows. Administration procedure: Activities can be Picture description.

Following directions: use any activity where the child must follow instructions. E.g. Drawing two cows sitting under tree.

Conversation: Engage the child with conversation relevant to the topic. Story with comprehension questions: Tell the child a story and then ask questions about the story. 2.5 Auditory Verbal Therapy Auditory verbal therapy is the

application of techniques, strategies, conditions and procedures which help in the acquisition of spoken language through major focus on listening to the children with hearing impairment. It is a way of guiding parents to teach their children with hearing impairment to develop spoken language by stimulating their residual hearing. The Auditory verbal approach helps children with hearing impairment learn to listen. Their speech and language skills are allowed to develop in a natural way following normal developmental stages. "The goal of auditory-verbal practice is that children

69 who are deaf or hard of

hearing can grow up in regular learning and living environments

enabling them to become independent, participating, and contributing citizens in mainstream society." (

from Auditory Verbal International, Inc, 1987 : position statement) 2.5.1 Principles: The main principles of the Auditory verbal therapy is

as follows Use of one sensory channel i.e. Auditory ONLY (No lip reading). Detection of hearing impairment as early as possible. To ensure that medical and audiological management is thoroughly completed, including selection, modification and use and maintenance of appropriate hearing aid / Cochlear implant. To support children's auditory verbal development through One to One therapy. Family involvement must be present as they are the primary models for spoken language. To wear the aid ALL DAY EVERY DAY. Using natural sequential patterns of listening, speaking, spoken language and cognition to stimulate natural communication.

To help children integrate listening into their development of communication and social skills.

The ultimate goal is a well adjusted person who uses listening and speaking to successfully interact with other at home and school in the community and in the world. Ongoing evaluation of progress to ensure that the Auditory Verbal Approach is appropriate

and through diagnostic intervention, modify the programme when needed.

To

help those children monitor their own voices and the voices of others in order to enhance the intelligibility of their spoken language. To provide support services to facilitate the children's Inclusion or integration into regular education classes. 2.5.2 Importance of Auditory Verbal Therapy Auditory Verbal Therapy encourages the maximum use of hearing in

order to learn language and stresses listening rather than matching. Young children with hearing

70 impairment even with minimal amounts of amplified residual hearing can be taught to use. In this kind of therapy, children with hearing impairment can grow up in regular and learning environment. Stages of Auditory development : - Sound Awareness Association of Meaning to Sound Imitation and Expansion. Comprehension: Effective Responses to Language.

2.5.3 Role of a Teacher A teacher of a child with hearing impairment is also a team member of the intervention process with Auditory verbal therapy method. Next to the parents a child with hearing impairment spends most of the time with his / her teacher. The special teacher may guide his/her student at the classroom, in their home or in different extracurricular activities. In Auditory Verbal therapy method the child has to listen with his amplification device and speak what he learns. Therefore, the teacher should follow the aural oral method of communication in the classroom and follows the principles of oralism during his / her class. In the beginning of the classes the teacher should check the individual or the group hearing aid or the implant as the aid functions properly for the child. If there is problem in the aid he/ she should immediately refer them to the audiologist. The teacher should follow the recommendation of the audiologist or Speech Language pathologist for communication i.e. the teacher's advice will be always verbal. Not a single nonverbal cue will be given to child for their understanding. As such they should also counsel the parents as to communicate with the child verbally only. The teacher also guides the student's friends and peer group to talk orally among themselves. The teacher may follow the following activities of the auditory verbal therapy in the classroom: - At first presentation of auditory stimulus. - Auditory attention: signal "listen" - Provide uncluttered listening space

71 - Acoustic highlighting - Use visual clarifiers - Speak slowly - Allow processing time Those children with hearing impairment follow the instruction of the teacher, they can learn verbal language and can include in the mainstream society.

2.6 Auditory Training and Auditory Verbal Therapy The basic principle of the Auditory Training and the Auditory Verbal therapy is same. As the child with hearing impairment must have to learn to listen auditorily and to speak orally only. In both training sessions the use of amplification devise is must.

2.6.1 Prerequisites For success in Auditory training and Auditory verbal therapy the child with hearing impairment must have the following prerequisites.

1. Early Identification: Early detection of hearing loss and early intervention of the disorder is must for Auditory training and auditory verbal therapy for the use of critical age period.
2. Proper Amplification Device: The child should use the proper hearing aid and or any other amplification device like cochlear Implant.
3. Adequate residual hearing: The child will learn to listen and speak through maximizing their residual hearing with amplification technology.
4. Parental cooperation: Parent participation is vital to the success of Auditory- Verbal Therapy for two reasons: parents are the natural teachers of their child's language and the parents are always with their child so can be constantly encouraging language development.
5. Proper Audiological management- There should be good coordination among professionals of the Rehabilitation team with skilful therapist and parents.
6. Child's Intelligence and learning style.
7. Listening to speak: The child learns to speak through listening to natural sounding speech. Correct spoken models of language are crucial to teaching the child to monitor his/her vocalizations. Visual cues are not encouraged.

72 8. Assessment: Monitoring and evaluating the development of listening skills as an integral part of the development process. 9. Integration result: Appropriate amplification and Auditory-Verbal Therapy enables children with a hearing loss to develop auditory receptive skills (understanding language) in the short term that will translate via medium outcomes, such as attending mainstream school, into greater social independence and quality of life. 10. Presence of other prerequisites of normal speech and language development like i) Neuromotor Maturation, ii) Sensory Perceptual ability, iii) Physical and Emotional development, iv) Cognitive development and v) Communicative environment. 2.6.2

Challenges It is a huge challenge for the Rehabilitation professionals to have success in auditory training and Auditory verbal Therapy for the children with hearing impairment. There are many factors or challenges which play role in its success. i. Aspects related to Early Identification and Intervention: Those children with hearing impairment identified and fitted with hearing aid before the age of 6th month perform better in auditory training and Auditory verbal therapeutic task than those who are intervened after their 6th month of age. If intervened early they can utilise almost full critical age period like normal hearing children and can achieve the normal speech and language if the other factors play positive role to them. ii. Factors related to Degree of hearing loss: The amount of residual hearing is a factor for achievement in auditory training and auditory verbal therapy. The more the hearing loss, the more the problem to have normal speech through auditory training and auditory verbal therapy. iii. Use of Amplification device: The better use of amplification device, the better will be the prognosis of verbal development of the children with hearing impairment. Using binaural digitally programmable hearing aid is a better option than the analog hearing aid. Hearing impaired child with cochlear implant also has better performance than the children fitted with hearing aid. iv. Motivation: It includes motivation of teachers, parents and the child too. As without motivation the teacher could not be able to train the child with hearing impairment for auditory training and auditory verbal therapy. Teacher should motivate parents to play active part in the training process.

73 v. Cooperation between the teacher and the Parents or the caregiver: parents must follow the advice of the teacher for the training or therapy and practice the skill at home with the child. There should be a healthy cooperation between the child and the parent for positive development of speech and language. vi. Opportunity to practice and use learned skills: When a new skill is taught, it should be practiced before the skill can become generalised. In order to do this, the teacher and parents should create situations in which a newly learned skill can be practiced. Practice sessions should be distributed throughout the day so that the child does not get fatigued. vii. Establishment of Proper habit: The child must be taught to pay careful attention to sound. It is a great challenge for the audiologist to establish proper habit to attend to all sounds of the environment and act accordingly. viii. Methods used by the teacher: Approach of training and the therapy should be appropriate for the level and expectation of the child. Within therapy session use of games and activities may interest the child. ix. Health and emotional state of the child: Before fitting of the aid or cochlear implant the health and emotional state of the child should be checked and then the prosthesis can be fitted and auditory verbal therapy can begin. 2.6.3 Similarities

and Differences
Auditory training as a set of procedures aimed at helping the aurally handicapped become more proficient in attending to the sounds of speech, discriminating one from the another and effecting an increase in retention of sounds (Kelly 1953).

According to Alpiner 1978,
Auditory training consists of three facets: i) Discrimination of individual speech sounds ii) Hearing aid Orientation. iii) Improvement of tolerance levels.

Whereas

Auditory-verbal therapy is a method for teaching deaf children to listen and speak using their residual hearing in addition to the constant use of amplification devices such as hearing aids, FM devices, and cochlear implants. Auditory-verbal therapy emphasizes speech and listening.

Auditory verbal therapy enables deaf and hard of hearing children to participate fully in mainstream school and hearing society.

74 It is apparent that there are no differences between Auditory Verbal Therapy and Auditory training, however if we really understand the principles of both training there is a considerable differences between the two. Similarities Both of these approaches have the following factors in common: i) They aim to assist the hearing impaired child to communicate with their peers using spoken language. ii) For either of these approaches to be successful, early identification of the hearing problem is essential. iii) Once the problem is identified, therapy should begin as soon as possible. iv) Hearing aids or cochlear implants are used to enhance residual hearing ability. v) Both aim to develop spoken language as the most desirable means of living and learning in society at large. vi) Both of the approaches exclude sign language. vii)

Both employ current technology and follow a number of similar clinical and educational

programme. Differences There are, however significant differences in those approaches. i) In the auditory-verbal approach, much of

the focus is on speaking and sound production. The teacher uses different types of 'modeling' to show the child how to speak correctly.

For example, a teacher may use the highlighting model to correct partially incorrect words or an Expansion model that fits in the gaps when a child skips a word or phrase.. But in the auditory-Training programme, the focus on listening is much more important. ii) In the auditory verbal therapy, the family is intimately involved in the learning process, and at least one parent must attend therapy sessions so that they can learn how to continue the learning process at home. In this approach, the parent becomes the teacher. In the auditory training programme Audiologist guide the child and the parent how to listen, discriminate, identified and comprehend all the sounds of the environment.

75 iii) Acoustic conditions of the home are very favorable to Auditory verbal therapy. In auditory training ambient noise level should be less than speech signals because ambient noise degrades speech signal. .

A clear speech is essential to learning. iv) Auditory verbal therapy involves children in abundant intervention with normal hearing peers,

but in auditory training it is not essentials. v)

Auditory verbal practice is to seek admission to regular school from the earliest possible stage.

In auditory training child is trained to comprehend speech and other signals from the environment not only for trying to include or integrate in normal school but also to receive the alarming noise from the environment. 2.7 Speech Reading

2.7.1 Concept Jacob's (1982) defines Speech Reading as 'a visual oral-language communication skills that enables a person to obtain linguistic information by watching the sequential, articulatory movements of a speaker's lips, jaws, adjacent facial musculature and facial expressions. According to Nitchie Speech reading is the act of understanding a speaker's thought by watching the movements of his mouth. There is a difference of speech reading from lip reading. Lip reading refers to the more analytical visual distinctive feature recognition process i.e. perception of visemes. While speech reading encompasses all of the other processes necessary to comprehend the spoken language. 2.7.2

Importance Speech reading or Lip reading can be called as a silent mode of verbal communication. The purpose of Lip reading is to provide visual cues to aid in the perception of speech. Not only have the deaf persons, person with normal hearing also communicated with lip reading. Sometimes we try to take some verbal information from a distant person through speech reading and sometimes we hide the oral movements of speech for not to give secrete information to unwanted persons. For the persons with hearing impairment Speech reading can be included in their total communication approach. As the deaf person get some verbal information through speech and some through speech reading. The degree to which persons with hearing impairment depend on vision for information is related to the extent of their hearing loss. According to Ross (1982), there is a world of difference between the persons who are deaf, who

76 must communicate through visual mode i.e. speech reading and persons who are hard of hearing, who communicate 'primarily' through an auditory mode. There is some evidence to suggest the visual recognition of consonants can be improved with a concentrated programme of lip reading instruction (Walden, Prosek, Montgomery, Scherr, and Jones, 1977). The development of these skills, however, can often be discouraging for the hearing impaired adult. The expectations of a client are usually unrealistically high when they first attend aural rehabilitation sessions. Discovering that the majority of English sounds are not visible is often enough to discourage or dishearten even the most enthusiastic client. This emphasizes the need for educating individuals regarding the limitations of using lip reading as a substitute for auditory information from the onset of the rehabilitative sessions. Even though persons with cochlear implant recognize some speech auditorily, the cochlear implant's most important role remains that of speech reading enhancement. Most cochlear implant persons recognize significantly more speech in a vision plus audition condition than an audition only condition. Speech reading training helps the patient relate the electrical signal to the corresponding visible articulatory behaviour.

2.7.3 Prerequisites

The Prerequisites that affect Speech reading process usually fall into five general areas as related to the Speaker, Speech reader, Environment, the Signal or Code, and other factors.

- a. **SPEAKER**
 1. **Familiarity of the Speaker:** A positive correlation was shown to exist between speaker - listener familiarity over 80 years ago (Day et al. 1928). Speech reading performance will be good when the speaker is familiar to the speech reader.
 2. **Facial expression, Gestures and Physical position:** Facial expression gives the cues about the context and situations. Speakers who used appropriate facial expression, common gesture and who positioned themselves face to face or within a 45 degree angle of the listener facilitated communication for speech reading (Stone, Berger 1972, 1957).
 3. **Articulation or Lip movement:** Speakers who were precise and not exaggerated articulation are the easiest for the speech reader to understand the message (Davis et al. 1972).

4. **Rate of Speech:** If the speaker's normal speaking rate exceed or reduced, the listener's visual reception capabilities or exaggerate speech production then it hampers comprehension.
5. **Distraction:** The speaker should avoid simultaneous oral activities such as chewing, smiling, yawning, sneezing etc. while convening with a hearing impaired person. The 'making effect' of these coincidental activities may complicate the speech reading task.
6. **Gender:** Berger (1977) suggested that male speech readers sometimes find difficulty with female speaker and vice versa. Gender related variables such as moustaches or the use of lipstick may influence speech reading process.
7. **Extent of Image:** Impression or the image of the speaker on the speech reader also plays an important role in speech reading.
8. **Associated Body movements:** Nitchie (1972) suggested that speech reading will be more productive where the speech reader can observe appropriate nonverbal communication modes like head and body movements of the speaker.
9. **Language spoken:** Familiarity of language is an independent variable that influences the interpretation of visual cues. Language spoken by the speaker should be common or familiar to the speech reader.
10. **Others like suprasegmental aspects of speech, speakers presentation and style etc. may influence speech reading.**

B. SPEECH READER

1. **Hearing capacity:** Persons with significant amount of residual hearing have the potential to speech more successfully than those with very limited hearing due to availability of auditory cues contained in speech. Other factors like auditory perception abilities, age of onset of hearing loss, progressively, site of lesion etc. may influence speech reading.
2. **Age and Language skills:** Speech reading proficiency tends to develop and improve throughout childhood and early adulthood and appears to be closely associated with the emergence of language skills (Berger et al. 1978). Even though the speech reading abilities are not fully developed in younger children, they may use speech reading to some extent even infants also. Other individuals do less speech reading than their counterparts who are between the age ranges of 21 to 30, may be due to decreased visual acuity with aging.

78 3. Intelligence: Much reduced intelligence level may result in poor speech reading performance (Smith et. al.1964) 4. Personality traits: Highly motivated clients tend to speech read more effectively than to unmotivated clients. 5. Visual performance proficiency: a) Visual acuity: Even slight visual acuity problem had an appreciable negative effect on speech reading scores. Visual acuity must be at least 20 / 30 to enable the speech reader to see the five sequential articulatory movements of speech. b) Visual problem: Like color blindness may affect speech reading through "Eye glass speech reading aid". c) Visual Memory: The speech reader must follow the following sequential pattern for visual memory. i) Perception of the articulatory patterns from the speaker's mouth and jaw movements, ii) Retention of the patterns sequentially in short term memory. iii) Coding into linguistic units by using inner language coding system. iv) Synthesize the information in permanent memory for final message identification. v) Match with information in permanent memory for final message identification. d. Visual perception of consonant and vowels: The visual perception of place of articulation of consonants, vowels and diphthongs is very important to speech reading. 6. Synthetic ability of the Speech Reader: Perceptual closure i.e the ability to identifying the patterns of speech and the conceptual closure i.e the ability to identify the message are the two synthetic abilities which requires speech reading. 7. Flexibility and Emotional attitude: It includes cooperation of parents, educational and therapeutic management etc. 8. Type of Intervention: Speech reading performance improves with cochlear implant / tactile devices as compared to conventional hearing aid or without hearing aid. 9. Motivation: Better speech reading skill was found among children who reported a positive attitude towards speech and speech reading by their parents and deaf peers. Interest and motivation should strengthen speech reading and overall communication skills.

79 C. ENVIRONMENT: 1. Distance and viewing angle: Speech reading ability is optimal when the speaker is about 5 feet distance from the speech reader with face to face conversational situation. For most speech readers, watching the speaker at horizontal viewing angle of 0-45 degree is preferable. 2. Competition: simultaneous auditory and visual competition can have an adverse effect on speech reading under certain condition. 3. Light and Illumination: For most optimal speech reading, light and illumination should provide a contrast between the background and the speaker's face. 4. Cues: Speech reading ability increases when the speech is accompanied by pictorial, auditory, contextual, situational and environmental clues. 5. Coping up with the situation: The speech reader's ability to visually scan and cope up the situation and understand the speaker's role will provide an attention which is set for social or formal communication. 6. Auditory distractions: The effect of noise on speech perception by the hearing and hearing impaired participants and the person with hearing impairment ability to monitor his or her vocal modules in noise are also factors to be considered. 7. Visual Distraction: It also affects speech reading by drawing the speech reader's attention away from the force especially if the distraction is more interesting than the speaker. 2.7.4 Challenges There are many variables which may influence or challenge the Speech reading. These are: 1. Amount of Self teaching: speech reading does not always have to be taught, though the individual's skill can be improved through instructions. Numerous hearing impaired individuals have developed a fair degree of proficiency without formal instructions. 2. The adequacy of the hearing aid or aids: Hard of hearing adult need to speech reading because all hearing aids have certain physical limitations, by this he will not perceive accurately all of the consonant sounds.

80 3. Extent of Hearing loss: Severe sensorineural hearing impairment (70 dB or more) patient will confuse many speech sounds or miss them altogether even with hearing aid. He must look as well as listen. 4. Pattern of Loss: The high frequency loss cases (sharp fall off at or beyond 1 KHz) need to combine speech reading with hearing in order to understand voiceless consonants. 5. Nature of Loss: In retro cochlear hearing loss cases the confusion of perceiving speech can only be straightened out through speech reading. 6. Individual differences in ability in mastering skills: Those people are not eye minded or will not automatically look as well as listen, they have not acquired any degree of speech reading skills though sufficient training are provided to them. 7. Knowledge of Language: To develop speech reading, he must have mastered the verb-tense system and syntax of his language which are redundant, patterned and rhythmical. 8. Nature of instruction: The teacher has to ascertain the child's true needs to teach the beginning skills of recognizing visible sound movements and known vocabulary and ideas to children. Beside there are some limitations of Speech Reading such as Low visibility of speech sounds, Homophonous sounds, Rapidity of normal speech, Transition effect, inter subject variability with sound formation and environmental limitation Therefore, it is apparent that numerous factors have an impact on speech reading success. The clinician should be familiar with these and take each into account when planning auditory training with respect to speech reading. However few factors are yet to be understood with its impact which requires further research development. 2.7.5 Role of Teacher As the 'Speech Reading' is an inherent linguistic activity (Boothroyd, 1988), the deaf students must learn the rules of language by which they are exposed to speech reading. Therefore it is the duty of the teacher of the deaf to develop language in deaf students. Without this he / she is unable to fill in the gaps providing information not obtained through speech reading or hearing (Bevan, 1988). Teacher should speak clearly with normal prosodical features as such most of the speech parameter can be intelligible to the students. As speech reading skills is a visual

81 communication process, the classroom of the deaf student should be properly illuminated so that the speaker's face can be properly visible during communication. A student with hearing impairment depends on his / her teacher for learning Speech Reading. Originally there were four methods of teaching speech reading in United States (O'Neill & Oyer, 1981). These are Bruhn Method (1929), Kinzie method (1931), Nitchie Method (1912) and Jena Method (Bunger 1944). First three methods were nurtured by normal persons and later these were used for persons hearing impairment. These original methods are now seldom used. Currently two general approaches of speech Reading is instructed by the teacher, i.e i) Analytic Approach : Where each of the basic parts of speech be perceived before an entire words, sentence or phrase (the whole) can be identified

or ii) Synthetic approach: It emphasizes that the perception of the whole is paramount regardless of which of its parts is perceived visually. Here the sentence / phrase to be the basic unit and these are the backbone of visual speech perception. Recent trends in teaching speech Reading: Recently apart from Acoupedic approach which emphasizes auditory channel only, speech reading appears to develop synergistically with the acquisition of auditory and Language skills (Pollack, 1964). Teacher may use holistic approach (Yoshinaga - Itano, 1988) to teach children with hard of hearing to Speech read. It focuses on each individual child's motivation, tolerance and sense of responsibilities for communication. Alpiner and Mccarthy (1993) and Rodel (1981) recently introduces Bisensory stimulation where both auditory and visual input are favoured. Therefore, teachers mainly allow speech reading to develop naturally in conjunction with the acquisition of auditory, speech and linguistic skills. 2.8 Let's Sum Up The major goal of aural rehabilitation is the improvement of communicative abilities of the persons with hearing impairment. Early identification, proper audiologic evaluation and good medical care are essential to the remediation of hearing impairment. Generally sensorineural hearing losses are primarily aided through audiologic rehabilitation only where auditory speech recognition or hearing clarity is usually affected. The structure of language is unique to the human beings only.

We have developed the auditory system and vocal mechanism through which language is customarily learned and communicated.

Oral communication involves a number of key components that originate with a source or speaker who has both a purpose for communication and the ability to properly encode and articulate the thought to be conveyed.

82 The human baby appears to be born with "preexistent knowledge" of language - specialized neural structures in the brain that await auditory experience with language to trigger them into functioning. If a child is deprived of language stimulation in his critical age period they will never attain his or her best potential language function due to hearing impairment or lack of language experience. Auditory perception of speech and non speech signal involves only one sensory system i.e. hearing or auditory system. Therefore, it is called as unisensory approach of auditory perception. Speech perception implies understanding and comprehension and the reception of speech signals by the auditory mechanism is only the first step in its perception. Perception or comprehension of speech may be thought of as involving a number of components. Among these are: DETECTION, DISCRIMINATION, IDENTIFICATION, ATTENTION, MEMORY, & CLOSURE. The persons with hearing impairment cannot perceive the speech signal as they are not able to receive and process the coded acoustical information of the speech signal like the person with normal hearing. The speaker's mouth movements, facial expressions and hand gestures as well as various aspects of the physical environment in which the communication takes place, are potential sources of useful information for communication. The person with hearing impairment is much more dependent on these visual cues for communication than the person with normal hearing. The degree to which persons with hearing impairment need visual information when conversing is proportional to the amount of information that is lost due to hearing impairment. Visual information may be transmitted by means of a manual or an oral communication system. The approach which includes more than one sense organ for perception of speech is termed as Multisensory approach. For perception of speech children with hearing impairment depends on vision and tactual sense along with their residual hearing ability. Auditory training is a systematic training of the residual hearing for the improvement of auditory abilities. Primary goal of auditory training is usually to maximize receptive communication ability by using audition. When it is conducted with a single person with hearing impairment it is called as Individual auditory training and the training session conducted with more than one person or in a group with common problems it is termed as Group Auditory training. The stages of the auditory training as per Traditional approach (Hirsch (1966), Ling (1976) and Erber (1982)) are: Awareness or Detection of Sound, Discrimination of Sound, Identification of Sound,

83 Comprehension of Sound. Auditory verbal therapy is the application of techniques, strategies, conditions and procedures which help in the acquisition of spoken language through major focus on listening. The goal of auditory-verbal practice is that children who are deaf or hard of

hearing can grow up in regular learning and living environments

enabling them to become independent, participating, and contributing citizens in mainstream society.

The primary stages of auditory

development are: Sound Awareness Association of Meaning to Sound Imitation and Expansion. Comprehension:

Effective Responses to Language. Sound Awareness Association of Meaning to Sound Imitation and Expansion.

Comprehension: Effective Responses to Language. A teacher of a child with hearing impairment is also a team member

of the intervention process with auditory verbal therapy method. The teacher may follow the auditory activities of the

auditory verbal therapy in the classroom with different acoustic and visual clues. The basic principle of the Auditory

Training and the Auditory Verbal therapy is same. As the child with hearing impairment must have to learn to listen

auditorily and to speak orally only. It is a huge challenge for the Rehabilitation professionals to have success in auditory

training and Auditory verbal Therapy for the children with hearing impairment. There are many factors which play role in

its success. As per Jacob(1982), Speech Reading is a visual oral-language communication skills that enables a person to

obtain linguistic information by watching the sequential, articulatory movements of a speaker's lips, jaws, adjacent facial

musculature and facial expressions. Lip reading refers to the more analytical visual distinctive feature recognition process

i.e. perception of visemes. While speech reading encompasses all of the other processes necessary to comprehend the

spoken language. The purpose of Lip reading is to provide visual cues to aid in the perception of speech. Not only have

the deaf persons, person with normal hearing also communicated with lip reading. The Prerequisites that

84 affect Speech reading process usually fall into five general areas as related to the Speaker, Speech reader, Environment, the Signal or Code, and other factors. It is the duty of the teacher of the deaf to develop language in deaf students. Without this he / she is unable to fill in the gaps providing information not obtained through speech reading or hearing (Bevan, 1988).Teacher should speak clearly with normal prosodical features as such most of the speech parameter can be intelligible to the students. 2.9 Check Your Progress A. Answer the following questions. 1. What do you know about Audiologic rehabilitation? 2. Describe human communication model. 3. What are different approaches of auditory perception? Discuss any one. 4. Describe the process of perception of speech stimulus. 5. What are the different approaches of auditory training? Describe Carhart Auditory training approach. 6. Define Auditory training. Mention importance of auditory training. 7. Differentiate between Individual and group auditory training. 8. Describe the stages of Traditional auditory Training approach. 9. Mention the factors affecting Auditory training. 10. What do you mean by Auditory Verbal Therapy? Describe the principles and importance of Auditory verbal therapy. 11. Discuss the role of a teacher in Auditory verbal therapy. 12. Mention the similarities and differences between auditory training and auditory verbal therapy. 13. Define Speech Reading. Mention importance and prerequisites of speech reading. 14. How does a teacher of children with hearing impairment teach speech reading to his student? 15. Describe the factors affecting teaching speech reading skills. B. Write short notes on the followings: 1. Classification of hearing impairment.

85 2. Auditory Listening. 3. Adult auditory training. 4. Group auditory training. 5. Prerequisites of auditory training and auditory verbal therapy. 6. Factors influencing auditory training and auditory verbal therapy. 2.10 References 1. Jerome G. Alpiner, Patricia A. McCarthy, Rehabilitative Audiology: Children and Adults, Williams and Wilkins; 1987. 2. Jack Katz, Handbook of Clinical Audiology; Wiliams and Wilkins. 3. Marian P Downs, Northern, Hearing in Children, 1990. 4. Richard S. Tyler; Cochlear Implants: Audiological Foundations, Singular Publishing Group, INC. San Diego. London; 1993. 5. Ronald L. Schow, Michael A. Nerbonne, Introduction to Audiologic Rehabilitation, Allyn and Bacon, 1996. 6. Sadhana Relekar, Usha Dalvi, Anjali Kant, Foundations of Speech and Teaching, Rehabilitation Council of India in association with Kanishka Publishers; New Delhi, 2006. 7. <http://www.hearinghouse.co.nz/> 8. <http://cochlearimplantonline.com/> 9.

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86 Unit - 3
Speech Intervention Strategies Structure 3.1 Introduction 3.2 Objectives 3.3 Approaches to teaching speech 3.3.1
Auditory Global Approach 3.3.2
Auditory Oral Approach 3.3.3 Aural-Oral Approach 3.3.4
Auditory Verbal Approach 3.3.5 Multi-sensory Syllable Unit Approach 3.3.6 Ling's Approach 3.4 Formulation of Lesson
Plan 3.4.1 Long term goal 3.4.2 Short term goal 3.4.3 Activities for teaching correct production of various vowels and
consonants 3.5 Orientation to acoustics of speech 3.5.1 Nature of Sound 3.5.2 Speech Sound 3.6 Strategies for
Production of Speech 3.7 Individual and Group Speech Teaching : Strength and Challenges 3.8 Let Us Sum Up 3.9 Check
Your Progress 3.10
References

87 3.1 Introduction All hearing impaired children experience speech and language problems owing to their reduced hearing capacity. The speech and language problems may range from no speech and language at all to some deficits in speech production and language ability of the child. As we have already learnt speech is oral medium of expressing language. Speech problems may include incorrect production of speech sounds, inappropriate voice quality and resonance. These problems arise due to inappropriate auditory feedback. All these problems can be remediated with early assessment and intervention. The child needs to undergo a detailed hearing, speech and language evaluation followed by fitting of an appropriate amplification device. This is again followed by a well-planned speech and language therapy. The mechanism of speech production is a very intricate process involving the vocal tract and respiratory system. To understand the mechanism of speech production mechanism appropriately, the basic characteristics of speech sounds have to be first understood. The acoustics of speech involve characteristics like frequency, intensity, duration and resonance. Various speech intervention strategies are described in the literature. These can be carried out in various settings such as therapy center, school and also at home. Many strategies are designed for individual child, depending on specific needs of the child. Also there are strategies which can be carried out in group settings. Each strategy have its own advantages and disadvantages. Speech training can be imparted by a single trainer/specialist or a group of trainers can be involved. The group can either consist professionals from same specialty or can be from varied specialties such as speech therapist, special educator, psychologist etc. The team teaching concept needs well skilled professionals and a very good planning. Moreover it yields a very satisfactory outcome. 3.2 Objectives At the end of this unit, students will learn about: 1) Various speech intervention strategies. 2) Formulation of lesson plan.

88 3) Acoustics of speech - basic characteristics involved in the mechanism of speech production 4) Techniques to elicit production of vowels and other speech sounds 5) Importance of individual training and group training 6) Group teaching. 3.3 Approaches to Teaching Speech Literature has description of many speech teaching approaches and activities. Before understanding each approach we should remember that speech therapy can be made successful when: 1) Done at an early age(starting within 3 years). 2) Done after complete assessment of speech problems and identification of child's current level. 3) Done after fitting of appropriate amplification device. 4) Done within a stimulating environment. 5) Done following a constructive lesson plan wherein targets are set and achieved. 6) Done with appropriate child specific selection of stimulus, reinforcers and speech therapy tools. All the approaches are based on certain principles. Few are listed below briefly: 1) Speech learning is developmental and follows a sequence even in hearing impaired children. Certain sounds develop first and certain come later, e.g. children are able to say /b/ much before saying /t/ or /r/. 2) Speech is a learned behaviour which needs to be taught. 3) Better residual hearing gives best results. 4) Speech therapy sessions should be repetitive and fun filled for the child. Let us learn the approaches now: Hearing Impairment causes delay in acquisition of speech and language. The degree of hearing loss, age of child, onset of hearing loss have effect on the speech and language skills of the child. By large almost all children with hearing impairment need some amount of speech therapy. The early it is started more successful results are obtained.

89 3.3.1

Auditory global approach For correct acquisition and production of speech the child must have an intact auditory channel. The child listens to adult speech, internalizes them and then starts producing them. The journey from starting to produce a speech sound to fully master its production needs lot of self- corrections by the child him/herself. He/she hears to adult speech, imitates and learn from it as a model then produces it correctly by self- corrections (with the help of auditory feedback). However the child also uses other cues such as visual, kinesthetic along with auditory cues for speech acquisition. In case of children with hearing impairment mainly the auditory channel is used, along with the other sensory channels. The selection of modality depends on the child's hearing level after amplification. For example in case of minimum benefit from amplification device, the visual, and tactile modes are largely used to supplement the minimum residual hearing. The term "auditory global" was given by Calvert and Silverman (1975). It mainly stresses the use of auditory method with minimum or no use of visual and tactile cues. The authors also emphasised early and continuous use of amplification device, comprehensive intervention at school as well as home, natural methods to model and teach speech and use of connected speech.

3.3.2 Auditory-Oral Approach In this approach speech reading and contextual cues are used along with residual hearing for understanding speech. The child is taught to combine hearing cues (with amplification device) with speech reading (lip reading cues) and understanding the context in which the conversation is carries out. This is a very useful approach for children with restricted residual hearing. However this approach needs lot of practice by the child. Moreover in absence of contextual cues, understanding becomes difficult. It can be easily incorporated by teachers in classroom during teaching sessions. The teacher can model the child how to speak, utter certain sounds/words etc. When used with young children after early identification and intervention, they can be easily mainstreamed.

3.3.3 Aural-Oral Approach The focus is on speaking and sound production. The therapist uses different types of 'modelling' to show the child how to speak correctly.

90 The child's aural skills (auditory) are developed for attaining oral (verbal) skills. In

this approach the following is advocated and used by therapist/teacher: 1) Directly talking with the child 2) Use of simple speech 3) Use of facial expressions and body language 4) Repeat the key words 5) Speak things from the child's context

3.3.4 Auditory verbal approach It is a parent oriented approach, where the child's residual hearing is maximally used to understand speech of others and to learn to use spoken language for communication. In this approach the audition is taught in four classical levels: detection, discrimination and identification. VT is based on some fundamental principles like early detection, fitting of appropriate amplification device, regular assessment and therapeutic management, direct parent involvement, mainstreaming the child into regular educational system. With improved technology in amplification devices, it is very much possible to teach the child only through auditory channel.

3.3.5 Multi-sensory syllable unit approach As the name suggests the auditory channel is accompanied by other sensory channels. It is useful for children with limited residual hearing. Visual and tactile stimulation is used with auditory stimulation. Written forms /orthographic representation of sounds, words are used along with oral speech. Labelling is used for all the vocabulary in the child's environment.

3.3.6 Ling's approach Developed in 1976 by Ling. In this approach maximum use of residual hearing is advocated. In this approach the child is taught to understand speech of others as well as correct own speech production by using residual hearing. Two principals of Ling's approach are: 1: The hearing impaired child should be taught to develop speech in the same order as a normal hearing child will follow. 2) The speech organs move rapidly and precisely during speech production, which should be taught to hearing impaired children so that they can produce correct speech.

91 Speech is taught at phonetic and phonological level. e.g. In phonetic level - nonsense syllables, repeated syllables are used. Then

this skills learned

are adapted to the phonological level. Initially vowels are taught in isolation, then consonants are taught

in different contrasts of place and manner. 3.4 Formulation of Lesson Plan Lesson plan is a brief rehabilitation plan for the hearing impaired child with some short term goals and one long term goal. The lesson plan is a road map for the teacher and therapist which guides them to carry out the therapy. It also contains information regarding the procedure which will be used to attain the goals, activities under these procedures are to be planned beforehand. The formulation of lesson plan is kept as realistic as possible. Selection of goals depend on the child's current performance, age, associated disorders and parental support. 3.4.1 Short term goal- these are planned for short time period.e.g. 15 days /30 days.

Usually easy and small targets yield better motivation to both the therapist and the child. At a time 3-4 short term goals can be achieved. These are expected to be achieved in the predefined time period. Once achieved, the task complexity is increased. In case of failure, the step may be repeated with an altered procedure and tools. The STM should be measurable, clear, realistic and verifiable. 3.4.2 Long Term Goal- It is a target or goal which is a final destination or level at which we want the child to reach over a longer period of time .e.g. six months. So that he matches his peers as closely as possible and can be gradually mainstreamed. 3.4.3 Activities for teaching various vowels and consonants The teaching can generally be carried out using the following techniques: 1. Modelling the speech sound to the child. Initially only auditory mode can be used, if the child failed to do so, other modes can be introduced. e.g. for teaching the child to produce /i/, the sound can be shown in writing to the child and the therapist can keep on modelling its production, repetitively, till the child starts showing attempts to produce it. If the child has limited residual hearing that is has limited benefit from amplification device cues of visual and tactile cues can be introduced. The

92 therapist can show the production of the vowel to the child, can physically guide the child's articulators to help produce the sound. The child has to be reinforced upon correct production of the sound. The sound is first taught in isolation then in combination with other vowels, other aspects like long vs short vowel are introduced later. 2. Imitation- Imitation of the therapist's vowel/consonant production is encouraged. The child is asked to listen and produce the target sound. In case of limited residual hearing, use of visual/tactile cues along with auditory cues give opportunity for the child to imitate the sound. 3. Repetitive drills- CV combinations, CVC combinations are practiced through speech drills. The combination of CV is also altered to make all possible combinations of the target sound. /pa,pi,pu,po,pe/ and /pa,pa,pa,pa/. Though the sounds are meaningless, these ensure improvement in the precision of movements of articulators. 4. The teaching usually starts with vowels. Initially the child may be taught just to vocalise and extend it with all the vowels.e.g /aaaaaaaa//iiii...../ etc. The therapist should always encourage a good quality of voice which sounds natural and pleasing. It should be loud enough, not nasalised, and should be produced with adequate mouth opening. Simultaneously the therapist has to encourage the child to monitor his/her own voice through auditory feedback. 5. In case of consonants, the easily visible consonants, voiced consonants are selected first.e.g. /b/ has to be taught earlier than /g/ or /p/. However in some children, there can be some amount of speech already present, which can be utilised to expand his/her utterances. The therapist can refer to the normal developmental sequence of consonants, and select the consonants serially. E.g. the production of consonants like /s/,/ch/ and /t/ develop after 4 years of chronological age, the same will apply to hearing impaired children, it's pointless to teach a 2 years old to produce the sound /s/!! 6. Once the child has learnt to produce consonants in isolation, gradually these can be taught into higher units, bisyllabic words, words, phrases etc. E.G. Once the child has learnt to say /ta/, he/she can be taught to say /tata/ meaningfully. 7. For carrying out above activities tools like mirror, tongue depressors, hand gloves, candle, paper bits, and graphical representation of the letters on flash cards are extremely useful. The use of toys and other reinforcers make the activities fulfilled and interesting.

93 8. Parents and caregivers should be actively involved in the training activities and should be counselled to practice the learnt sounds at home. 9. It's helpful to set targets and expected responses to achieve success. E.g. If our target consonant is /t/,the child should be able to utter it 3 times out of 5 trials, which ensures us to take the child to the next level. 10. All the learned vowels and consonants should be retrained at a regular interval to achieve stabilisation. 3.5

Orientation to Acoustics of Speech 3.5.1 Nature of sound Sound is variations in air pressure detectable by the human ear. Pressure varies through time at a particular point, and over space at a particular time, as molecules of air collide (condensation) or move apart (rarefaction). Fig. 1: Representation of fluctuations in air pressure such as those caused by a vibrating tuning fork. Waves and energy movement, or variation at a particular point, can be plotted as a waveform on a graph, as in above figure Fig.1.The variation in pressure at a given point gives a sine wave for pure sounds involving simple harmonic motion (SHM).The amplitude (the amount of maximum displacement from zero) of the wave reflects the highest pressure involved, and therefore the acoustic energy. Relations between frequency (F), period (P), wavelength (w) and speed of sound (c):

94 $F = 1/P$ For example, a wave with a period of 1/100th of a second has a frequency of $F = 1/0.01 = 100$ Hz (Hertz = cycles per second) $w = c/F$ The standard speed of sound is 330 m/s. For example, a wave with a frequency of 100Hz has a wavelength of $330/100 = 3.3$ m Fig. 2. Representation of a sinusoidal Waveform There are various types of sound sources a. Tuning fork - periodic b. Vowel sounds - quasi-periodic. Fig. 3: c. Flow of water - continuous random noise d. Fricative - random within certain constraints. Fig. 4: e. Hammer hitting table - transient f. Stop consonant - transient + noise. Fig. 5: Resonators and Filters Natural frequencies and resonance - different objects more or less tuned to specific frequencies - can act as filters. Filters have centre frequency and bandwidth - the range of frequencies passed by filter not more than 3dB down on its maximum amplitude. The bandwidth of a filter may be relatively narrow or broad.

95 Source + Filter theory: Vowel Sounds The vocal tract acts as a complex variable filter. Into this is input a signal from the glottal source (for voiced sounds). Fig 6 shows a glottal source wave for a vowel, i.e. a complex wave with numerous harmonics which rapidly decrease in amplitude as frequency increases (12 dB/octave). (b) Vowel sounds seen as product of glottal source and variable filtering effect of supraglottal tract. So, the same vowels have the same gross spectral shape, irrespective of the fundamental frequency f_0 of the source. Fig. 6 filtered once ... filtered twice and filtered 3 times Fig. 8: Spectrum of a vowel sound shown as the product of the glottal source and the filtering effect of the supraglottal vocal tract. 3.5.2. Speech sounds

Speech sounds, just like any other sound, are rapid fluctuations in air pressure. Speech sounds are generated when air is made to move by the vocal organs, While speaking, acoustic energy is radiated from the vocal tract. This acoustic disturbance, consisting of pressure fluctuations, causes the listener's eardrum to move rapidly in and out - in when the pressure is positive, out when negative. Thus acoustic energy is transformed into mechanical energy at the eardrum, This mechanical energy, and the information it contains, go through several more transformations before arriving as patterns of neural energy at the listener's brain, The processing of the information in the listener's brain results in the percept of sound. Speech waves The speech wave

is distributed, at any given instant, as a sound pressure wave in the air around the speaker, and can be looked at as pressure varying as a function of distance from the speaker.

In speech acoustics, however, it is more common to

96 consider the air pressure in a speech wave as varying not as a function of distance but as a function of time. This is equivalent to saying that at such-and-such point in space, the air pressure varies in such-and-such way over time.

Frequency It can be seen that the magnified speech wave consists of rapid variations in air pressure as a function of time.

Variations represent positive increases in pressure relative to atmospheric pressure and also negative. The variations are periodic - they repeat and are obviously complex, in that the air pressure can be seen to be varying simultaneously at several different frequencies. These frequencies can be roughly estimated visually as follows. Fundamental frequency

The rate of repetition of the complex wave is called its fundamental frequency (abbreviated F_0 , which is pronounced "eff-oh" or "eff sub-zero") and this wave therefore has an F_0 of 154 Hz. Fundamental frequency is an extremely important measure in acoustic phonetics in general. From the point of view of speech production, the F_0 corresponds to the rate at which the vocal folds vibrate. From the point of view of speech perception, had been in the vicinity of the waveform, an eardrum would have been going in and out 154 times per second as a response to these pressure fluctuations. Fourier analysis

One way of looking at the speech wave is as complex fluctuations in air pressure as a function of time. Another is as a spectrum, which shows exactly what frequencies are present with what amplitudes. Fourier's theorem shows that any complex wave can be decomposed into, or represented as, a set of sine waves, also called sinusoids, each with its own frequency and amplitude. The spectrum

Harmonics and Spectra Complex waves can be mathematically analysed as being composed of different sine waves (Fourier analysis). Vibrating objects don't usually vibrate at a single frequency, they have harmonics. According to when each harmonic starts, the different elements of a complex wave can be in different phase relations. Any complex wave can be analysed into the periodic elements of different frequencies of which it is composed. Result: the spectrum of sound. For example, the following spectrum is of the waveform

97 produced at the glottis in a vowel. Note the series of peaks or harmonics, occurring at integer multiples of the fundamental frequency f_0 . (d) Non-periodic sounds are more adequately represented not by line spectra but by a continuous spectrum. Fig. 7: Continuous spectra of non-periodic sounds: left [s] (peak at c. 5920 Hz); right [ʔ] (peak at c. 2700 Hz). The acoustic theory of speech production 107Db 5500Hz

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98 The theory that explains the radiated acoustics in terms of the vocal mechanism that produces them is called the acoustic theory of speech production, or source-filter theory. It was developed by the Swedish speech scientist Gunnar Fant. The source-filter theory describes speech production as a two stage process involving the generation of a sound source, with its own spectral shape and spectral fine structure, which is then shaped or filtered by the resonant properties of the vocal tract. Most of the filtering of a source spectrum is carried out by that part of the vocal tract anterior to the sound source. In the case of a glottal source, the filter is the entire supra-glottal vocal tract. The vocal tract filter always includes some part of the oral cavity and can also, optionally, include the nasal cavity (depending upon whether the velum is open or closed).

3.6 Strategies for Production of Speech : Modeling & Shaping through Auditory, Visual and Tactile Modalities

STRATEGIES FOR ELICITING SOUNDS

Strategies may have auditory, visual, and tactile components. However, some strategies may be exclusive to one modality. For example, manipulation is primarily a tactile strategy with a possible visual component. Phonemes should be taught first through audition. When discussing auditory strategies, it is important to discuss the four levels of auditory skills: detection, discrimination, identification, and comprehension. Detection is simply determining whether sound is present or absent. Through detection tasks, we can check whether hearing aids are working and set appropriately, alert students to the listening task, and determine which sounds are audible to the child. The response may be yes/no or a conditioned response (such as dropping a block in a bucket). The second level of auditory skill, discrimination, is determining the similarity or difference between speech sounds. Instructors often use this level as remediation or a check when the student makes an identification error. It is important to realize that some different discrimination tasks are difficult or impossible for children who are unable to categorize or make generalizations. The third level of auditory skill, identification, means providing a name or a label for what the student has heard. The student may respond by repeating the word, writing the word or sentence, or pointing to the stimulus being presented.

99 The highest level of the auditory skill hierarchy is comprehension. Comprehension tasks require that the student understand the meaning of auditory messages. It also requires the student to acquire new information through hearing, and then react appropriately. Unlike an identification task, the student must not only label the stimulus, but also must demonstrate understanding with a response that differs in content from the stimulus but is closely associated in some way (Eerber 1982). After using auditory strategies, visual strategies should be considered before moving to tactile strategies. Because the strategy employed is dependent upon the student's abilities, diagnostic results should be reviewed carefully. This will allow you to move quickly to strategies that will provide the student with success. Many times, strategies are used simultaneously. The most widely used strategy is that of imitation or demonstration. Imitation requires the student to repeat a target sound after one or more examples have been provided. Imitation is easily and naturally combined with other strategies when evoking sounds. For example, a sound may be presented without allowing the student to see your face. The student is required to produce the sound after one or two presentations. If the student is unsuccessful, the phoneme may be presented again, this time allowing the student to see your face. If this strategy is unsuccessful, imitation through tactile stimulation may be the next modality attempted. The tactile modality is usually the last teaching strategy used. Students can feel the tongue position for most vowels by placing a finger on the instructor's tongue, then placing a finger of the other hand on their own tongue. Another widely used strategy is moving from a known sound or "U set" to an unknown. This is accomplished through use of context, sound approximation, and analogy. Use of context means that facilitating contexts may be used as a beginning point for a lesson or in combination with other techniques to develop intelligibility. For example, if a student can produce /J/ in a few contexts (such as /Ju/ and /Ja/) but cannot imitate it in other contexts (/Jil/ or /Ju/), the instructor should indicate the words where the sound is correctly produced, then provide practice on the available facilitating contexts. Teaching through sound approximation is another technique of progressing from a known sound to an unknown sound. In this method, the instructor uses a phoneme the student can correctly produce as a point of departure for teaching the target sound. For example, say the target sound is /f/ and the student can produce /si/. Have the student gradually move the tongue back until /f/ is produced. The use of imitation

100 plays an important role during sound approximation strategies (Secord 1981). For approximations to be successful, the strategy of analogy also must be applied. An analogy is a resemblance or comparison in some particulars between things otherwise unlike. Ling (1976) summarized analogies in this statement: Analogies can be auditory, visual, or tactile, depending on the child's sensory capacities and on the

nature of the behavior to be taught. For example, an auditory analogy might be used to show the commonality of nasality in sounds such as m and n, or b and d; a visual analogy, using one hand to represent the palate and the other the tongue, might be used to demonstrate relative points of occlusion for /t/ and /k/; or a tactile analogy, using the fingers on the chin to feel vibration, might be used to indicate that both v and z are voiced. The most effective use of analogy is to show that a sound or behavior that is known shares a particular characteristic with the sound or behavior that is being learned (p. 288). Prompting is another effective strategy used to evoke sounds. Prompting activities involve the association of a particular manner of production with specific objects or actions (Ling 1976). For example, you might touch your chest to cue the student to lower pitch register. This technique should be used when an auditory presentation is unsuccessful and only after the phoneme can be consistently produced. The prompt should be discontinued as soon as possible, since its continued use may impede the development of coarticulation skills (Ling 1976). Vocal play is a recommended strategy for eliciting sounds. Encouraging the child to generate sounds spontaneously in the course of play establishes the use and control of the speech organs (Ling 1976). Once the sound is produced during vocal play, the instructor is challenged to bring the child to a consistent imitation stage. It may be necessary to probe for imitation during vocal play for a substantial time before the child is able to imitate consistently. This strategy is one of the most effective for evoking sounds in young children. Direct verbal instruction is another effective strategy. Instructions must be concise; for example, "Close your lips for /m/" or "I want to see your teeth." This strategy is more successful with older students and adults. Verbal instruction is most effective when combined with imitation and sound approximations. Another strategy used to teach hearing impaired students is explanation of component skills. When using this strategy, first explain to the student what component parts are needed to produce the sound (for example, "I want you to say au. Say a and the u together. Blend them smoothly on one breath"). This strategy is less effective in the

101 early stages of speech acquisition because most hearing impaired children do not have the language to understand the explanation and apply it. However, thoughtful use of this strategy can produce positive results. The final strategy is that of manipulation. This strategy is primarily a tactile strategy with a visual component. Manipulation may be defined as the shaping of a speech behavior through gentle force imposed on one or more of the speech articulators (Ling 1976). The most preferred type of manipulation is that in which the student adjusts the articulators by using a finger or tongue depressor. Manipulation is the last strategy used and is usually not necessary. The strategies of manipulation and tactile imitation are closely associated and are considered by some to be one and the same. Once the student can reliably imitate, manipulation is unnecessary, and some form of auditory or visual cues may be more appropriate.

3.7 Individual and Group teaching: Strengths and Challenges

Individualized Teaching Strategy

Individualized instruction is also known as differentiated instruction. Individualized instruction strategy refers to those classroom practices of teaching which recognize the uniqueness of each student learner and thus provide for adequate tutorial guidance, and other support services suited to bring about a wholesome development in the person (mind, body, and spirit). Individualized instruction is about using teaching strategies that connect with individual student's learning strategies. The ultimate goal is to provide a learning environment that will maximize the potential for student success. In this strategy the teacher shouldn't always stick to the same pattern of teaching rather they should adapt new ways such as teaching through audio, video, field trip, etc. so that students have multiple options for taking in information and making sense of ideas. The intent of individualizing instruction is to maximize each student's growth and individual success by meeting each student where he or she is, and assisting in the learning process. It provides the opportunity for students to learn at their own pace, in their own way, and be successful.

Advantages and disadvantages of Individualized instruction strategy.

Advantages: 1. Student-Centric Differentiated instruction focuses on the academic needs and learning abilities of every individual student. By changing the methods of teaching to suit students,

102 teachers are able to adjust the content of the syllabus. This encourages critical thinking in students, and gives them a chance to come forward and demonstrate what they have learned. It also creates a sense of equality among students, including the ones with a learning disability. Differentiated learning provides ample opportunity for students to aim and attain academic success with aplomb. 2. Raises The Bar Advocates of this teaching approach believe differentiated learning raises the standards of learning in a big way. The true essence of this practice lies in the realization that learners and their abilities, readiness and interests vary. Educators have the liberty to set up classrooms and devise methods that would aid all students in thinking, analyzing and comprehending the teaching contents easily. Differentiation does not have hard and fast rules; it is all about options. 3. Meeting the needs and interests of diverse learners. 4. Provides the opportunity for students to learn at their own pace, in their own way, and be successful. 5. Recognizes students' varying background knowledge, readiness, language, preferences in learning, interests, and to react responsively. 6. Maximizes each student's growth and individual success by meeting each student where he or she is, and assisting in the learning process. 7. Helps in providing for the uniqueness of each child in terms of his/her particular learning style, talents and potential, handicaps and deficiencies, etc. Disadvantages: 1. Time constraints and chopped-up schedules are an obstacle. Teachers could work better if they had longer blocks of time with students. At the elementary level, kids have to go somewhere or someone comes in to do something every 15-30 minutes; at the secondary level, kids rotate in and out every 37 or 42 minutes. It makes teachers crazy. 2. Class size and teaching load are two of the biggest constraints. A teacher who works with 150 kids a day gets glassy-eyed when told he needs to get to know those kids better. It's doable, but we would be far more efficient by arranging schedules so teachers had fewer students to get to know or kept them over longer periods of time.

103 3. Teacher Preparedness. Sometimes, the teacher's lack of adequate knowledge on individualizing instruction could also serve as a serious obstacle in individualizing instruction in the classroom. The teacher's lack of knowledge and ignorance could be further aggravated when the school does not have the essential resources to support individualized or differentiated instruction. GROUP TEACHING Using Group Work and teamwork. Co-operative learning involves having students work together to maximize their own and one another's learning (Johnson, Johnson & Smith, 1991). Team teaching involves a group of instructors working purposefully, regularly, and cooperatively to help a group of students of any age learn. Teachers together set goals for a course, design a syllabus, prepare individual lesson plans, teach students, and evaluate the results. They share insights, argue with one another, and perhaps even challenge students to decide which approach is better. Teams can be single-discipline, interdisciplinary, or school-within-a-school teams that meet with a common set of students over an extended period of time. The team-teaching approach allows for more interaction between teachers and students. Faculty evaluate students on their achievement of the learning goals; students evaluate faculty members on their teaching proficiency. Emphasis is on student and faculty growth, balancing initiative and shared responsibility, specialization and broadening horizons, the clear and interesting presentation of content and student development, democratic participation and common expectations, and cognitive, affective, and behavioral outcomes. This combination of analysis, synthesis, critical thinking, and practical applications can be done on all levels of education, from kindergarten through graduate school. Working as a team, teachers model respect for differences, interdependence, and conflict-resolution skills. Team members together set the course goals and content, select common materials such as texts and films, and develop tests and final examinations for all students. They set the sequence of topics and supplemental materials. They also give their own interpretations of the materials and use their own teaching styles. The greater the agreement on common objectives and interests, the more likely that teaching will be interdependent and coordinated. Teaching periods can be scheduled side by side or consecutively. For example, teachers of two similar classes may team up during the same or adjacent periods so that each teacher may focus on that phase of the course that he or she can best

104 handle. Students can sometimes meet all together, sometimes in small groups supervised by individual teachers or teaching assistants, or they can work singly or together on projects in the library, laboratory, or fieldwork. Teachers can be at different sites, linked by video-conferencing, satellites, or the Internet. Breaking out of the taken-for-granted single-subject, single-course, single-teacher pattern encourages other innovations and experiments. For example, students can be split along or across lines of sex, age, culture, or other interests, then recombined to stimulate reflection. Remedial programs and honors sections provide other attractive opportunities to make available appropriate and effective curricula for students with special needs or interests. They can address different study skills and learning techniques. Team teaching can also offset the danger of imposing ideas, values, and mindsets on minorities or less powerful ethnic groups. Teachers of different backgrounds can culturally enrich one another and students. Advantages

Students do not all learn at the same rate. Periods of equal length are not appropriate for all learning situations. Educators are no longer dealing primarily with top-down transmission of the tried and true by the mature and experienced teacher to the young, immature, and inexperienced pupil in the single-subject classroom. Schools are moving toward the inclusion of another whole dimension of learning: the lateral transmission to every sentient member of society of what has just been discovered, invented, created, manufactured, or marketed. For this, team members with different areas of expertise are invaluable. Of course, team teaching is not the only answer to all problems plaguing teachers, students, and administrators. It requires planning, skilled management, willingness to risk change and even failure, humility, open-mindedness, imagination, and creativity. But the results are worth it. Teamwork improves the quality of teaching as various experts approach the same topic from different angles: theory and practice, past and present, different genders or ethnic backgrounds. Teacher strengths are combined and weaknesses are remedied. Poor teachers can be observed, critiqued, and improved by the other team members in a nonthreatening, supportive context. The evaluation done by a team of teachers will be more insightful and balanced than the introspection and self-evaluation of an individual teacher. Working in teams spreads responsibility, encourages creativity, deepens friendships, and builds community among teachers. Teachers complement one another. They

105 share insights, propose new approaches, and challenge assumptions. They learn new perspectives and insights, techniques and values from watching one another. Students enter into conversations between them as they debate, disagree with premises or conclusions, raise new questions, and point out consequences. Contrasting viewpoints encourage more active class participation and independent thinking from students, especially if there is team balance for gender, race, culture, and age. Team teaching is particularly effective with older and underprepared students when it moves beyond communicating facts to tap into their life experience. The team cuts teaching burdens and boosts morale. The presence of another teacher reduces student-teacher personality problems. In an emergency one team member can attend to the problem while the class goes on. Sharing in decision-making bolsters self-confidence. As teachers see the quality of teaching and learning improve, their self-esteem and happiness grow. This aids in recruiting and keeping faculty. Disadvantages Team teaching is not always successful. Some teachers are rigid personality types or may be wedded to a single method. Some simply dislike the other teachers on the team. Some do not want to risk humiliation and discouragement at possible failures. Some fear they will be expected to do more work for the same salary. Others are unwilling to share the spotlight or their pet ideas or to lose total control. Team teaching makes more demands on time and energy. Members must arrange mutually agreeable times for planning and evaluation. Discussions can be draining and group decisions take longer. Rethinking the courses to accommodate the team-teaching method is often inconvenient. Opposition may also come from students, parents, and administrators who may resist change of any sort. Some students flourish in a highly structured environment that favors repetition. Some are confused by conflicting opinions. Too much variety may hinder habit formation. Salaries may have to reflect the additional responsibilities undertaken by team members. Team leaders may need some form of bonus. Such costs could be met by enlarging some class sizes. Nonprofessional staff members could take over some responsibilities. All things being considered, team teaching so enhances the quality of learning that it is sure to spread widely in the future.

109 for helping children with hearing loss acquire language and communication skills. The most common approaches are: (a) auditory- oral (AO); (b) auditory-verbal therapy (A VT); (c) total communication; and (d) the bilingual-bicultural approach. AO and A VT approaches are similar in that both aim to assist children develop spoken language and enable full integration into mainstream society. Both promote early diagnosis of hearing loss, followed by immediate and optimal amplification. They place an emphasis on the consistent use of hearing technology. However, they differ in that the AO approach encourages the use of lip-reading, facial expression, and naturally occurring gestures. A VT, on the other hand, de-emphasizes the use of visual cues (Estabrooks, 2006). Total communication is a multisensory approach which is practiced widely around the world. It aims to offer the most appropriate oral and visual codes according to individual needs (Lynas, 1999). The signing in total communication is a contrived sign system (e.g. Signed English) that was designed to be used simultaneously with a spoken language. It is not a natural sign language (Lynas, 2005). A natural sign language, such as the Indian Sign Language is one that has evolved within a Deaf community and has its own unique grammar and word order. In recent years, some early intervention centers have moved towards the use of natural sign languages as part of bilingual-bicultural education, which involves teaching a natural sign language as the child's first language and spoken/written English as their second language.

4.2. Objectives The objectives are: 1. To familiarize the reader with the types of communication options available for teaching language to the hearing impaired child. 2. To justify the use of different communication options across different educational setups. 3. To describe the strengths and weaknesses of each communication option.

4.3. Methods of Teaching Language: Natural, Structural and Combined Communication is the process of exchanging information and ideas. An active process, it involves encoding, transmitting, and decoding the intended message. Each communication partner must be alert to the needs of the other, so that messages are

110 conveyed effectively and intended meanings preserved. Speech and language are only a portion of communication. Other aspects of communication may enhance or even eclipse the linguistic code. These aspects are paralinguistic, nonlinguistic, and metalinguistic. The child communicates from the time of birth. Early communication does not depend on the use of language or speech. In fact, communication provides the vehicle within which initial language develops. As language improves, there is also a corresponding improvement in overall communication abilities. Education of Children with Hearing Impairment: "Education is not an advantage, but a basic right of every individual's life". Educational aims are based on the life and needs of individuals. However, few percentage of children due to their disability have difficulty in meeting their needs through general education, these children have special educational needs apart from ordinary needs and require special attention and training in satisfying their needs. Aims of Special Education: Primary aim of education is to provide opportunities for the individual to develop the innate capacities, learns to make adjustment, improve speech and language development. Maximize use of residual hearing Improve IQ Improve social adjustment and behavior Improve cognitive skill Stimulate thinking and memory Teaching methods: 1) structured method 2) natural method 3) combined method Structured method: - Structured method believes that language is teachable hence has to be taught. It advocates the use of symbol system to represent the structure. Students are made to work on grammar rules by analyzing, categorizing the grammatical aspects. It advocates the use of memorization and imitation work in developing patterns of language.

111 Natural method: - Believes that language is not teachable - it is learned. One has to ensure exposure and input and the children "learn" the language naturally.

Child is expected to acquire language implicitly through interaction occurring within the environment. No symbol system is

used. The main emphasis is on the development of language via oral conversation method based on the experience of the children as it happens naturally in the home environment and the instructions are all planned to parallel the sequence of language acquisition in hearing children.

Combined method: - Utilizes components of both structured and natural method.

4.4. Principles and Techniques of Developing Language: Language development in hearing impaired children: - The degree and type of hearing loss has distinct impact on development of speech and language in hearing impaired children. According to Sharma and Jangira (1987), language development and speech is mildly affected in moderate hearing-impaired children.

Difficulty with rarely used words, minor differences in meaning of words and idioms,

reading and writing are delayed. In the case of children with moderately severe hearing loss, grammar, vocabulary, articulation and voice are affected. Severe hearing impaired children's speech and language may not develop spontaneously. Their voice is usually high-pitched and articulation is distorted. Profound hearing impairment children's speech and language are severely affected. Language for preschool hearing impaired child: - The Oral method and Sign Language are the two most widely used and highly debated methods of communication for the deaf. Some believe the Oral communication method to be most beneficial for deaf individuals while some agree on Sign Language to be the most beneficial method. The root of the debate lies in the fact that the method of communication used can affect the social and educational aspects of a deaf individual's life. Further, the basis of this debate stems from differences in personal preferences which have been affected by historical influences. It is in this debate that parents, teachers, deaf students, deaf adults, and all involved can make a communication decision based on the values and benefits each method entails.

112 4.5. Communication Options: Compare and Contrast ORALISM: - The concept of Oralism has existed since the time of the great philosopher Aristotle. However, Oralism only became widely used and accepted in the mid-1500's when a Spanish monk, Ponce de Leon, began to educate deaf students through Oral communication for religious purposes. From there, the development of Oralism continued throughout the centuries, changing and advancing in instruction until it was commonplace for a deaf individual to solely listen and speak. Oralism won out as the top communication method used for deaf individuals in America until a decrease in use in the 1970's and 1980's. Prerequisites for adopting Oralism Provision of appropriate amplification As soon as the infant or child is diagnosed as deaf, it is considered crucially important to fit appropriate hearing aids. Without hearing aids the child with a severe or profound hearing loss will have little or no access to the sounds of speech. The hearing aids must be carefully prescribed in order to take into account the nature of the child's hearing loss and amplification needs. Hearing aids must also be carefully maintained so that they perform as intended. Parents, in the first place, must take responsibility for keeping the hearing aids in good working order and for ensuring that they are correctly placed in the ears. Research has demonstrated that there is a significant correlation between speech achievements and good use of hearing aids (Ling and Ling, 1978). So despite the difficulties involved, oralists emphasize the need for good hearing aid use. The current oralist emphasis on the exploitation of residual hearing through hearing aids does not imply that visual information plays no part in the perception of speech and the understanding of spoken communication. Where there is hearing impairment the auditory sense will, so most oralists believe, be supported by visual communication such as facial expression, lip movements, body language, and natural gestures. Spoken language experience:- Oralists have spent a considerable amount of time thinking about how to provide the right kind of language experience during the deaf child's developing years (Nolan and Tucker, 1988; Clark, 1989). Modern oralists take the view that it is very important that the spoken language surrounding the hearing impaired child is relevant to his or her needs and interests. The language offered should be related to the child's focus

113 of attention at any particular moment. Creating situations which require communicative exchange is part of the skill required by an adult in facilitating language acquisition. Once adults develop sensitivity to the deaf child's interests and communication needs, satisfying interaction can occur (Clark, 1989). The more the adult offers communication that is relevant to the deaf child's interests, the more the child will attend to speech and the more responsive and interactive he becomes. Communicating with the hearing impaired child gets progressively easier for the adult. And, as these children develop their capacity to listen, the more feedback they get from their own vocalizations and this in itself encourages further vocalization. As the auditory signals received by the child from the spoken language environment come to be perceived as linguistic symbols so the process of language acquisition gets under way. Support for Oralism: - Those who believe in Oralism as the most beneficial communication method do so because of the benefits it offers for deaf individuals for assimilation into a hearing society and in education. Oralists choose these benefits over those provided by ASL as they are based on personal fundamental values for what they see as most necessary in life. These values that Oralists embrace come from the historical influences of educational endeavors and conformity to social norms. The Oral communication method does indeed procure higher levels of educational success and assimilation into the hearing society for deaf individuals. Current research indicates that deaf individuals using Oralism, compared to their deaf non-oral peers, tend to have higher vocabulary, literacy rates, and opportunities. Deaf individuals who use Oralism have proficiency with spoken language and have an average reading ability of thirteen to fourteen-year-old levels, which is approximately double the US national average for all children who are deaf. Furthermore, programs using Oralism generally have strong academic curricula resulting in high achievement levels and more students who go on to complete secondary or higher education programs. This also results in more social, educational, and work opportunities and to a more fulfilling and independent adult lifestyle. These benefits of Oralism allow deaf individuals to reap the educational benefits and equal opportunities that the Oralists, continue to cherish.

114 Furthermore, the Oral communication method also has new strategies and technology to assist in successfully educating the deaf. According to ASL Access, which is a leading organization providing media to deaf individuals, those who use the Oral method have more qualified teachers. Deaf individuals using other communication methods often lack qualified and fluent teachers as most teachers of the deaf are hearing adults. On the other hand, deaf individuals using Oralism have a consistent and a plentiful supply of role-models who understand their primary language and how to teach with it. Also, there are laws that ensure educational supplements or services are available to provide the proper aid and instruction necessary for the deaf individuals. This includes necessary services such as speech therapy, audiology services, and special education teachers to ensure educational success through Oralism. Also, the development of new technology has allowed for more deaf individuals to access oral communication, which in turn allows for easier access to educational information. The recent developments in technology include cochlear implants, hearing aids, FM Systems, and several other devices that enhance the ability of deaf individuals to use their residual hearing. All of these developments assist deaf individuals in using Oralism to facilitate easier education. Because of the benefits received from the use of Oralism, increasing access to it, and the importance placed on education by Oralists, it is seen that the Oral communication method can indeed be beneficial to deaf individuals. Apart from education benefits, assimilation into the hearing community is another advantage of oralism. The benefits for the assimilation of deaf individuals are two-fold. First, deaf individuals benefit from it because they become included and accepted by the majority, the hearing population. Deaf individuals using a communication method other than Oralism have been less accepted in schools and in the workplace because it was evident that they were different from norm. Using Oralism to assimilate deaf individuals into the majority allows them to feel accepted, which is a noted fundamental value of Oralists.

115 The second benefit of assimilation of the deaf is the ease it provides to the hearing majority during communication. Deaf individuals using Oralism can generally integrate into work and social areas because of their ability to "appear" assimilated into the social norms and therefore make communication for all less intimidating. Thus, it is clear that the Oral communication method provides benefits both in education and assimilation and, because of their fundamental values; Oralists declare it as the most beneficial communication method for deaf individuals. Problems with Oralism 1. Language Delay Oralists acknowledge that with an auditory-oral approach profoundly deaf children typically do not learn to listen immediately they are fitted with hearing aids and that spoken language acquisition takes longer than when a child has normal hearing or a less severe hearing loss (Nolan and Tucker, 1988; Clark, 1989). Delay in language acquisition does mean that some deaf children cannot communicate through language during the early years in quite the same way as a hearing child. The frustration caused by this delay make deaf children suffer serious emotional problems which may persist into adulthood (Meadow, 1980). Also, there may be a problem when the language-delayed deaf child starts school. 2. The Struggle to Communicate and Acquire Language The hearing impaired child is always at a disadvantage relative to hearing children in receiving information via the spoken word: the hearing impaired child must concentrate harder with both eyes and ears to keep abreast of lesson material. Furthermore, to be obliged to communicate throughout the day through spoken language increases the burden. This is particularly so for the mainstreamed hearing impaired child who is surrounded by competent hearer-speakers and who is likely to be reminded frequently of his hearing handicap by failures to grasp what is being said and by an inability to participate fully in the informal school life. 3. Suppression of Deaf Identity An oral education implies that the hearing impaired child should assimilate into the hearing world and become 'normalised'. The hearing impaired child is 116 required to conform as far as possible to the norms of hearing society and this is a violation of justice. An oral education in the mainstream denies deafness and implies an attempt to make a deaf child be what he or she can never be: a hearing person (Merrill, 1981). 4. Persistence of Oral 'Failure' Some writers think that there are differences in children's psychoperceptual abilities and that when a child is very deaf this feature can have a crucial influence on ability of some children to make use of residual hearing (Bamford and Saunders, 1991). Tumin (1982), on the basis of her experience with her two hearing handicapped believes that the ability to perceive the prosodic features of the speech is a crucial factor. The daughter, who acquired spoken language easily, was having a more severe loss than her sister but could perceive the intonational patterns of speech, whereas her sister could not. Oral 'failure' has considerably reduced over the last 10-15 years and oralists believe that some of the current 'failure' is a consequence not of the auditory-oral approach per se but of poor implementation of that approach. Most oralists would argue, anyway, that all children, however deaf, should be given the chance to develop oral language through a natural auditory approach since we do not know in the early stages how well a child can hear or perceive speech. 5. The Need for Perfect Conditions There is a view which accepts that fluent spoken language is a desirable goal and that many hearing impaired children have the potential to achieve it but that in practice the goal is only achievable under certain conditions. These conditions, it is argued, are often too difficult to meet. According to this view the demands of the auditory-oral approach, with the necessity for consistently good hearing aid maintenance and management and the need for a facilitating oral language environment both at home and at school, are beyond the capacity of parents and educators. However, researchers like Clark (1989) claimed that there have been good oral achievements for many deaf children and young people despite a combination of unfavourable factors. This is not to be said that the presence or otherwise of these features and circumstances have no significance but that they are not, as it is claimed, crucial factors.

117 SIGN LANGUAGE: - In the late 1700's and 1800's, sign language emerged as a communication method for the deaf and was used extensively. In USA, it was not until the 1800's that ASL was introduced to deaf individuals as an official communication mode. Sign language was brought to America in 1817 by Thomas Hopkins Gallaudet, an American clergyman in search of a new method of deaf education, and Laurent Clerc, a deaf Frenchman who used signed communication. Together the two men configured the beginnings of a signed language and established the first deaf school in America that led to the development of American Sign Language. Sign language is a visual language with its own grammar that uses manual movements to represent concepts (Schirmer.A. 1993). Some people consider sign language to be the natural language of deaf individuals because they use visual and tactile input to compensate for the loss of auditory input. Sign language is an independent language and has complex structures like any other verbal language. The structure of any sign language like ISL, ASL, BSL etc. is not the same like any verbal language. Sign languages change country to country and are not universal. There exists many numbers of sign languages. Sign languages are not man made. It has evolved on its own like any natural language. Like verbal languages, sign language too has regional variety, for example, Hindi of a Delhite and the Hindi of Mumbaian are very different. India too has assigned language with its regional varieties. Sign languages have its own dictionary and grammar. The characteristics of a language displacement, arbitrariness, cultural transmission, creativity, and duality are present in sign languages. Sign languages do not only involve use of 'only hands'. Hands play a very significant role in sign language, whole body and facial expressions too have a part in sign language. The features of a sign language are: Designator - the hand shape Tabula - the location of the sign Signation - hand movement of the sign Orientation - the direction of the movement relative to the signer's body. There are differences between sign language and sign system. They are:

118 Sign Language Sign System Each concept/word has a sign Each morpheme has a manual sign Naturally evolved Artificially made Has independent grammar Uses grammar of the verbal language Has to be used independently Has to be used along with speech Supposed to replace speech Supposed to supplement speech Used in bilingualism Used in Total Communication Indian Sign Language Indian sign language is not well studied or adequately documented. Hence many of its aspects related to grammar and its use in the deaf society remain unknown. Sign language is an integral part of the deaf community in India. ISL is used by over 10, 00, 000 deaf adults and approximately 500,000 deaf children (Vasistha et al., 1980) less than 5% of whom attend special schools for deaf students. While there are 15 official languages in India and over 200 different dialects, there is only one Indian sign language. There are four major regional dialects centered in the urban areas: Delhi (North), Kolkata (East), Bangalore-Chennai (East) and Mumbai (West). It is claimed that ISL is used not only on India but also in Pakistan (Zeshan, 2000). ISL has various regional varieties sharing the same grammar. Zeshan claims that common vocabulary among the regional varieties is from 60% - 85%. Indian Sign System In western developed countries one verbal language has several parallel sign systems created by different scholars. For example, English has many parallel sign systems like Seeing Essential English (SEE I), Signing Exact English (SEE II), Signed English (SE), Sign English (SE) etc. verbal languages in India do not have as many parallel sign systems as in English. However, due to a UNICEF funded project at A YJNIIH, Indian sign systems have been created. These are created keeping the vocabulary and grammar of the language in mind. ISS, like any other sign system, has to be used with speech. Support for Sign Language: - There is still the side of the debate supported by sign language groups who do

119 not disvalue education and assimilation, but instead highly value social-emotional benefits and the privilege to exercise human rights. Developing social-emotional stability is one way to be at peace with oneself. Aspects such as an individual who can adequately function, hold positive self-esteem, and accept oneself are some examples of sound social-emotional development. These aspects are known to be procured through using sign language, which is why those who support strong social-emotional development also promote sign language. Current research suggests that, deaf individuals who use sign language as a communication method have indeed been found to have higher social-emotional development than those deaf individuals who do not. The deaf individuals who use sign language have higher self-esteem, feel valued, feel complete and not "broken", and have a strong sense of identity so they can feel accepted for who they are and not for what others want them to be (Orsi 1, Sign Media, Inc. 2). They also identify more readily with their deafness and are confident in themselves as a whole individual whereas those who use Oralism find themselves in denial of deafness, "fixed," forced to speak so they are more "normal," and devalued by society. Furthermore, deaf sign language users receive additional social-emotional development because they can identify with a community of people that shares sign language as a communication method, the Deaf Culture. Furthermore, deaf sign language users receive additional social-emotional development because they can identify with a community of people that shares sign language as a communication method, the Deaf Culture. The Deaf Community is a community that not only shares the communication method of sign language, but also shares a culture that gives acceptance to deaf individuals for who they are despite their "differences". Although this acceptance does come from a minority group, it comes wholeheartedly as conformity nor is educational status necessary. Belonging to the Deaf Culture allows deaf individuals to be proud of being deaf and form a stable and true sense of identity (Schirmer 1994). In the Deaf

120 Culture it is understood that deafness is not a disability but instead it is an accepted and respected characteristic. There is still the side of the debate supported by sign language groups who do not disvalue education and assimilation, but instead highly value social-emotional benefits and the privilege to exercise human rights. Developing social-emotional stability is one way to be at peace with oneself. Aspects such as an individual who can adequately function, hold positive self-esteem, and accept oneself are some examples of sound social-emotional development. These aspects are known to be procured through using sign language, which is why those who support strong social-emotional development also promote sign language. Current research suggests that, deaf individuals who use sign language as a communication method have indeed been found to have higher social-emotional development than those deaf individuals who do not. The deaf individuals who use sign language have higher self-esteem, feel valued, feel complete and not "broken", and have a strong sense of identity so they can feel accepted for who they are and not for what others want them to be (Orsi 1, Sign Media, Inc. 2). They also identify more readily with their deafness and are confident in themselves as a whole individual whereas those who use Oralism find themselves in denial of deafness, "fixed," forced to speak so they are more "normal," and devalued by society. Furthermore, deaf sign language users receive additional social-emotional development because they can identify with a community of people that shares sign language as a communication method, the Deaf Culture. Furthermore, deaf sign language users receive additional social-emotional development because they can identify with a community of people that shares sign language as a communication method, the Deaf Culture. The Deaf Community is a community that not only shares the communication method of sign language, but also shares a culture that gives acceptance to deaf individuals for who they are despite their "differences". Although this acceptance does come from a minority group, it comes whole-

121 heartedly as conformity nor is educational status necessary. Belonging to the Deaf Culture allows deaf individuals to be proud of being deaf and form a stable and true sense of identity (Schirmer 1994). In the Deaf Culture it is understood that deafness is not a disability but instead it is an accepted and respected characteristic. In addition, using sign language as a communication method allows for equal interactions among deaf individuals within the Deaf Community. Conversing with other deaf individuals who share the same concerns, language, deaf pride, confidence, and self-esteem is invigorating and encouraging. Thus, using sign language and belonging to the Deaf Culture has proven to be beneficial for deaf individuals' social-emotional development. In addition to social-emotional development to promote inner peace, using sign language as a communication method also allows deaf individuals to exercise human rights. Thus, it is reasonable to understand how the social-emotional benefits and use of sign language as a communication method fulfill these fundamental values of sign language groups who then label Sign Language as the most beneficial communication method for deaf individuals.

Problems with Sign Language

1. Sign language and parents of the deaf: Parents feel a time pressure to learn and be proficient in sign language. The communication, many times, is restricted to the parent's skill in sign language usage.
2. Access to the Curriculum through Sign Language The majorities of teachers of the deaf currently working are 'hearing' and have not received training in sign language. Moreover, the sign language does not incorporate the conventions of everyday colloquial language. There is also problem in semantic distortion in the use of Idiom through sign language.

THE BILINGUAL APPROACH Bilingualism is a relatively new idea and one which has attracted a lot of recent attention and interest. Bilingualism can be seen as a reaction against both oral-only and TC approaches. Bilingualists share with advocates of Total Communication (TC) the view that an auditory-oral approach fails to meet the communication and linguistic needs of children with substantial hearing losses. But bilingualists are equally critical of TC and agree with the view that combining speech with a contrived system of signs does not bring verbal language to deaf children. Furthermore, they believe that TC does not directly offer a language in sign. TC is perceived to be speech centred and speech does not serve the developing deaf child's communication and language needs. The introduction of TC has been successful in persuading many former oralists to become more 'flexible' in their attitude towards sign and prepared to acknowledge that an oral-only approach does not meet the needs of at least some deaf children. It is suggested that sign is the natural language of the deaf: their 'biologically preferred' mode (Charrow, 1975). Young deaf children, left to communicate among themselves, have been observed 'naturally' to develop a gestural code of communication (Heider and Heider, 1941). Thus, fundamental to the bilingual approach is that the first language of all deaf children should be the sign language which belongs to the Deaf community of the country concerned. Bilingualists consider access to sign language, as a first language, is the birthright of all deaf children. However, there is support for bilingualism and acknowledgement of the deaf child's need for verbal language. Literacy is an important goal for bilingualists because they accept that without the ability to read and write an individual is handicapped in a society. However, for bilingualists the route to verbal language is different from that advocated by supporters of oralism or TC. There appears to be universal advocacy of learning verbal language as a second language. A verbal language, such as English, should be taught only when the first language, sign language, has become established in the developing deaf child. With both oralism and TC the aim is that the verbal language (e.g. English) should be acquired as a first language.

Components of Bilingual Approach? Strategies for the Acquisition of Sign Language: the Preschool Years

1. In the first few months of the deaf infant's life the baby is much preoccupied with the touch, smell and sight of the care-giver and at this stage deaf mothers tend to vocalise more than they sign (Woll and Kyle, 1989).
2. It is when the infant sits up independently and pays attention to aspects of the wider environment that the signing parent starts to communicate in sign. The signing care-giver must gain the deaf infant's visual attention to give information through sign yet at the same time relate the information to the object, or focus

123 of attention in the environment. 3. Signing care-givers adopt a variety of strategies to overcome the problem of divided attention. Care-givers manoeuvre themselves into the visual field of the infant and produce a high proportion of signs within the child's focus (Harris et al., 1989). Care-givers wait for the deaf child to look at them and then produce signs appropriate to the situation (Mills and Coerts, 1990). It is possible to get the child first to attend to the care-giver's face by gently tapping the child, or moving his or her face, and then sign what is to be referred to while pointing the (care-giver's) arm in the direction of the object (Woll and Kyle, 1989). A care-giver can point to an object, or picture of an object, checking that the child's gaze is directed towards the object or picture and then redirect the child to the adult and provide a sign for that object (Woll and Kyle, 1989). Another strategy observed is to sign on the deaf infant's body (Maestas and Moores, 1980) and to manipulate the child's hands into the shape of signs and guide its movements (Bouvet, 1990). Ensuring that the deaf child is seated comfortably and is supported means that the adult can face the child and at the same time look at pictures or play with toys. In this situation an adult can offer signs without being physically separated from the child (Mills and Coerts, 1990). Learning through Sign: The School Years 1. It is assumed that by the time the deaf child reaches school age he or she has achieved the linguistic competence necessary to have access to the normal school curriculum (Johnson, Liddell and Erting, 1989). Following the bilingual principle of using the child's first language for educational purposes the curriculum should be offered in sign language. Those who offer curricular content to the children must be fluent signers. For this to be achieved it is extremely important, to make considerably more use of deaf signing adults in formal education than is currently the case (Pickersgill, 1990). 2. It is Sign Language, as the L 1 of deaf children, which should be used to enable the child to acquire L2, such as English. According to Johnson, Liddell and Erting (1989), verbal language will be taught as a second language and methods of verbal language instruction will take advantage of the first language competence the children already have. Amongst bilingualists there now seems to be almost universal approval of approaching verbal language via the written rather than the spoken form (Johnson, Liddell and Erting, 1989). The reason

124 for not approaching verbal language through speech is the belief that essentially deaf people perceive language in a visual and not in an auditory way. It is important, therefore, that as part of this process deaf children are enabled to come to an understanding of the linguistic principles of sign language, of the way it is structured and formed. Bilingual Approach: Pros and Cons One problem with attempting to evaluate the efficacy of a bilingual approach is that we do not have sufficient experience of use of the approach to know whether or not deaf young people emerge from it as fluent signers and as literate, knowledgeable and well informed people. The main elements of the argument seem to be these: 1. Deaf people should be recognised not as handicapped individuals but as a cultural and linguistic minority group with rights of access to education, employment, etc. equal to those of other members of society. 2. Natural sign languages have the same linguistic status as verbal languages. 3. Deaf children have the right to acquire their own 'indigenous' language, sign language, as a first language. 4. Given appropriate experience, deaf children acquire sign language at the same rate and in a manner that is very similar to the way hearing children acquire spoken language. 5. Hearing parents, if offered appropriate support, can communicate comfortably through sign with their young deaf child. 6. Deaf signing adults have an important role to play in helping hearing parents acquire sign communication and in developing sign language in deaf children. 7. Deaf children should be educated through the medium of sign language as only then will they have full access to the normal school curriculum. 8. Deaf children can become literate, that is, acquire verbal language in the written form through the language base of natural sign language. 9. It is morally wrong to impose on deaf children a language they cannot apprehend, that is, spoken language. 10. The linguistic potential of the deaf child can be realised only through being enabled to acquire sign language as a first language.

125 Communication Strategy for High School going Hearing impaired Communication training is instruction provided to a person with hearing loss to maximize his or her communication potential. A communication strategy is a course of action taken to facilitate a conversational interaction or to rectify a problem that arises during conversation. It include any verbal or non verbal behaviors that can be used to improve the effectiveness of communication (Gagne et al 1991). Tye murray (1994) grouped communication strategies under two general categories. a) Facilitation strategies b) Repair strategies. (a) Facilitative strategies This includes instructing the talker and structuring g the listening environment to enhance the listener performance. There are four Facilitative strategies, which may be used to influence: i) Communication environment:- Constructive strategies are managing the physical environment In which conversation takes place. (eg noise poor lighting). A person structures the environment to optimize communication by minimizing background noise and ensuring a favorable view of the talker. e.g, move close to talker, reduce background noise, adequate lighting, no reverberation in room etc. ii) Patients speech recognition skills: Adaptive strategies:- The individual with hearing loss implements relaxation techniques. Attending strategies:- the individual pays attention to situational, linguistic and facial cues for the purpose of inferring partially recognized messages (e.g. anxious / happy) Both adaptive and attending strategies are methods of counteracting maladaptive behaviors that stem from hearing loss. Anticipatory strategies:- The individual prepares for conversation interaction In advance by anticipating conversational content and potential listening difficulties. iii) Communication partner Instructional strategies: A person influences the 126 communication partners speaking behaviors by asking the partner to speak clearly, facing forward. iv) Message:- Message tailoring strategies: Individuals encourage communication partners to use short sentences or they control the topic of conversation. Erber (1988) had shown that persons with HL have less difficulty answering questions that require a closed set response than general open ended question. (b) Repair strategies Repair strategies are behaviors used to overcome a communication breakdown between communication partners. A communication breakdown occurs when one of the communication partners fails to understand-a message that was intended for that person (Gagne et al 1991) Repair strategies can be used by the person who is providing the information (expressive strategies) or by the person for whom the message is intended (receptive strategies) Receptive strategies: Could you say that again (Repeat repair strategy). Who is going to give you ride (Request for information repair strategy). I missed that completely that (key word repair strategy) are you talking about? Asking for more information (elaborate repair strategy). Expressive repair strategy:- are used to rectify the communication breakdown that occurs because the HI person produces an unintelligible speech utterance, and conversational partner cannot recognize it) Specific repair strategies: Repeat all or part of message Rephrases message Elaborate message Simplify the message Indicate the topic of conversation Confirm the message 127 Write Finger spell. Non specific repair strategies: What Huh Pardon Model for communication training: The model provides a frame work for stages of communication strategies training (Tye Murray 1992) 1. Formal Instruction 2. Guided learning 3. Real world practice. Formal instruction:- Provides individuals with information about vanous types of communication strategies and appropriate listening and speaking behaviors. Guided learning:- Train the patients to use a communication strategies in a structured setting. Activities include role playing, analysis of video taped scenarios ,continuous discourse tracking and drill activities. Video taped scenarios provide examples of communication interaction that can be used to discuss communication strategies. Individuals view videotaped scenarios that contrast inappropriate with appropriate use of communication strategies. Continuous discourse tracking is another means to provide guided learning. It is an aural rehabilitation technique in which the listener attempts to repeat verbaton text presented by a reader. If, the receiver cannot recognize then he/ she should use a repair strategy. Exercise drills can provide guided learning. An example of a drill activity is a sentence identification task (Tye Murray 1997). Real world practice" practice a new skill or behavior in an everyday environment. Short term training: WATCH (formal instruction) is an acronym that Montgomery (1994) coined to describe

128 short communication strategies training program. W - Watch the talkers mouth not his eye A - Ask specific questions T - Talk about your hearing loss C - Change the situation H - acquire health care knowledge SPEECH (Formal Instruction) S = spotlight your face Keep face visible, distance, same room P = pause slightly while speaking Moderate rate E = empathize and be patient Be patient, utilize facilitative and repair strategies. E = ease their listening Gain listener attention, ask for communication solutions C = control the circumstances Manage environment H = have a plan Use appropriate communication strategies for situations Assertiveness training Most of the time assertive behavior is appropriate for good communication assertive people respect their communication partners, but they also meet their own needs they admit their problems and ask for assistance. The assertive person indicates for e.g. The need to speech read because of poor hearing The difficulty created by the poor lighting. One area that is often addressed in aural rehabilitation is development of assertiveness Behaviors stressed in Assertive training According to Spitzor, Loder and Giolas (1987) some of the behaviors given emphasis

129 In assertive training are 1) Asking for assistance when something is missed e.g. I missed the date of meeting when will the meeting be the place? 2) Getting feedback regarding a portion of the utterance (e.g. I know that you were discussing the movie you saw was the movie Raiders of the Lost Heart?) 3) Information others of hearing impairment 4) Moving seat to advantageous location. 5) Continuing to try to understand (eye contact using communicative repair strategies etc) 6) Attempting to anticipate to flow of conversation 7) Modifying strategy when initial approach is unsuccessful ego (I am sorry but I still don't understand that name would you mind telling a word it rhymes with?) 8) Negative behaviors should be reduced or extinguished. The hearing impaired person should not demonstrate impatience, tension or hostility when there is a communicative failure. Once the behaviors stressed in assertive training are acquired by a hearing impaired person. He/she is ready to select the appropriate strategy depending on the situation and use them effectively. Role playing Discussions are not sufficient in assertiveness training. Clients need an opportunity to practice new skills in a safe structured environment if they are to change a life long history of passive communication behaviors. Role playing in a group can provide practice of new assertiveness skills.

4.6 Communication Option: Justification and Challenges
Communication options for cochlear implanted children: In addition to educational setting, the other major educational decision made relates to communication mode. Oral communication has often been linked with improved outcomes from implantation and that spoken language at an elementary level evidenced

130 higher levels of language and literacy at high school. Studies comparing outcomes from implantation in children using oral communication and those using signed communication often suggest that communication choice is a 'once and for all' decision, that communication does not change over time, or that differing communication modes may be used in differing situations. However, children with cochlear implants do change communication mode after implantation, particularly if implanted early (Watson et al., 2006). Most parents have changed communication mode following implantation. The trend is markedly towards an increase in oral communication, even for children who had initially used signed communication. Parents' views are that this shift was largely driven by the change in access to audition provided by the implant and was led by the child's changing needs and own choice. Those implanted younger were more likely to change communication mode from sign to oral and did so more quickly than those implanted later, with 83 per cent of those implanted below the age of three using oral communication exclusively 5 years after implantation. As per researchers, majority of cochlear implanted children have moved from signed communication to oral within 6 months of implantation. Parents and young people have showed interest in the use of some signed support or Sign Language (e.g. BSL/LSL/ASL), once spoken language had been established. Thus, while cochlear implantation offers increased opportunity for the development of oral communication, parents have recognized that differing approaches may be appropriate at differing times, and this might include the use of signed communication. The concept that parents have to make a 'once and for all' decision about communication mode, shortly after diagnosis has been changed by cochlear implantation. Challenges: For educators, cochlear implantation has provided new opportunities, but also new challenges to address: Providing flexibility in educational provision over time. Providing effective support in mainstream, inclusive educational settings. Supporting a more diverse population with more subtle communication needs. Monitoring subtle changes in progress over time, and identifying difficulties which may impede progress, whether these originate in the child, the environment, or in the technology.

131 Providing appropriate education for those who have an additional learning disability. Providing appropriate support for the increasing demands in the secondary, school setting. Managing complex, changing technology in a busy educational environment. Collaborating effectively with a greater number of professionals. Providing peer-group support for the psycho-social needs of the increasing numbers of those in mainstream settings (Archbold, 2010). There remains the challenge of long-term management in education for this new group of children, who are deaf but functioning with levels of hearing provided by implantation not previously possible for profoundly or severely deaf children, and who are increasingly using two implants. They are not functioning as profoundly deaf children of the past, but neither do they function as hearing children. Communication options for early identified children having access to good amplification: Children who have been screened early and fitted with hearing aids before the age of six months reach a higher expressive and receptive language level, their speech is more intelligible, they have higher auditory capacities, fewer social-emotional problems, their parents have better attachment, they become better readers and more and more of these children are going to a mainstreamed educational setting. The Simcomm (Simultaneous communication) approach has evolved to be a better approach for early identified children fitted with good quality hearing aids or cochlear implants. Challenges: Transition from sign to spoken communication is dependent upon the age of hearing aid fitting. Children fitted before eighteen months of age are able to make the transition well. However, if hearing aid fitting occurs after thirty months of age, the probability of transition from sign to speech is significantly reduced. Several factors have been identified which affect the communication option opted by the family and the child fitted with hearing aids. These factors include: Continuing debate concerning the appropriate language(s) of instruction in deaf education (e.g. speech alone, cued speech, speech+sign). Still-evolving approaches for developing speech and auditory capacities in hearing aid users.

132 Individuals' receiving their hearing aids relatively late (3-12 yrs of age) Pre-fitting language and cognitive abilities Concomitant neurological or psychological conditions Post-fitting educational methodologies Greater complexity and abstractness of reading materials for older students Degraded signals provided by hearing aids which restrict full access to spoken language. Communication options for late identified children having access to good amplification: The single most important factor in determining successful development of spoken language after successful identification of hearing loss is the age of hearing aid fitting and commencement of speech, language therapy and remedial education. The younger a child is intervened, the more likely they are to be able to understand spoken language and to use intelligible spoken language for everyday communication. Universally for late intervened children, Sign is used in conjunction with speech (total or simultaneous communication) or a sign language such as British Sign Language (BSL), Indian Sign Language (ISL) or American Sign Language (ASL) is used as the child's first or primary language, with spoken or written English being introduced as a second language. The following pattern proposed by Archbold et al. (2000) has been advocated. This includes: Oral communication approach: the child was communicating at home and school and being educated by means of spoken language. Sign communication approach: the child was communicating and being educated using sign for all or part of the day and to whatever degree; this included use of spoken English with sign support (total or simultaneous communication) and the use of sign language (Archbold et al. 2000). Challenges: The sensitivity of the central nervous system and neural plasticity is an important concern. While the effects that deafness may have on neuronal connectivity within the auditory pathway have yet to be defined, neural plasticity of the brain in infants has been discussed when considering early intervention. It seems that those intervened over the age of 3 may need more time to adjust

133 to the new signal being received through hearing aids, and are less likely to change from a signed approach to an oral approach, and some who do change are likely to take longer in comparison with those intervened at an earlier age. Adaptability to change is another issue. Those children who do not change from sign to oralism or take longer time to change are because their communication pattern would have been more firmly established. Globally, despite growing consensus for early identification of hearing loss congenitally deaf children generally spend at least 3 years with only very limited access to sound and even if any still learn to use vision as their primary or sole route to communication. In order to change from the use of a visual system, which utilizes a sense that for the majority is unimpaired, the auditory signal will need to become the more salient route for communication and this process takes years not months to be developed. 4.7

Tuning the environment (Home & school) for facilitating Language and Communication

The child's communication approach would be considered as one factor in the decision regarding school placement. For children who were intervened between the ages of 3 and 5 and those who used sign when they started school, their placement will differ significantly. Once a child starts school, there is a pressure on educationalists to ensure that the child accesses the curriculum. The emphasis is on teaching and ensuring that the child has grasped significant concepts and accessed information. If the child's language development is delayed compared to their hearing peers, then the pressure to ensure that the child can access the curriculum will be increased. Staff may have less time available to spend in promoting the child's listening skills, either in a global way by encouraging the child to listen and presenting auditory cues first, followed by visual cues as necessary, or by engaging the child in discrete listening activities. It is also possible that the expectations of staff, maybe born out of experience of signing deaf children with hearing aids, are that children who start to use sign do not change, whereas in reality children intervened early and fitted with good quality hearing aids have better spoken language, and over time this may change the child's communication use. Classroom adaptations for children with hearing impairment: IN LOWER GRADES:

134 Preferential sitting Use of FM system/traditional amplification along with hearing aid. Selection of classroom with good acoustics and low noise level Regular monitoring of hearing and gain levels. Regular assessment of speech perception IN HIGHER GRADES: Curriculum based assessment Use of assistive devices Identifying strengths and weaknesses Capitulating on the individual's strength Enhancing written more than oral usage of language Using sign language/ SimCom if the individual is adapted with its use. Identifying courses which the individual will have ease of study. 4.8 Let Us Sum Up Structured method believes that language is teachable hence has to be taught. It advocates the use of symbol system to represent the structure. The students are made to work on grammar rules by analyzing, categorizing the grammatical aspects. It advocates the use of memorization and imitation work in developing patterns of language. The natural method believes that language is not teachable but rather learned. One has to ensure exposure and input and the children "learn" the language naturally.

The child is expected to acquire language implicitly through interaction occurring within the environment. No symbol system is used. The main emphasis is on the development of language via oral conversation method based on the experience of the children as it happens naturally in the home environment and the instructions are all planned to parallel the sequence of language acquisition in hearing children. The combined method utilizes components of both structured and natural method.

135 SimmComm, Total Communication and Bilingualism are some of the combined methods. The Oral method and Sign Language are the two most widely used and highly debated methods of communication for the deaf. Some believe the Oral communication method to be most beneficial for deaf individuals while some agree on Sign Language to be the most beneficial method. Children with cochlear implants change their communication mode after implantation, particularly if implanted early. Most parents have changed communication mode following implantation. The trend is markedly towards an increase in oral communication, even for children who had initially used signed communication. Children who have been screened early and fitted with hearing aids before the age of six months reach a higher expressive and receptive language level, their speech is more intelligible, they have higher auditory capacities, fewer social- emotional problems, their parents have better attachment, they become better readers and more and more of these children are going to a mainstreamed educational setting. 4.9 Check Your Progress 2. What are the factors that affect integration of a child with hearing impairment in normal school? 3. What is structured method of language teaching for children with hearing impairment? 4. What are the educational problems faced by children with hearing impairment in the Indian context at various levels. 4. What are the differences between American sign language and Indian sign language 5. What is natural approach? Why is natural approach superior over structured method 6. What are the classroom adaptations for children with hearing impairment?

136 4.10 References: 1. Thicker, I., & Nolan, M. (1984). Educational audiology. Dover, NH: Croom Helm. 2. Clarke, B. R., & Kendall, D. C (1980). Learning disabled or hearing impaired: A folly of forced categories. British Columbia Journal of Special Education, 13-27. 3. Meadow, K. (1980). Early manual communication in relation to the deaf child's intellectual, social, and communicative functioning. American Annals of the Deaf, 113,29 -41. 4.

Educational Intervention If your child is receiving help in school you will have no hesitation to hear the term intervention. A set of people apply this declaration loosely, to express any kind of assistance once a child gets. But intervention has a very particular definition. Knowing what the term means puts you in an improved position to understand the help your child is getting in school. That is why Educational Intervention is a most important part of an education system. An Educational intervention is a specific program or set of steps to help a child improve in an area of educational need. Like reading or math, there are instructional interventions and also sometimes called academic interventions. In this regard education intervention has various education programmes like pre- school, primary, secondary and high secondary in inclusive setup. The education also underwent changes in the philosophy, mode of communication, teaching methods, curriculum, evaluation etc. In the light of this there are two types of key elements of Educational Intervention concept. These are: Educational intervention— I. Aimed at a particular weakness. II. Specific and formal. Aimed at a particular weakness : That means the educational programmes have become need based of the child and search the particular weakness where the children are not capable of the subject orientation programme. Example: In academic progress hearing impaired children particularly in deaf, he/she can use in picture where the comprehend language is used which relies heavily upon the language skill. Specific and formal. That means the educational programmes in hearing impairment have become mainly fostering the academic achievement in specific formal way towards the mainstream atmosphere.

5.3.1. Needs and Areas of Educational Intervention in H.I. To understand

the difficulty that students with hearing impairments may have in presenting oral reports are the potential language development problems linked to hearing impairments and they cannot articulate words clearly. So these educational obstacles related to hearing impairments stem around communication. A student with a hearing impairment may experience difficulty in: the subjects of grammar, spelling and vocabulary taking notes while listening to lectures participating in classroom discussions watching educational videos presenting oral reports

So from the above Points, Educational Intervention take a major role in a hearing impaired child. That is why Educational Intervention can play a great role to monitor a child's hearing, speech, and language development. The different varieties of needs used for documenting children's development are beyond the scope of this module. The needs are:

5.3.2. A-Speech and Language development

The ability to learn language and speech is the most severely affected area of development of the hearing impaired child. That is, without extensive training the hearing impaired child will not develop normal language and it is a great barrier to normal language development. So Speech and Language development is the most important part of a hearing impaired child.

B-Intellectual Ability Development

Thinking process of normal and deaf children are found to be similar. Cognitive abilities of deaf children are same as normal without language and it is called non-141 verbal intelligence. Hence, a hearing impaired children get a higher score in non- verbal intelligence.

C-Academic Achievement Performance

Hearing impaired children are frequently handicapped in varying degree of educational achievement and they are particularly handicapped in reading which relies heavily upon language

skills. Only small percentage of deaf or hearing impairment individual comprehend language well enough to read text book. So in this regard, academic achievement of deaf children is mainly due to the fact that academic atmosphere in school and colleges is predominantly verbal in nature and that the deaf children have deficiency in verbal skills. D-Social and Occupational Adjustment Social and personality characteristics of hearing impaired children are markedly different from the normal children because social interaction depends upon communication with the speech. A hearing impaired child particularly deaf focus trouble in communicating with speech. This agreement the problem of social adjustment. Due to this such children live in a world of isolation. Due to such isolation hearing impaired children develops a sense of inferiority and frustration in the hearing impaired children. Areas of Educational Intervention There are mainly two important aspect of Educational Intervention. These are Curricular and co-curricular part. A-Curricular You all are skilled teachers of the students with hearing impairment and not required to explain what curriculum is; nor do you need to be told what adaptations are? However, it is always better to start from the beginning ensuring that one is absolutely clear about the basic concepts involved. Hence let us just quickly brush up what we know about 'curriculum' and 'adaptations'. Curriculum, in general is a detailed blueprint of 'what to teach' and 'how to teach' which includes the following aspects :

- (1) Objectives of Teaching Learning Process (TLP)
- (2) Content (subject matter) of the TLP
- (3) Speed and duration of TLP
- (4) Classroom curricular transaction strategies.
- (5) Calendar and schedule of activities and experiences required for facilitating TLP.
- (6) Teaching Learning Material (TLM) required for TLP.
- (7) Assessment strategies- formative as well as summative.

The curriculum must: Include child centred pedagogy keeping in mind the child's psychological development, interests and specific learning needs Ensure equal access in every possible manner like physical, attitudinal, academic and social. Facilitate learning in an inclusive learning environment with accessible material, positive attitude and relevant/adaptive teaching strategies. Prescribe for use of all available educational / assistive technologies to ensure equal participation of and effective learning in all children specifically for children with hearing impairments. Include all children with and without hearing impairment needs by providing differential opportunities to demonstrate learnt skills according to their learning abilities. Adaptation: Adaptation is an ongoing dynamic process that modify and adapts the IEP/ prescribe programme to meet the learning requirements of a student with hearing impairment and ensure that every student is challenged to learn. Adaptation must : Include components of life skills through transitional stages working towards independent living. Include locally available conditions/ opportunities/ situations to develop pre- vocational and vocational competencies. Integrate work pedagogy in education and include broad-based work experiences taking care of the needs of hearing impaired children. 143 Ensure participation of hearing impaired children in play, games, social and cultural activities to improve the physical and mental health by developing appropriate adaptations. Provide flexibility in school and class time tables to address individual needs of children Create opportunities for facilitated social interaction. Construct knowledge by connecting new ideas to existing ideas on the basis of materials/ activities. Incorporate required adaptation in curriculum (learning content, learning approach, learning aids and evaluation) to address and accommodate individualised learning styles.

B-Co-curricular A Child's holistic development is measured not only by his academic achievements. Sports & Games, Arts & Fine Arts and social skills combined together with intellectual excellence makes a student what he or she will be when he blossoms into an adult. In view of this opens an avenue of Co-curricular activities to prepare children with hearing impairment for his greater journey of life's-curricularactivities are not just 'nice to have' or 'desirable to have', but 'must have' qualities and this activity are like Yoga, Music, Dance, Sports and other activities moulds the wholesome personality in students and implementedfor character development in students. Types of Educational Intervention Education completes man. Students need quality education suitable for life. Perceiving the needs of the learners, appropriate changes are made in the curriculum, syllabus and textbook on a need basis. Currently changes have taken place in the evaluation system. The long-practiced marking scheme has been done away with and grading system has been brought in its place. The students are assessed not only during examinations but all through the term. Education intervention is conducted through activities in two broad senses. These are curricular and co-curricular activities. In this regard, there is no single type of Educational Intervention. So the prevalent types of Educational Interventions are group, individual, developmental and remedial.

A-Group: There is a range of inclusive teaching strategies that can assist all students to learn but there are some specific strategies that are useful in teaching a group which includes students with hearing impairments. The solution to all the problem arising out of formation of various levels within a group hence is known as grouping for instruction. The highlights of the grouping system are: There is no rigid class. All children of a same class do not remain within the same group or all subject. Children are grouped according to their abilities, strengths or weakness and are taught accordingly by separate teachers in separate class room. Type of flexibility within the group for instruction exists for most of the curricular and co- curricular lessons in the schools where grouping are practiced. It is an ideal way which could give an opportunity to each and every child to learn appropriately at his/her pace and as per the ability.

B- Individual: Man is a social animal and cannot live without society. Individuals are part of the society and the society in turns has many expectations from every individual. So both should contribute each other and individuals must acquire social efficiency. But society believes that education is necessary only for able children. Due to this hearing impaired children are often unnoticed resulting in ignorance of the society towards educational needs and social participation of the children with hearing impairment. A special education program should be customized to address each individual student's unique needs. A special educator provides a continuum of services, in which students with hearing impairment receives varying degrees of support based on their individual needs. Special education programs need to be individualized so that they address the unique combination of needs in a given student. In special education educational professionals use a student's Individualized Education Programmed "The IEP is meant to address each child's unique learning issues and include specific educational goals. It is a legally binding document. The school must provide everything it promises in the IEP. So with the help of IEP students with hearing impairment are assessed to determine their specific strengths and weaknesses and teacher produce the children's

145 placement, resources and goals. These are determined on the basis of the student's needs. Accommodations and Modifications to the regular program may include changes in the curriculum, supplementary aids or equipment, and the provision of specialized physical adaptations that allow students to participate in the educational environment as much as possible. Parent of students with hearing impairment must know what type of disability their child has, so they can get accommodations like speech therapy, auditory training etc. For example, if a student takes an academic test and it indicates that the student struggles with reading comprehension; parents can request speech and language support or classroom accommodations, such as extra time to complete reading and writing tasks.

C-Developmental: Developmental Education intervention must involve ongoing teamwork and discussion with parents and other service providers (therapists or special education teachers, assistants and one-to-one aids) involved in delivering in developmental education intervention services to each eligible child participating in the group and the child's family. Families must collect steady response on the child's progress, based on the needs of the child and family. In addition, families should receive feedback on how they can help their child learn and work on skills to support learning and development in the home environment. Developmental education intervention services should include the supports and resources (e.g., assistive technology, curriculum adaptations and equipment) necessary to maximize the child's opportunities to participate and learn in the group setting and services should use developmentally appropriate practices that are also responsive to cultural and language needs of the children in the group.

Guidelines for Selecting Developmental Education Intervention

What are the child's unique strengths, developmental needs and skills, interests, health status and history that contribute to the consideration of a group setting? If services are recommended for a child with health issues, what precautions and supports are necessary to ensure the child's health status will not be compromised in a group setting? Considering the child's chronological age and developmental status, in what ways might he or she benefit from participating in group services? What are the planned approaches and activities in a group setting necessary to

support the transition of the child to a typical preschool or preschool special education program? What types of adaptations, modifications, supports, and equipment might be needed to enhance the child's participation in the group setting? What characteristics of the group setting are important to achieve the goals and measurable outcomes in the child's and family's and to help the child benefit from the group experience. e.g., type of intervention model, need for staff fluent in the child's language, cultural considerations etc. D-Remedial: Remedial Education Intervention is also known as developmental education, basic skills education, compensatory education, preparatory education, and academic upgrading. It is signed to assist students in order to achieve expected competencies in core academic skills such as literacy and numeracy. Whereas special education in children with hearing impairment is designed specifically for students with hearing impairment. remedial education intervention can be designed for any students, with or without special needs; the defining trait is simply that they have reached a point of under preparedness, regardless of why. 5.4 Principles and Practices in Early Educational Interventions Family Centered, Contextualised (natural and inclusive environment) and Integrated (Collaborative) Support and Services 5.4.1 Introduction: Now our formal education is started from very early childhood. A child can go to school from 2 years + . There are many play schools for children. According to rule of our Govt. formal education is started from 5 years + in primary school. The children who belong to the age group of 5 years + to 6 years get education in pre-primary classes. There after they start their primary education from Class I. The children get support in the corner of nutrition, health and non-formal education also. The children of 0-5 years can go to the Anganwadi Centres. But the informal education is started from birth by the pleasant touch of mother. A child grows gradually in nature and he/she becomes a member of his/her family. So, then he/she starts to learn anymore from his/her family and surrounding also. We can say that a family has the important 147 role to develop the child. Every child is quite individually different from each other. So every child has different capability also. We should prepare various types of curriculum according to ability to fulfil their needs. 5.4.2 Principles: Early childhood education is the most important part in the life. Before 5 years a child can get education through informal and non-formal ways. But many play schools introduce formal education by playway techniques. So they follow some basic principles. These are : The educational goal must be child centrie. A child is a main component of education. So the main objective of education is to fulfil the needs of a child. The age limit of the education must be below 5 years. The education of below 5 years is called early childhood education. The education must be activity based. A Child likes to do activities. They can learn easily through more and more activities. The curriculum must be friendly. A child always wants to meet with his/her friends. They like to play with themselves. So, if the curriculum is filled up with joy a child can accept it spontaneously. The curriculum must be flexible. The curriculum can be charged on the basis of needs, time and environment also. The curriculum must be developed from simple to complex. The teaching or learning should be started from simple to complex. As a result the child acquires the concept easily. The curriculum must have the indication from known to unknown. If the learning activities are started from familiar situation to unfamiliar situation or known experience to unknown experience the child can learn anything properly. The curriculum must be prepared on the basis of interests and tendencies of the children. The Curriculum must be made from concrete to abstract.

In early childhood a child wants to observe all by touch, So, the curriculum should be prepared such a way that are fulfilled with many activities of concrete materials. 5.4.3 Family Oriented Programmed in Early Childhood Education : A child grows gradually in his/her own family. Every child becomes mature by the warm and nice touch of his/her family members. During the period of 0-5 years nature and family atmosphere both play the vital role. The family members continuously assist the child to adapt with nature and surroundings. The growth and developments of the children both are running on at the high rate before 5 years. So, the parents and other family members should keep it up in the mind that a child wants more support at that age particularly. Many research have already shown that if any child becomes strong physically and mentally at that age he/she can spend a healthy life for ever. The parents should spend the quality time with their child. In early childhood the every child wants to imitate someone who is the ideal to that particular child. The child often likes somebody and so he/she follows each activity of that person. Actually that person is the role model to the child. So, the family members or adult should be very much careful to nurture their little one. The child tries to accept all the behaviour of their guardians by imitation. We can say that early childhood is the crucial age of every life. Now our children with special needs start their journey as same as normal children. But the children with special needs demand extra support. Often many techniques and different methods are used to facilitate them. Suppose we have a learner who is a child with hearing impairment. Now there is a question how will we give fruitful instructions which are more beneficial for him to communicate with others. 5.4.3.1. Steps to follow : First of all we should remember that a HI child wants to show some gestures to interact with other. He points out some objects by the use of fingers. But we know very well that it is not enough. So, we can follow some procedural steps. Early detection is the most effective task to us. If this type of disability is detected after birth (0-6 months) by the parents the next attempt may be easy. After detection the parents should go for disability certification to measure the level of disability. According to level the parents should give him hearing aid. It is their duty to

149 make him habituated for the use of hearing aid. At the beginning the child does not want to use hearing aid. He often puts off hearing aid. The parents should be careful about it that he does not put off his aid. After habituation of use of hearing aid the family members should arrange different types of instruments (rattle, bell etc) or objects with various tones and tunes. The members will create the sound in front of him and utter clearly the names of those instruments or objects. This practice will continue on regular basis. The number of the instruments or objects are increased day by day. After identification of a sound we can proceed for another sound. Then he will be able to discriminate each sound among others. There after he can comprehend many sounds. It is an ordinary task of auditory training at home. Simultaneously we can show him many objects in front of him and properly pronounce the word repeatedly. It must be the face to face interaction. The parents must encourage their child to utter those words. At that time the child can try only not perfectly. After that the child needs more picture clues. The picture must be clear and colourful. It is quite natural that at that age the little one will become curious and investigative. Then he enquires very much. The family members should give him reply clearly to fulfil his requirement. The child needs love and care. The family members should not avoid or joke with him. They should keep up patience while they talk with their child. If the child feels that he is a victim he will stop the communication. The parents should send him for play with peer groups. The communication should be increased gradually. Here the parents can follow a technique which is called lip reading. When an adult talks with the child he/she should care it that the child can observe his/her lips clearly or not. The sentences must be simple and short. Dramatization is another effective technique. The family members can play the short roles to establish different characters or to make him realize many abstract thoughts. The child will also involve in it. But the adults will not express to the child that it is not true. They should present whole as same as real life. Thus the child can develop his speech and interaction with others. The parents should create the environment as if the child wants to interact with another member of the family spontaneously.

5.4.4 Inclusive Support According to RTE Act (2009) every child has a right to get formal education under the same roof. Sarva Siksha Mission (SSM) has already said that no child will be isolated due to his/her disability. On the other hand SSM has a slogan—'no discrimination'. So, every year SSM provides many grants to prepare TLM for the children with special needs. Now every school (directly Govt. & Govt. undertaken) has been transformed into inclusive school. In our West Bengal Govt. aided many schools are under the same circle. Every circle has a resource room where the special education are appointed through needs go to the resource room twice in a week. They get proper assistance on the basis of their requirement. The special educators are expert in different field of disability. Every special educator is responsible for many special need children of different schools within the circle. They visit regularly in every school and submit their report to the circle office (Circle Level Resource Centre—CLRC) as well as SSM. First of all they take report from the Head of the Institution of every school at the beginning of the session if any child with special need is admitted or any type of disability has been detected by the responsible teachers. There after he/she gives suggestions to the responsible teachers how the child will overcome the difficulties. If the teacher wants he/she can prepare different types of TLM for the child with special needs with the help of special educators. The teacher can enquire how he/she will use that activity of the learners. The special educator helps the responsible teacher to make up the teaching of children with special needs. Often SSM provides orientation programme for the teachers. The teacher should follow the techniques and methods which are demonstrated in orientation programme. Every child wants empathy not sympathy from us. So, it is high time to take necessary steps for the children. 5.4.5 Integrated Supports & Services If the child has high degree of hearing loss he needs support of some special techniques which are executed in special schools where special teacher facilitation the child how to apply some techniques in home. So, we can say that home and special school are not fully different unit but both are dependent to each other. The child can learn

151 the techniques and methods properly by the assistance of special teachers and then he may practice those techniques in home with his family members. The family members can also learn the techniques from the teachers. As a result they can rectify the child when he practices. According to RTE Act (2009) the child starts to go to normal school from 5 years + . There he meets with many friends and teachers. If the teachers of normal school have been known with such methods of communication with HI children they can develop his communication skill. The special school is not an isolated body but it can work with other associated bodies such as normal school, parents, family members and peers group etc. Thus the HI child can progress his speech. Below 5 years a child goes to Anganwadi centre. He gets chance to make friendship among the children there. The centre-in-charge should follow the techniques to interact with her learner. If she thinks that she needs adequate support of guardians she may call them and may take the help. A word must be kept in mind that integration is possible when all of us want to provide effective assistance to the child. 5.5.

Maxim, Methods of teaching & Lesson planning (group, individual and developmental, remedial) 5.3.1. Maxim, Methods of Teaching Every teacher or special educator wants to make maximum involvement and participation of the learners in the learning process. He sets the classroom in such a way so that it becomes attractive for them. He uses different methods, rules, principles etc. in order to make his lesson effective and purposeful. He uses general rule or formula and applies it to particular example in order to make teaching -learning process easy and up to the understandable level of students. These settled principles, tenets, working rules or general truths through which teaching becomes interesting, easy and effective are called the maxims of teaching. They have universal significance. Every person who is expected to enter into the teaching profession has to familiarize himself with the maxims of teaching. Their knowledge helps him to proceed systematically. In this context of Hearing Impaired Learners it is very much important to say that expression through language is the main barrier of learning. So all the times it is keep in mind that all words are new to them.

The different maxims of teaching are briefly explained below. The teacher or special educator should always proceed keeping them in view.

1. From known to unknown: - When a child enters into school, he possesses some knowledge and it is the duty of teacher to expand his previous knowledge. In case of Hearing Impairment (HI) students the teacher to expand his / her language also. Whatever he possesses should be linked with the new knowledge and language. If we link new knowledge with the old knowledge our teaching becomes clearer and more definite. This maxim facilitates the learning process and economises the efforts of the teacher and the taught. For example, is teaching English to the children and he is to teach the word 'water'. This way of teaching helps the learners to understand things fully. This way the teaching becomes definite, clearer and more fruitful. Example: - Water (Know) Stream (Unknown).
2. From simple to complex: - The main objective of teaching is to teacher and the learner's objective is to learn something. In this process of teaching and learning, simple or easy things should be first presented to the students and gradually he should proceed towards complex or difficult things. The presentation of simple material makes the learners interested, confident and feel encouraged. As they will show interest towards the simple material, they become receptive to the complex matter. On the other hand, if complex matter is presented first, the learner becomes upset, feel bored and finds himself in a challenging situation. For example, in mathematics we first present the idea of addition (+), subtraction (-), multiplication(\times) and then division. When the hearing impaired students gets admitted to 9th and 10th class we introduce algebra, square, trigonometry, geometry etc. As he proceeds further he becomes familiar with the complex material like matrices, integration, differentiation etc. In this way a learner shows interest by proceeding from simple mathematics to complex one. But if we reverse the situation, he will find himself in a challenging situation and will left his studies due to complexity of matter. Simplicity or complexity of the subject matter should be determined according to the view point of the learners. It makes learning convenient and interesting for the students.
3. From concrete to abstract: - Concrete things are solid things and they can be visualized but abstract things are only imaginative things. The child understands more easily when taught through their senses and never forget that material. On the other hand, if abstract things or ideas are presented, they forget it soon. As Froebel said, "Our lessons ought to start in the concrete and end in the abstract". For example, when we teach the solar system, we first visualize the sun through our senses and gives the concept of eight planets, galaxies, meteorites etc. Through this process, the learners understand the materials more easily. Some power of imagination also develops in them. But if we reverse the situation, it will become difficult for learners to understand anything. Another example, when we teach counting to the students we should first take the help of concrete objects like beads, stones etc. and then proceed to digits and numbers.
4. From analysis to synthesis: - When we divide a thing into easy parts or separate elements in order to understand it easily is called analysis. It is the process which helps in understanding the hidden elements of a thing or the cause of some incident or behaviour. For instance, in order to tell about the structure or functions of heart, the parts of the heart are shown separately and knowledge of every part is given. After it the students are made to understand the structure or system of working of the heart. In this way, even a very difficult thing can be easily understood. Synthesis is just opposite of analysis. All parts are shown as a whole. The process of analysis is easier than synthesis for understanding a thing. This process develops the analytical power of the students. It is the best method of starting the teaching process. For example, while teaching digestive system, we should first analyse the different parts of digestive system one by one and then gives the synthetic view of it. Hence a good teacher always proceeds from analysis to synthesis.
5. From particular to general: - A teacher should always proceed from particular to general statements. General facts, principles and ideas are difficult to understand and hence the teacher should always first present particular things and then lead to general things. Suppose the teacher is

teaching continuous tense while teaching English, he should first of all give few examples and then on the basis of those make them generalize that this tense is used to denote an action that is going on at the time of speaking. Hence a teacher should proceed from particular to general. 6. From empirical to rational: - Empirical knowledge is that which is based on observation and first and experience about which no reasoning is needed at all. It is concrete, particular and simple. We can feel and experience it. On the other hand, rational knowledge is based upon arguments and explanations. For example, suppose the students are to be taught that water boils on heating. They should first be made to heat the water and see it boiling. Then the teacher should explain that when water is heated, the molecules gain kinetic energy and there is thermal agitation of the molecules which make the water boil. This maxim is an extension of some of the previous maxims, namely proceed from simple to complex proceed from concrete to abstract and from particular to general. 7. From induction to deduction: - The process of deriving general laws, rules or formulae from particular examples is called induction. In it if a statement is true in a special situation, it will also be true in other similar situations. It means drawing a conclusion from set of examples. For example, when hydrogen reacts with boron, it gives Boron hydride, potassium reacts hydrogen, it gives potassium hydride, we come to the conclusion that all elements when reacts with hydrogen they form hydrides. While using this process in teaching, a teacher has to present particular examples or experiences and tell about similarity of their attributes. Deduction is just opposite of induction. In it, we derive a certain particular conclusion from general laws, rules or principles. For example, in language teaching, before giving the definition of noun, the students are acquainted with the example of noun like man, chair, Delhi etc. and then they are led to general definition of noun. So a good teacher always proceeds from induction and finishes at deduction. 8. From psychological to logical: - Modern education gives more emphasis on psychology of the child. The child's psychological development is of utmost important than any other thing. A teacher while teaching should follow this maxim viz from psychological to logical. Psychological

155 approach takes into consideration the pupil his interests, abilities, aptitudes, development level, needs and reactions. The teacher should keep in mind the psychological selection of the subject matter to be presented before the pupils. Logical approach considers the arrangement of the chosen content into logical order and steps. It is child centered maximum. For example, a teacher tells the story of a poem to students when they are not interested in reading, with this a teacher proceeds from psychological to logical sequence. 9. From Actual to Representative: First hand experiences make learning more vivid and efficient than to give them representative ones. A teacher while selecting the content for presentation should make all efforts possible to present it through actual, natural or real objects than from their improvised representative one's like pictures, models etc. For example, to teach about 'Golden Temple Amritsar', a teacher should try his best to visit the actual place and that learning will be more vivid and the pupils will retain it for a long time in spite of teaching through sketches, model or a picture. Representative forms should be used at the higher classes than in lower classes. 10. From Whole to Parts: This maxim is the offshoot of gestalt theory of learning whose main emphasis was to perceive things or objects as whole and not in the form of parts. Whole is more understandable, motivating and effective than the parts. In teaching, the teacher should first give a synoptic view of lesson and then analyse it into different parts. For example, the teacher while teaching the pollination in plants, he should first take the flower then analyse it into different parts and give detailed information about each and every part like the sepals, petals, androecium, gynoecium etc. In this way, maximum learning is possible. It is actually the reverse of the maxim "analysis to synthesis". 11. From definite to indefinite: A teacher should always start from definite because definiteness has its limited boundaries and jurisdiction than indefinite things. We always have confidence on definite and tested things. We learn easily indefinite things on the basis of definite things. Hence a teacher while teaching any content should first present definite things, ideas and then he can learn indefinite things easily. Definite things, definite rules of grammar help the

learner to have good knowledge. Gradually he can be taught about indefinite things. The above method also applicable for hearing impaired students, not only the specific students any students can learn from the above method. This is a very important for the student to be trained for five senses (eye, ear, nose, test, & touch) in the teaching field. It all these organs are always active, students learnt every things very quickly. With the help of sense organs students are able to from concept in their mind about size in this universe, types, colours, weight, quantity ,density and temperature etc. If the sense organ work properly the concept of each object also develop correctly in students. LESSON PLANNING A lesson plan is a teacher's detailed description of the course of instruction, or 'learning trajectory' for a lesson. A daily lesson plan is developed by a teacher to guide class learning. Details will vary depending on the preference of the teacher, subject being covered, and the needs of the students There may be requirements mandated bypassed the school system regarding the plan. A lesson plan is the teacher's guide for running a particular lesson, and it includes the goal (what the students are supposed to learn), how the goal will be reached (the method, procedure) and a way of measuring how well the goal was reached (test, worksheet, homework etc.). Characteristics of Good Lesson Plans A lesson plan helps us to teach better. A big part of having lesson plans is being able to track your teaching activities throughout the term. For example, start with the objective, or what you want students to learn from the lesson, and link it to the overall course objectives and state standards. This not only keeps you accountable but also helps you keep track of how you are meeting course objectives. Your lesson objectives should be viewed as, 'what will the students learn today?' or 'what can they do with this information, afterwards?' The Flowchart below may serve as a reference for teachers in the delivery of collective or group or individual teaching.

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Steps for Preparing a Lesson Plan A lesson plan is the instructor's road map of what students need to learn and how it will be done effectively during the time. Before you plan your lesson, you will first need to identify the learning objectives for the class meeting. Then, design appropriate learning activities and develop strategies to obtain feedback on student learning. A successful lesson plan addresses and integrates these three key components: Objectives for student learning Teaching/learning activities Strategies to check student understanding Specifying concrete objectives for student learning will help you determine the kinds of teaching and learning activities will use in class, while those activities will define how you will check whether the learning objectives have been accomplished. (1) Outline learning objectives The first step is to determine what you want students to learn and be able to do at the end of class. To help you specify objectives for student learning, answer the following questions: What is the topic of the lesson? What do I want students to learn? What do I want them to understand and be able to do at the end of class? What do I want them to take away from this particular lesson? Once you outline the learning objectives for the class meeting, rank them in terms of their importance. This step will you for managing class time and accomplishing the more important learning objectives in case you are pressed for time. Consider the following questions: What are the most important concepts, ideas, or skills I want students to be able to grasp and apply? Why are they important? If ran out of time, which ones could not be omitted? And conversely, which ones could I skip if pressed for time?

159 (2) Develop the introduction Now that you have your learning objectives in order of their importance, design the specific activities you will use to Search students to understand and apply what they have learned. Because you will have a diverse body of students with different academic and personal experiences, they may already be familiar with the topic. That is why you might start with a question or activity to gauge students' knowledge of the subject or possibly, their preconceived notions about it. For example, take a simple poll: "How many of you have heard of X? Raise your hand if you have." You can also gather background information from your students prior to class by sending students an electronic surveyor asking them to write comments index cards. This additional information can help shape your introduction, learning activities, etc. When you have the students' familiarity with the topic, you will also have a sense of what to focus on. Develop a creative introduction to the topic to stimulate interest and encourage thinking. You can use a variety of approaches to engage students (e.g., personal anecdote, historical event, thought-provoking dilemma, real-world example, short video clip, practical application, probing question, etc.). Consider the following questions when planning your introduction: How will I check whether students know anything about the topic or have any preconceived notions about it? What are some commonly held ideas (or possibly misconceptions) about this topic that students might be familiar might espouse? What will I do to introduce the topic? (3) Plan the specific learning activities (the main body of lesson) Prepare several different ways of explaining the material (real-life examples, analogies, visuals, etc.) to catch the attention more students and appeal to different learning styles. As you plan your examples and activities, estimate how much you will spend on each. Build in time for extended explanation or discussion, but also be prepared to move on quickly different applications or problems, and to identify strategies that check for understanding. These questions would help design the learning activities you will use: What will I do to explain the topic? What will I do to illustrate the topic in a different way? How can I engage students in the topic? What are some relevant real-life examples, analogies, or situations that can help students understand the topic?

What will students need to do to help them understand the topic better? (4) Plan to check for understanding Now that you have explained the topic and illustrated it with different examples, you need to check for student understanding - how will you know that students are learning? Think about specific questions you can ask students in order to check understanding, write them down, and then paraphrase them so that you are prepared to ask the questions in different Try to predict the answers your questions will generate. Decide on whether you want students to respond orally or in You can look at to help you generate ideas and you can also ask yourself these questions: What questions will I ask students to check for understanding? What will I have students do to demonstrate that they are following? Going back to my list of learning objectives, what activity can I have students do to check whether each of those been accomplished? An important strategy that will also help you with time management is to anticipate students' questions. When planning lesson, decide what kinds of questions will be productive for discussion and what questions might sidetrack the class. about and decide on the balance between covering content (accomplishing your learning objectives) and ensuring that students understand. (5) Develop a conclusion and a preview Go over the material covered in class by summarizing the main points of the lesson. You can do this in a number of you can state the main points yourself ("Today we talked about..."), you can ask a student to help you summarize them, you can even ask all students to write down on a piece of paper what they think were the main points of the lesson. review the students' answers to gauge their understanding of the topic and then explain anything unclear the following Conclude the lesson not only by summarizing the main points, but also by previewing the next lesson. How does the relate to the one that's coming? This preview will spur students' interest and help them connect the different ideas within larger context. (6) Create a realistic timeline GSIs know how easy it is to run out of time and not cover all of the many points they had planned to cover. A list often learning objectives is not realistic, so narrow down your list to the two or three key concepts, ideas, or skills you want students to learn. Instructors also agree that they often need to adjust their lesson plan during class

161 depending on what students need. Your list of prioritized learning objectives will help you make decisions on the spot and adjust your lesson plan as needed. Having additional examples or alternative activities will also allow you to be flexible. A realistic timeline reflects your flexibility and readiness to adapt to the specific classroom environment. Here are some strategies for creating realistic timeline: Estimate how much time each of the activities will take, then plan some extra time for each When you prepare your lesson plan, next to each activity indicate how much time you expect it will take Plan a few minutes at the end of class to answer any remaining questions and to sum up key points Plan an extra activity or discussion question in case you have time left Be flexible - be ready to adjust your lesson plan to students' needs and focus on what seems to be more productive rather than sticking to your original plan Presenting the Lesson Plan Letting your students know what they will be learning and doing in class will help keep them more engaged and on track. You can share your lesson plan by writing a brief agenda on the board or telling students explicitly what they will be and doing in class. You can outline on the board or on a handout the learning objectives for the class. Providing a meaningful organization of the class time can help students not only remember better, but also follow your presentation understand the rationale behind in- class activities. Having a clearly visible agenda (e.g., on the board) will also help students stay on track. Reflecting on Your Lesson Plan A lesson plan may not work as well as you had expected due to a number of extraneous circumstances. You should have discouraged - it happens to even the most experienced teachers! Take a few minutes after each class to reflect on what worked well and why, and what you could have done differently. Identifying successful and less successful organization class time and activities would make it easier to adjust to the contingencies of the classroom. For additional feedback planning and managing class time, you can use the following resources: student feedback, peer observation, viewing videotape of your teaching, and consultation with a staff member. Conclusion To be effective, the lesson plan does not have to be an exhaustive document that describes each and every possible classroom scenario. Nor does it have to anticipate each and every student's response or question. Instead, it should you with a general outline of your teaching goals, learning objectives, and means to accomplish them. It is a reminder what you want to do and how you want to do it. A productive lesson is not one in which everything goes exactly as planned, but one in which both students and instructor learn from each other. This plan is very much effective for the general students but if the students with hearing impairment you must stress knowledge and language. Developing a lesson plan While there are many formats for a lesson plan, most lesson plans contain some or all of these elements, typically in this order: Title of the lesson Time required to complete the lesson List of required materials List of objectives, which may be behavioural objectives (what the student can do at lesson completion) or knowledge objectives (what the student knows at lesson completion) Information of Language. The set (or lead-in, or bridge-in) that focuses students on the lesson's skills or concepts-these include showing pictures or models, asking leading questions, or reviewing previous lessons An instructional component that describes the sequence of events that make up the lesson, including the teacher's instructional input and, where appropriate, guided practice by students to consolidate new skills and ideas Independent practice that allows students to extend skills or knowledge on their own A summary, where the teacher wraps up the discussion and answers questions An evaluation component, a test for mastery of the instructed skills or concepts- such as a set of questions to answer or a set of instructions to follow A risk assessment where the lesson's risks and the steps taken to minimize them are documented. Analysis component the teacher uses to reflect on the lesson itself -such as what worked, what needs improving.

163 Individual Lesson Plan: When we are modifying the teaching plan for an individual, the teacher should prepare for individual lesson plan. Now question is what is individualized education programme (IEP)? An IEP defines the individualized objectives of a child who has been determined to have a disability, as defined by federal regulations. The IEP is intended to help children reach educational goals more easily than they otherwise would. In all cases the IEP must be tailored to the individual student's needs as identified by the IEP evaluation process, and must especially help teachers and related service providers (such as paraprofessional educators) understand the student's disability and how the disability affects the learning process. The IEP describes how the student learns, how the student best demonstrates that learning and what teachers and service providers will do to help the student learn more effectively. Developing an IEP requires assessing students in all areas related to the known disabilities, simultaneously considering ability to access the general curriculum, considering how the disability affects the student's learning, forming goals and objectives that correspond to the needs of the student, and choosing a placement in the least restrictive environment possible for the student. Special education allows a child to have an individual education plan (IEP) when the child's disability interferes with the student's education and performance. Special Education is available for all children that qualify from age 3 through age 21 or upon graduation from high school, whichever comes first. If a parent feels their child requires special education, the first step is to contact the school the child is attending and explain what how you feel your child's disability will affect education. The next step is the evaluation, which will include: a letter or form from the physician explaining the child's specific medical concern interview with parents interview with teachers information from parents specific testing, including all areas related to suspected disability. After that the teacher should plan for the child according to their need. It is absolutely need based programme. Through task analysis teacher will prepare a plan. IEP plan and related matter you have already done. So here is no need to further discussion.

Remedial Lesson Plan

Each pupil is different in terms of learning ability. academic standards. classroom learning and academic performance, and each has his own in learning.

By adapting school curricula and teaching strategies. teachers can provide learning activities and practical experiences to students according to their abilities and needs. They can also design individualized educational programmes with intensive remedial support to help pupils consolidate their basic knowledge in different subjects, master the learning methods, strengthen their confidence and enhance the effectiveness of learning.

A sample plan of work for the remedial class Mode of operation: additional lessons / withdrawal (setting) / withdrawal (partial withdrawal) Year Level: Remedial Group: Teacher-: Date/ Key Stage Targets/ Reference/Resources/ Assessment Actual Remarks Language Period Forms, Functions/ Learning Activities Progress Language Skills Here are 10 strategies teachers can use to help hearing-impaired children. 1. Make sure hearing-impaired students wear amplification devices, such as a frequency modulated (FM) unit that will connect to a microphone for you to wear. 2. Use the child's residual hearing, as total hearing loss is rare. 3. Allow hearing-impaired students to sit where they think best, as sitting close to the teacher will help the child to better understand the context of your words by observing your facial expressions. 4. Don't shout. If the child is already wearing an FM device, your voice will be amplified, as it is. 5. Give interpreters copies of lessons in advance. This will help the interpreter prep

165 the student for the vocabulary used in the lesson. 6. Focus on the child, not the interpreter. Teachers do not need to give interpreters directions to give to the child. The interpreter will relay your words without being asked. 7. Only speak while facing forward. Do not speak with your back to hearing impaired children. They need to see your face for context and visual cues. 8. Enhance lessons with visuals, as hearing impaired children tend to be visual learners. 9. Repeat words, directions and activities. 10. Make every lesson language-oriented. Have a print-rich classroom with labels on the objects inside. Let us sum-up: Maxims of Teaching are the universally facts found out by the teacher on the basis of experience. They are of universal significance and are trustworthy. The knowledge of different maxims helps the teacher to proceed systematically. It also helps to find out his way of teaching, especially at the early stages of teaching. Making an effective lesson plans takes time, diligence, and an understanding of your students' goals and abilities. The goal, as with all teaching, is to motivate the students to take in what you are teaching and to retain as much as possible. Check Your Progress 1. Discuss about the maxim of teaching. 2. What is lesson plan? 3. How can make a plan for hearing impaired students. 4. What is Remedial teaching? 5. How can make a plan as remedial teaching for hearing impaired children? Reference: 1. American Partnership for Eosinophilic Disorders Website [http://www.apfed.org/ downloads/IEP](http://www.apfed.org/downloads/IEP) and 504.pdf 2.

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5.6 Partnership of Various Professional & Agencies in Educational Intervention. In order to achieve the best outcomes for all children and young people, schools must work in partnership with students, parents, other professionals and the wider community. In this changing landscape of education, the notion of the traditional school no longer exists. Partnership Working to Support Special Educational Needs & Disabilities looks at what is possible in this exciting new world, and how some teachers are putting

167 into practice the best principles of multi-agency working. Supporting children and young people with special educational needs and disabilities (SEND) in this context is more vital than ever, as more children are being diagnosed with additional needs, and those working with children are aware of the need to ensure every individual is given the maximum opportunity to develop to their full potential. In this connection various partnership and agencies is there for their better life:

1. Family As an educator, you may find that it is not as important to classify families by stages of adjustment to the child's disability as it is to understand that families have varied reactions and may work through their feelings in a different way and pace. It is helpful to realize that you and the family may not be operating at the same level or stage of understanding about the child rather than to make comments like "That family is so demanding" or "If the dad would get over his anger, we would be able to work together better" (Ulrich & Bauer 2003, 20). Listening to families is key in working with them as partners in supporting the learning and development of their child with special needs. Unless you have a child with a disability, you cannot fully understand the experience. As you get to know the child and family, it is also important to learn about and participate in the development of the child's Individualized Family Service Plan (IFSP) or Individualized Education Program (IEP).

2. Partnership with the Various Therapist (a) Audiologist An audiologist can help figure out what the problem is with a kid's hearing. He or she might send a report to the kid's doctor, so they can work together on solving the problem. Kids with hearing problems may visit an audiologist regularly to see how the treatments are working and to make sure their hearing hasn't changed. (b) Speech and Language therapist For deaf children, speech and language therapy is most effectively provided with the child's therapist to help their communication skills during everyday life. Speech and language therapist will also work closely with other professionals who may be involved with the child. Whatever communication choices you make for your child, speech and language therapy may be able

to help your child to further develop their communication skills. Speech and language therapists provide a service that takes into account the needs and wishes of your child. Speech and language therapy may be specified in a child's statement. (c) Auditory-Verbal Therapy Thanks to the improved technology in hearing aids and the availability of the cochlear implant, 95% of deaf and hearing impaired children can have access to sound. And with the right therapy, these children can learn to listen and to speak clearly and naturally like their hearing peers. This therapy is Auditory-Verbal Therapy. LSLS Certified Auditory-Verbal Therapists originally known as Auditory-Verbal Therapy was developed by Helen Hulick Beebe, an internationally-known speech-language pathologist and an educator of deaf people. It is used to enable deaf and hearing impaired children with a cochlear implant or hearing aid to listen and speak to enable them to fully participate in mainstream society. Auditory-Verbal Therapy is the therapy that is used when parents want their deaf or hearing impaired child to communicate with spoken language. LSLS professionals focus on education, guidance, advocacy, family support and the rigorous .. application of techniques, strategies and procedures that promote optimal acquisition of spoken language through listening by newborns, infants, toddlers and children who are deaf or hard of hearing.

LSLS professionals guide and coach families to help their children develop spoken language through listening, and help them advocate for their children's inclusion in mainstream schools. Ultimately, parents gain confidence that their children will have access to a full range of educational, social and vocational choices in life. The principals of Auditory-Verbal Therapy include: Early detection: Early detection programmes and initiation of Auditory-Verbal instruction upon diagnosis of the hearing loss. Appropriate amplification: The child will learn to listen and speak through maximising their residual hearing with amplification technology. Parental participation: Parent participation is vital to the success of Auditory- Verbal Therapy for two reasons: parents are the natural teachers of their child's language and the parents are always with their child so can be constantly encouraging language development. Listening to speak: The child learns to speak through listening to natural sounding

169 speech. Correct spoken models of language are crucial to teaching the child to monitor his/her vocalisations. Visual cues are not encouraged. Assessment: Monitoring and evaluating the development of listening skills as an integral part of the development process. Integration result: Appropriate amplification and Auditory-Verbal Therapy enables children with a hearing loss to develop auditory receptive skills (understanding language) in the short term that will translate via medium outcomes, such as attending mainstream school, into greater social independence and quality of life. (d) Art Therapist An art therapist is a mental health professional who uses an individual's innate creativity, usually in the visual arts, to develop social skills and self-awareness and to manage behavior and emotional conflicts. This Therapy much more effective for Hearing Impaired Children for modification of behaviour. The American Art Therapy Association explains, "A goal in art therapy is to improve or restore a client's functioning and his or her sense of personal well-being. During individual and/or group sessions art therapists elicit their clients' inherent capacity for art making to enhance their physical, mental, and emotional well-being." (e) Vision therapy Vision is a complex process that coordinates muscles, cognition and perception. Difficulty with visual motor control can lead to problems with reading, learning and executive function skills. Vision therapy, under the guidance of a developmental optometrist, can help remediate visual motor skills. Vision therapy exercises include mazes, red/green glasses, prism glasses, logic games, reading comprehension exercises, optical illusions and brain teaser games and other activities that challenge a person to understand and follow what they are seeing. (f) Special Education Services The hearing support program has a child centered philosophy for educating deaf and hard of hearing students. A variety of educational approaches and strategies are utilized and individualized according to each student's needs. This philosophy promotes effective and independent communication. The Individuals with Disabilities Education Act (IDEA '04) defines two terms related to hearing acuity: Deafness and Hearing Impairment.

According to IDEA 2004,

Deafness means

a hearing impairment that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification,

that

it adversely affects a child's educational performance. Hearing impairment means

impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance but that is not included under the definition of deafness.

So in this connection special educator is needed for special educational services. In the inclusive set up children with hearing impairment various agencies is needed for success of the inclusion. How partnership & Agencies working affects those children with hearing impaired. the diversity of additional needs; specialist schools; partnership working with special schools; partnership working with groups of schools; schools and other services working together; children's centers; In order to achieve the best outcomes for all children and young people, schools must work in partnership with students, parents, other professionals and the wider community. The teachers and other professionals are putting into practice the best principles of multi-agency working. Let us sum up A child with hearing impairment is identified when he /she has problem paying attention in the school, find it difficult to understand speech ,answers irrelevantly, requires repetitions of speech for following instruction, display poor vocabulary and grammar, voice problem and mispronunciation etc. Using various Audiological test for specific identification losses of hearing. In the various problems the teachers can solve easily. So that teachers should arrange the partnership of various professional & agencies. Check your progress 1. Discuss about various professionals and agencies in educational intervention. Reference:

171 A Critical Review of the Role of Neonatal Hearing Screening in the Detection of Congenital Hearing Impairment Health Technology Assessment (1997) Bamford J, Battersby C, Beresford D, Davis A, Gregory S, Hind S, Moore L, Owen Y, Reeve K Assessing Service Quality in Paediatric Audiology and Early Deaf Education British Journal of Audiology, Vol. 35, December 2001. Teachers' Perspectives on Support for Under-fives in Families of Ethnic Origin Deafness & Education International Vol 2 No 3 (2000) 5.7- Child & Family Outcomes of Educational Intervention 5.7.1- Education Intervention Education intervention is a support and educational system for very young children (aged birth to six years) who have been victims of or who are at high risk for child abuse and/or neglected as well as children who have developmental delays or disabilities. Some states and regions have chosen to focus these services on children with developmental disabilities or delays but Education Intervention is not limited to children with these disabilities. The mission of Childhood Education Intervention especially in education is to assure that families who have at-risk children in this age range receive resources and supports that assist them in maximizing their child's physical, cognitive, and social/emotional development while respecting the diversity of families and communities. Education Intervention services for children with hearing impairment yields to a better quality of life in the family. This is due to the reason that Education Intervention services to Children with hearing impairment shows a positive impact across developmental domains, including language communication, cognitive development and social/emotional development. The first few years of a child's life are a particularly sensitive period in the process of development, laying a foundation in childhood and beyond for cognitive functioning behavioural, social, and self-regulatory capacities and physical health. Yet many children face various stressors during these years that can impair their healthy development. That is why childhood education intervention programs provide supports for the parents, the children, or the family as a whole. These supports may be in the form of learning activities or other structured experiences that affect a child directly or that have indirect effects through training parents or otherwise enhancing the care giving environment. 5.7.2- Types of Educational Intervention programs in hearing impaired child. The three major types of Education Intervention programs are: Auditory-verbal: Focuses on the use of even minimal amounts of amplified hearing to develop spontaneous speech and to process language in a natural way through auditory pathways. These programs aim to enable children with hearing impairment to learn to listen, understand spoken language and communicate through speech using their residual hearing, and in the oral-aural approach, using lip-reading as well. These programs usually place the parent in the role of primary educator. Total Communication: Focuses on the use of a wide range of methods of communication including speech, lip-reading, listening, signing and finger spelling. These various methods of communication may be used alone or in combination with each other. When speech and signing are used together this is known as simultaneous communication. Simultaneous communication is used to manually represent English using a sign system known as signed English. Bilingual/Bicultural: Focuses on education through two languages. Mother tongue and second language. English is taught as a second language via reading and writing or through sign systems representing English, and speech. In many educational programs and school settings, children who are deaf or hearing- impaired may learn about the deaf community and its history, language and culture, as well as learning about the hearing community. 5.7.3-Child Outcomes of Educational Intervention: When a child's hearing loss is identified soon after birth, families and professionals can make sure the child gets intervention services at an early age. Here, the term intervention services include any programme, service, help or information given to families whose children have a hearing loss. Such intervention services will help children with hearing loss to develop communication and language skills. There are many types of intervention services to consider. We will talk about early Education intervention. So early education intervention services choices mean about education 173 and including learning to communicate with each other. Early education intervention programme will be assigned by a service coordinator to help you understand the intervention system and make sure that your child gets the services to which he or she is entitled. If proper Early Education Intervention is done, child should develop many of the factor the factors mention below: Language and speech- With the help of Early Education Intervention child can ability to learn language and speech is the highest development of children with

hearing impaired. Intellectual ability- Process of thinking of deaf children and normal peers are found to be similar in cognitive abilities and develop verbal intelligence.

So Early Education Intervention service is the most important factor of children with hearing impairment.

Academic Performance- Hearing impaired children are frequently handicapped in various degree of hearing loss and it affects educational performance and particularly reading which relies heavily upon language skill. So Early Education Intervention service is the most important factor of children with hearing impairment.

Social Adjustment- Our social interaction depends upon communications. So deaf children have communication problems. That is why they should have a problem of social interaction. Such children live in a world of isolation and form a group of their own, an association of the deaf for their common interest and interaction. So Early Education Intervention service is most important factor of children with hearing impairment that should help scholastic achievement of the children with hearing loss and that can help to develop on adjustment of their social interaction. Behavioural problem- Deaf learners feel invariably inferior and helpless in adapting to circumstances that require verbal communication. So non-verbal communication is regarded absence of verbal. They have poor self-concept which damages the development of personality but with the help of Early Education Intervention service children with hearing impairment studying in mainstream education develop personality and the problem behavior is reduced regarding various social academic aspect. Socially handicapped - Learners with hearing loss cannot adjust with society because they suffer from communication difficulty and fail to understand what others hearing people say. But with the help of Early Education Intervention service they develop communication skill and mixing the oral social. Thereby reducing social handicapped ness. Problem in personal and social development- Language becomes a barrier for deaf learner for the purpose of communication with others. So this affects the socialization process and plays a vital role in the personal and social development of hearing loss learner. So with the help of Early Education Intervention they can be mainstreamed in regular class room it develops the normal peer acceptance and reduces the problem in personal aspect. Personality problem- Hearing difficulty may create personality problem. A deaf learner becomes more frustrated as he/she tries to reach the level of the normal and a totally deaf child seems reconciled to his fate. But given well provided adequate facility of language and communication with regard to literacy development in regular school they develop personal adjustment and well developed scholastic achievement in hearing impaired students. This happens only in Early Education Intervention services.

5.7.4-Family Outcomes of Education Intervention Children develop through the complex interlink of nature and nurture and the family plays a very important role in the development. In other words, children are born with some innate abilities. They have different levels of intelligence and they have different kinds of attitudes. The way they are brought up decides many of their achievement levels. The family can help in bringing up the children with the right attitude and develop their full potential. Every child needs to be nurtured with love and affection and guided by adults who have knowledge about the child. Deprivation and Rejection by the family can adversely affect any child, more so a child with disability. Deprivation of any kind due to poverty, wrong attitudes or ignorance will affect the nutrition, health and psychosocial development of the child. Rejection of any kind, for reasons of gender, unwanted, unplanned conception, poverty and disability in the child affect the growth and development of the child. Meaning of family Family does not mean just the mother and father of the child. The family includes the siblings, grandparents, uncles, aunts, caregivers, neighbours, doctors and any adult who comes into contact with the child.

175 5.7.5-Need and Importance Usually the family members do not have any information on the effect on hearing impairment on the child's progress. They either do not realize the importance of schooling or they tend to believe that schooling is not likely to improve the child. In most cases, the family members would rather transfer the responsibility of their child onto someone else. The participation of the family members in the education of the child with hearing impairment is very important. The family needs re-assurance that the child is going to learn and will benefit if the home is going to co-operate with the school and works. 5.7.6- Common Misconceptions of Family towards Hearing Impairment children Usually the family members do not have an exposure to the problems posed by the disabilities in children. In case of hearing impairment, the ignorance of the family is the highest. Hearing impairment is a hidden disability. The family members are not able to identify the disability as they would identify the visual impairment, mental retardation or cerebral palsy. The hearing impairment in the infant goes unnoticed for an unreasonably long time. When the mother is alert, she is able to identify that the baby is not responding to sound stimuli. Even then, the child is not taken for diagnosis due to 2 reasons: (a) The mother does not realize that the hearing impairment in the baby will stop the baby from acquiring speech skills. (b) The mother is not able to share her worry and concern with her husband and the in-laws as there is a possibility of them not taking it in the right spirit. It is only when the child is old enough to be talking in simple sentences and the child is not able to converse even in words, the family members realize that the child has a disability. At this stage also the child does not get help immediately due to several reasons like: poverty, the diagnostic facilities are not available, the family gets misguided by relative or friend or sometimes even the doctor that child is too young and that they can wait for the child to grow older, visiting some holy places or performing certain religious rites could restore the hearing for the child,

it is the result of some 'karma' of previous births and they have to bear it and there is no alternative, etc. The wrong attitude of the family results in the delay in looking for Early Diagnosis and Early Intervention and the children lose the most important years in their lives, without any useful inputs. 5.7.7- Family Intervention Process The professionals have a very important role in educating the family. The family members need to feel confident that they are doing the right thing for their child. Family members need guidance to recognize their strengths and skills in parenting. They need help to be able to handle the problems with maturity. The knowledge of the disability in the child changes the roles and dynamics of the entire family, including the siblings. The family members need counseling and guidance to realize the importance of their contribution to the welfare of the child with hearing impairment. The professionals need to include all the family members directly or indirectly into the intervention programme. The process of family intervention has two categories. These are Rehabilitation process and Educational Rehabilitation. 5.7.A - Role of Rehabilitation Process in Family There are three types of Rehabilitation Process in Family intervention process that can be conducted. These are Initial Feeling, Reaction and Adjustment of Family. Initial Feeling Family members always look forward to the arrival of a healthy child. When they come to know that the child may be suffering from hearing impairment, it is not easy for them to accept. Moreover, hearing impairment is a silent disability unlike visual impairment, mental retardation or cerebral palsy. The child with hearing impairment looks absolutely fine, he laughs and plays like any other child and yet the family members have to accept that the child suffers from hearing impairment. The initial feeling of disbelief and despair is difficult to overcome. Reaction The family members react differently. Some get into a depression. Some go from doctor to doctor, expecting a better verdict. Some feel that it is their fate and nothing could be done about it. Some are able to take courage and seek help.

177 Adjustment of Family The family needs to make a lot of adjustment. Once a child with hearing impairment is born in a family the psychology of the entire family gets affected. It reflects on the performance level of all the individuals. It also affects the interpersonal relationship with each other. Diagnosis, hearing aid fitment and intervention costs money. Many are not able to afford it. When help for diagnosis and intervention is not available in the hometown, the family members have to go to other places. This requires adjustments from all the members of the family. 5.7.8- Role of Family in the Educational Rehabilitation Process In Special School When a child is in a special school, the family can play a very active role in supplementing the efforts of the school. They can find out from the special school as to what kind of support they can provide so that the child will be able to make use of his potential to the maximum. In Inclusive School When the child is in an inclusive school, it is possible that the child may be missing out a lot. The caregiver from the family has to keep in close touch with the class teacher, Special teacher and as well as the other children in the class so that the child is able to progress at par with the others. The child requires a lot of emotional support and reassurance from the family members. In Day School The caregiver of the family can be of immense help to the child in a day school. He can keep close touch with the class teacher in class room activity. In Residential School When the child is in a residential school, the family is to bring home the child every weekend if possible or at least once a month. It is important that the child is in touch with the family members constantly. 5.10- References 1. American Speech-Language-Hearing Association. (2008). Roles and responsibilities of speech-language pathologists In early intervention: Technical Report. Available at: <http://www.asha.org/docslhtml/TR2008-00290.html>

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Notes

INTERVENTION AND INTERVENTION AND TEACHING STRATEGIES TEACHING STRATEGIES

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3

Early intervention (EI) is a system of professional services provided to children from birth until about five years of age who are disabled, have delayed development or are at risk of delayed development. To help children with disabilities, it is essential to focus on the earliest years of development, since this is a critically important time for early learning which powerfully affects the child's future life course. It involves planned professional intervention organized around relatively brief periods of time for the very young children so that they may receive sufficient adult attention. There are different ways in which training for intervention, and intervention itself, can be provided-in the home setting, in a centre, or by adopting an approach that combines the two. The rapid advances in medical technology have successfully increased the survival of high-risk babies, thus adding to the number of babies who might end up with developmental delays and disabilities. Therefore, special focus is required to address the existing deficiencies in providing early intervention services. Further, the major hurdle in the development of these services is lack of trained professionals. To reach out to those unreached, the vital step is human resource development and the need to develop a cadre of professionals who can provide services even in the rural areas through a single window service delivery system. This Unit also delineates Documentation, which helps in reviewing and evaluating a programme objectively. Thus leading to quality in the programme and a scope for improvement. Further, the services are not only provided in schools but also in varied settings. This unit is also intended to orient you the various aspects of record maintenance and documentation at the preschool level. In this context, it can be highlighted that inclusion is not merely a place, or an instructional strategy, or a curriculum' inclusion is about

11 belonging, being valued and having choice. The socio-political context in which children and families live and work also impacts inclusion. This is how our society should view high-quality early childhood care and education for all children. In other words, if providing high quality child care for typically developing children is not a societal priority, providing high -quality child care for children with disabilities will not be a priority either. 1.2.

Objectives: After going through this unit, you will be able to:

Understand the

concept of early intervention Understand the implication of early intervention for preschool inclusion Become familiar with the service delivery models Understand the steps of early intervention Understand the interventional services approaches Explain the various role of professional in early intervention Understand the meaning and importance of documentation Understand the concept of early childhood education Understand the implication of early intervention for preschool inclusion Understand the key experiences in preschool curriculum 1.3.

Concept, Significance, Rationale, Scope, Advantages of Early Intervention 1.3.1 Concept of Early Intervention (

EI) Early intervention is the first intervention strategy in the process of rehabilitation. Early intervention may focus on the child alone or on the child and the family together.

12 EI programs may be centre based, home based, hospital based or a combination. Services range from identification - that is, hospital or school screening and referral services to diagnostic and direct intervention programs. EI may begin at any time between birth to school age. Early intervention refers to the introduction of planned program, deliberately timed and arranged in order to alter the anticipated or projected course of development. (Siegel, 1972). EI services are specialized health, educational and therapeutic services designed to meet the needs of infants and toddlers, from birth through two, who have a developmental delay or disability, and their families (US Department of Education). 1.3.2 Who needs EI? Children with Biological Risk Developmental Environmental Disabilities Risk Low birth Cerebral Palsy poor nutritional status weight Epilepsy Poor Prematurity Autism Socio Birth Mental economic injuries Retardation status Prenatal and Children with Lack of stimulations Natal injuries Learning High risk Problems mothers Sensory Impairment 1.3.3 Areas to be covered by EI: Physical (reaching, rolling, crawling and walking etc.) Cognitive (thinking, learning, solving problems) Communication (talking, listening, understanding) Social/Emotional (playing, feeling secure and happy) and/ or Self-help (eating, dressing).

13 Professional involved in Early Intervention: The Early Intervention Program offers a variety of therapeutic and support services to eligible infants and toddlers with disabilities and their families, including : - family education and counselling, home visits, and parent support groups - special education - speech pathology and audiology - occupational therapy - physical therapy - psychological services - medical services - nutrition services - social work services - assistive technology devices-see 1.3.4 Rational for Early Intervention: Early periods of development are critical in nature. The rate of development of the preschool (especially 2-6 years) is so rapid that the child can given more learning experiences. As the developmental pattern follows cephalo-caudal and proximo-distal direction, EI can promote better development and control of the cortex to the bodily functions. Children are by nature very flexible and their growth and development can be modified extensively in a variety of directions. EI helps in proper-shaping the behavior. EI helps the mothers or caretakers to handle the child in a more scientific way. EI helps the professionals to prescribe the remedial plans at the right. Arguments relating to the child : EI also fulfils a remedial function. EI reduces the side effects of chronic illnesses and permanent functional impairments. EI helps in preventing the occurrence of disability.

14 Arguments relating to the parents: Early intervention is an effective way of helping parents to deal with their handicapped children. EI prevents the parents from being deprived of information. This information can relate to :- a) The diagnosis, the cause of the handicap and the prognosis; b) Knowledge about normal development and about how a retarded and/ or disturbed development needs to be stimulated c) The social system of provisions that are available to them EI can prevent brothers and sisters from acquiring an unfavorable or disadvantageous position within the family as a result of which their own development may be hindered and behavioral problems may arise. EI can ensure that the family as a system and the family as network (grandparents, uncles and aunts) learn to adjust themselves to the situation of coping with a handicapped child. Alleviation of the burden to the family, among other things by offering family assistance etc. Arguments relating to Society: EI makes society aware of the fact that there are also young children with developmental disabilities who are part of the community and have a right to support. EI enhances the opportunities of the children, since they go through school more successfully. 1.3.5 Early Intervention in Various Disabilities: The UNCRPD stresses the importance of habilitation and rehabilitation beginning at the earliest possible stage and being based on individual needs and strengths. Early identification, availability of services, trained professionals and information and support to families are all considerations of quality early intervention services. The demand for early intervention is expected to grow as the survival rate of high-risk babies is increasing with advances in medical technology, and consequently the number of babies who might end up with developmental delays and disabilities is increasing. Due to the absence of

15 a universal new born screening program coupled with the lack of awareness, majority of babies born deaf in India have been missing the opportunity of getting early intervention. The Early Intervention curriculum is indigenous and primarily focuses on language, audition and early literacy skills. The EI services for children with visual impairment is required to detect blindness and prevent further disabling condition early in life and hence reduce the impact of visual impairment. The services are provided to accelerate the rate of development in the child and to facilitate acquisition of new behaviour patterns and skills by the child that enhances skills for independent functioning of the child with visual impairment. Since children with autism find it difficult to work in large groups, the early intervention services for them should follow a structured program of one-on-one training or training in small groups to help attain individual goals. Early intervention services for children with 105 cerebral palsy comprise multiple interventions such as medical intervention for premature babies who might be 'at risk', family counselling, family training, physical, occupational, speech therapy and/or special education intervention for children below the age of three years of age. Early Intervention services are crucial for children with cerebral palsy, since the services can take advantage of the plasticity of the brain and provide opportunities for optimal development of the child's potential. It is important that early intervention services adopt a family centred approach, rather than a child- centred approach, since families are key to ensuring the best results for the child. Many children with Multiple Disability may require specialized intervention and environments for longer than other children receiving early intervention. 1.4 Types of Early Intervention The early interfvntion services are provided through various types of delivery system as described below— 1.4.1 Home-based Programme: Home-based Programme initially early intervention programmes where home-based, mainly for the benefit of rural families as they were far from health facilities. The key persons in a home based programme are the home visitors. They need not be

16 professionals. In fact, if they are SF passed and receive intensive training in early intervention and have good supervision and guidance, then they do equally well. The home visitor is the active agent who takes the planned system of skills based sequentially, to the home and fulfills the role of a counselor and friend to both mother and child. The mother teaches the suggested activities based on the skills to her child and reports the progress to the home visitor at each visit. She in her turn, reports back to the supervisor regularly. In this way, the child's progress can be constantly monitored and the skills adjusted as necessary. Advantages The child learns in a natural environment. The training is provided in the home setting, and therefore, what is learnt is directly applicable. There is no need for transferring the learning from a centre-based situation to home conditions. Parents are fully involved in their child's learning. It is convenient for them as there is minimal disruption, for example, with respect to looking after other children, making transport arrangement, etc. Materials needed for stimulating the child are available at home and easy to use. All family members can learn the interventions skills and carry them out with the child. Thus, the child receives the stimulation and the mother is relieved of full time responsibility of the child. Because of the home visits, the intervener has a good understanding the family and its strengths and problems. Through this, she/he is able to adapt the training procedures and activities on the basis of the strengths and resources of the family, and the needs and abilities of the child. The training programme is thus individualized. The method is cost effective as the only investment is remuneration for the intervener for her/his time, skill and expenses on transport. Home-based programmes are most appropriate for rural areas and in those places where transportation is a problem, making it difficult for the parent to bring the child with disability to a centre on a regular basis.

17 Disadvantages A home trainer can cover only a limited number of children due to the distances, travel time and individualization of the programme. Therefore, if he/she has more children to attend to, she /he might visit a child just once a week, or even less frequently than that. Parents who may lack skills are responsible for implementing much of the intervention. Teachers spend potential planning and instructional time traveling from site to site. No opportunity exists for peer interaction and socialization. The family will not have a chance to meet other such families and have an exchange, which is a very important process in accepting the child's disability and developing parents' self-help groups. The child may need the services of more than one expert, which a home trainer may not be able to provide.

1.4.2 Centre-based Programme:

Center-based early intervention is usually carried out in a children's hospital, a clinic or a center for children or a rehabilitation center for disabled children. If such programmes are in hospitals they are part of OPD services and are conducted daily. They are usually attached to a Department of Neonatology/ Pediatrics. In the latter case, they are offered daily on a full-time or part-time basis. In center-based early intervention, the services of units like physiotherapy, occupational therapy speech therapy are also available and are provided as part of the programme. In addition, a Children's Hospital has other units like Departments of Neurology Cardiology, ENT, Ophthalmology, etc., where center-based children can be referred for tests and consultation. For multiple disabled infants, a center-based programme becomes imperative. However, the effect of early intervention can only be gauged over a long-term, mothers who are overburdened, or have other young children or who have to travel over long distances, usually are unable to continue unless there is family support. Unfortunately, very few hospitals so far have undertaken such programmes as they involve additional expenses. In center-based early intervention, the supervisor can be a

18 pediatrician or a public health nurse, therapist or a special educator with knowledge in child development and experience in early intervention. Under her, she may have staff who are trained (equivalent to home visitors) and who give the planned system of skills sequentially to the mother individually. She works in the same way as a home visitor and guides the mother periodically in learning activities based on the skills. Advantages The major advantages of centre - based early intervention is that the child gets direct services from the experts using suitable aids, appliances and assistive devices. The parent/caregiver learns and clarifies doubt from the experts, and therefore, feels more confident about the intervention. All primary support services are housed in one location. Teachers have more time for planning and instruction. Situation promotes peer interaction and socialization. The children learn from other children and also develop social skills by playing with other children. Disadvantages Cost of providing facilities and range of services is high. Center may need to provide transportation and bus aides, which increases cost. Also parents have to travel with the child to reach the centre, which may mean a day's wages apart from the travel expenses. If not properly planned, having too many people to guide the parents may confuse them. All experts may not be available in all the centres. There is a likelihood of a lesser degree of parent and family involvement. 1.4.3 Mixed (Centre and home based) Intervention: There are some agencies which offer both home based and center based early intervention. It is offered to those families in urban areas who are far away from centers offering early intervention and where health services are lacking. The latter programme is offered to those families who live in districts and can come to centers on a fortnightly or monthly basis. The programme is also offered to those infants who are multiply disabled

19 and who need paramedical and other services (for instance, babies with convulsive disorders). 1.4.4 Direct strategy of home based and centre based intervention (a) The home visitor is introduced to the parents following the initial contact by the supervisor while the mother is still at the hospital. During the initial contact, the parents are given a brief account of the service. (b) The home visitor on his/her introductory visit, gives further information regarding the service and gathers basic information about the family in the initial interview. She also determines whether the parents wish to accept the programme. This is then followed by: - Weekly home visits by the home visitor allotted for a particular area or locality. - Giving weekly training goals set individually for each parent and child. - Demonstrating the target skills to the principal care of the child, mostly the mother. - Training by the 'Principal' carer during the course of the week. - Assessing the skill by the home visitor the following week. - Modification of the skill if need be, In case of any difficulty, or else teaching new skills sequentially. - Recording each of the home-visits made by the home visitors during the week. - Weekly supervision and reporting of the cases by the home visitors to their respective supervisors. Whenever babies do not respond to the training programme, they are brought to the center for examination. If on examination, the baby shows physical or neurological problems, then proper referral or treatment is undertaken, but these infants also continue in the programme. On referral, the Supervisor of the early intervention programme meets the mothers of the referred infants to ascertain their willingness to participate in the programme. The mothers' cooperation is crucial to the success of any early intervention programme, for she in turn influences the family's involvement.

20 1.5 Intervention Techniques 1.5.1 Steps of Early Intervention CASE HISTORY After completion of the registration, formalities and recording of demographic details of the clients, they are sent for the early intervention services. To begin with, the case history of the client is recorded by the professional concerned. The case history format consists of details regarding the chief complaints, prenatal, natal, neonatal, postnatal history, family history, immunization history and feeding history, developmental history and behavior problems. The chief complaints that are reported by the parents are recorded verbatim. This provides information about the child's developmental status as perceived by the parents and is significant for planning the right intervention. Information on prenatal / natal/neonatal and postnatal aspects will help to identify the probable risk and etiological factors. The immunization, feeding and family history of the child is taken to rule out any of the environmental and biological risk factors. ASSESSMENT The assessment forms an integral part of the intervention process, as it is a resource guide for devising the intervention strategies that are sensitive to the needs of the individual child. It is within this perspective that the developmental assessment gives the respective team members a comprehensive view about the child's all-round developmental areas where the child is delayed in development. The general examination and the systemic examination will enable the pediatrician to understand the health as well as the neurological status of the child. The information gathered can assist in knowing the cause, site of lesion, and effect of the pathology on the child, maturational status, and degree of deviation from normal, associated conditions and to a certain extent the prognosis. Its major contribution will be for intervention planning, strategies to be opted, frequency of visits, areas to be targeted, investigations to be ordered and referrals if any required and treatment of medical conditions. The

21 motor and sensory development of the child is well comprehended with Physiotherapy and Occupational therapy assessments. The assessment primarily consists of gathering information on reflex maturation, tone, voluntary control, muscle power, involuntary movement, gross motor, fine motor, oro- motor functions, sensory integration components, play and self-care skills. Other significant aspects of assessment includes speech, language and audiology assessment. The speech and language abilities of the child are recorded along with other or motor abilities that set limits to acquisition of language abilities. The family assessment comprises assessing the family support, family resources and family functioning. These aspects are essential for providing intervention that is context- specific. Assessment of behavior helps to understand the evolution of behavior problems if any that may be manifested due to any deficits in child's development. INTERVENTIONS The intervention strategies are devised in accordance with the assessment conducted by the multidisciplinary team. The Individualized Early Intervention Plan (IEIP) devised by the team focuses on using the assessment data for helping the child to overcome the deficits and mitigating the effects of risk factors through environmental stimulation through the transdisciplinary approach. Intervention related to medical aspects primarily aims at the use of medication for problems like epilepsy, hyperactivity, spasticity, general health problems and related concerns. It also focuses on nutrition, health, hygiene and immunization. Genetic counselling is given wherever it is deemed necessary, and anticipatory guidance on various health issues is also provided. Prior to intervention, the parents/caregivers are given information regarding the status of the child with reference to development, maturation, problems present, their effect and the requirement of the child. Provisional diagnosis is made and management strategies are explained. The role of parents and family in intervention is explained. The steps that are essential for successful program outcome are described. The limitations of predictive prognosis are briefed. Parent's general queries are answered. Information and guidance are given on request.

22 Interventions pertaining to child's development focus on fostering social, emotional and cognitive processing. The stimulation that helps to enhance these processes form an integral aspect of child development. The behavior of the child is also studied for understanding the evolution of behavioral problems that may arise due to deficits in neurological and environmental dysfunction. This kind of ecobehavioural analysis is essential for planning an appropriate behavioral management program. The importance of interactions for facilitating speech and language development is an essential component of speech therapy. It also includes identifying and facilitating the specific speech and language deficits in children. Auditory training for children with hearing impairment is also provided. Auditory training includes, awareness, detection and discrimination (Gross and Fine discrimination). Auditory training is given in order to make the child aware of all the environmental and speech sounds which help in the development of speech and language. Home training programs are also provided. Here, the guidelines are given to the parents to incorporate these home-based activities every day. Physiotherapy interventions foster motor development in the child using Neurodevelopmental techniques. The emphasis of this technique is on facilitating movement under a normal postural tone. Sensory Integration Therapy is provided for children with sensory problems, which are manifested due to early insult to the developing brain. Training in Activities of Daily Living caters to those aspects like feeding, bathing and dressing. These self-care skills are important to maximize the functioning and minimize the dependency. Occupational therapy enables a child to develop gross motor, fine motor and self-help skills using activity as a medium for fostering movement. Sensory Integration is useful in treating specific Learning disabilities, Emotional and Behavioral disorders, Attention deficit disorder, Speech and language disorder, Infants at risk, Autism and Hyperactivity. Specific interventions like behaviour management and anticipatory guidance are also being provided. Family intervention is targeted for improving the care giving environment. Potential stressors like lack of motivation in mother, time management strategies and referrals for further assistance are the likely interventions. All the above interventions are in accordance with the parent consultation model where the parent is advised, guided and

23 given practical demonstration about the intervention which can be carried out at home. They are given guidelines on observations and recording methods and therefore require the cooperation of family members. Information and guidance of all the above interventions is an added attribute. Follow-up services Follow-up services include evaluation on the progress of the child, information as recorded by the parents. Once the earlier set goals are achieved, necessary plans for further course of intervention are made. These activities are practically demonstrated to parents to follow-up at home. Regular follow up services are provided depending upon the need. The follow ups may be daily, weekly or fortnightly. However, for outstation cases efforts are made to identify local agencies giving early intervention and the cases are referred to them. The parents are advised on follow-up as per the requirement and convenience. Referrals Suitable specialists are of vital importance for providing interventions. Referrals to specialists for opinion and advice and investigations help in understanding and confirming the diagnosis, thereby assisting in planning appropriate individualized intervention. For some children with locomotor impairments, aids and appliances are recommended to correct and prevent the setting of deformities. Other referrals for family-related aspects are made when there are family problems like marital discord, alcoholism, financial crisis or mental illness in the family. 1.5.2 Early Intervention Service Approaches The growing acceptance and implementation of the team approach also reflect early intervention professionals' view of human development that regards a child as an integrated and an interactive whole, rather than as a collection of separate parts (Golin & Ducanis, 1981). The team approach also recognizes that the multifaceted problems of very young children are too complex to be addressed by a single discipline (Holm & McCartin, 1978). The complexity of developmental problems in early life (Fewell, 1983)

24 and the interrelated nature of an infant's developmental domains are prompting early intervention specialists to recognize the need for professionals to work together as a team. Although different team models are in use, most are composed of professionals representing a variety of disciplines: Medicine, Child development; Physical, Occupational, Speech and Language therapy, Special education, Social work, and Psychology. The teams also involve the family in varying ways and degrees. Team members share common tasks including the assessment of a child's developmental status and implementation of a program plan to meet the assessed needs of the child within the context of the family. What may best distinguish early intervention teams from one another is neither composition nor task, but rather the structure for interaction among team members. Three service delivery models that structure interaction among team members have been identified and differentiated in the literature: multidisciplinary, interdisciplinary, and transdisciplinary (Fewell, 1983; Linder, 1983; Peterson, 1987; United Cerebral Palsy National Collaborative Infant Project, 1976). A. The Multidisciplinary Approach The approach to early intervention now is multidisciplinary where each professional individually provides services to the child. In multidisciplinary teams, professionals from several disciplines work independently of each other (Fewell, 1983). Peterson (1987) compared the mode of interaction among members of multidisciplinary teams to parallel play in young children: "side by side, but separate". (Although multidisciplinary team members may work together and share the same space and tools, they usually function quite separately. Interaction among team members in the multidisciplinary approach does not foster services that reflect the view of the child as an integrated and interactive whole (Linder, 1983). This can lead to fragmented services for children and confusing or conflicting reports to parents. Another concern about the multidisciplinary model is the lack of communication between team members that places the burden of coordination and case management on the

25 family. In contrast, both the interdisciplinary and transdisciplinary approaches avoid the pitfalls of multidisciplinary service fragmentation by having the team develop a case management plan that coordinates both their services and the information that is presented to the family. B. The Interdisciplinary Approach Interdisciplinary approach defines a process where professionals from different but related disciplines work together to assess and manage problems by actively participating in mutual decision making. Team members share information with one another but independently implement their section of the plan. Interdisciplinary teams are composed of parents and professionals from several disciplines. The difference between multidisciplinary and interdisciplinary teams lies in the interaction among team members. Interdisciplinary teams are characterized by formal channels of communication that encourage team members to share their information and discuss individual results (Fewell, 1983; Peterson, 1987). Regular meetings are usually scheduled to discuss the shared cases. Representatives of various professional disciplines separately assess children and families, but the team does come together at some point to discuss the results of their individual assessment and to develop plans for intervention. Generally, each specialist is responsible for the part of the service plan related to his or her professional discipline. Although this approach solves some of the problems associated with the multidisciplinary teams, communication and interaction problems (e.g., influence of "professional turf") may impinge upon the team process. C. The Transdisciplinary Approach In the transdisciplinary approach, each professional provides a management plan to the case manager in consultation with the other team members. One of the members may be elected as a case manager who will deal with the child. The case manager may be a rehabilitation worker. This approach is holistic in nature and provides better case management and resource management (time & money). This approach provides services

26 to a greater number of children with less number of professionals and facilitates easy access to the community. Features of the Transdisciplinary Approach: ? It has a Holistic approach ? There is better case management ? There is better resource management (Time, Money) ? Greater Coverage of Services is ensured ? Less number of professionals required. ? It is a CBR approach Early intervention being at the rudimentary stage in our country, there is an urgent need for intervention in the rural areas. The few available services in the urban areas hardly percolate to the rural population. Transdisciplinary teams are also composed of parents and professionals from several disciplines. The transdisciplinary approach attempts to overcome the limitations of individual disciplines in order to form a team that crosses and recrosses disciplinary boundaries and thereby maximizes communication, interaction and cooperation among the team members. Fundamental to the Transdisciplinary Model are two beliefs: ? Children's development must be viewed as integrated and interactive, and ? Children must be served within the context of the family. Since families have the greatest influence on their child's development, they are seen as a very critical part of the transdisciplinary team and are involved in setting goals and making programmable decisions for themselves and their children. All decisions in the areas of assessment and program planning, implementation and evaluation are made with the consensus of the team. Although all team members share responsibility for the development of the service plan, it is carried out by the family and one of the team members, who is designated, acts as the primary service provider.

27 Another characteristic of a transdisciplinary team is that the team members accept and accentuate each other's knowledge and strengths to benefit the team, the child, and the family (Lyon & Lyon, 1980). Staff development in the form of mutual training may occur at three increasing levels of complexity: (1) sharing of general information; (2) teaching others to make specific judgments; and (3) teaching others to perform specific actions. The first two levels pertain to the sharing of information while the third level pertains to the sharing of roles. Implications of the transdisciplinary model Because the transdisciplinary team members are interdependent, all must commit themselves to assist and support one another. This commitment is demonstrated by the following behaviors: 1) Giving the time and energy necessary to teach, learn, and work across traditional disciplinary boundaries. 2) Working towards making all decisions about the child and family by team consensus—that is, giving up disciplinary control. 3) Supporting the family and one other team member as the child's primary service provider. 4) Recognizing the family as the most important influence in the child's life and including the family members as equal team members who have a role to play in their child's development program 1.5.3 Personnel and Their Role in Early Intervention PEDIATRICIAN i. Assessment ? Growth and development ? Nutrition ? Detailed systematic and neurological examination Investigation ? Diagnosis

28 ii. Intervention ? Nutrition Care Plan ? Comprehensive Healthcare services ? Genetic Counselling ? Treatment of Medical illness and associated abnormalities ? Anticipatory Guidance ? Referral iii. Teamwork ? Share Information ? Assist Other Team Members ? Health Education–Prevention, ? Early Identification ? Family Support ? Parent training programmes
Psychologist i. Assessment ? Psychological development of the child ? Behavioral characteristics/needs of the child and family ii. Intervention ? Psychological Counselling ? Family Counselling ? Behaviour Modification Referral iii. Teamwork Referral Awareness Programmes Parent Training programme

29 Master trainers programme Case Management Interdisciplinary Planning Physiotherapist 1. Assessment ? Motor Skills / development ? Motor Dysfunction ? Neuromotor ? Musculoskeletal ii. Intervention ? Design Adaptive Equipment and mobility devices ? Motor Intervention ? Gait Training ? Specific Therapies iii. Teamwork ? Interdisciplinary Planning ? Referral ? Awareness programmes ? Parent training programmes ? Master training programmes ? Case Management Occupational Therapist i. Assessment ? Functional performance ? Sensory processing ? Adaptive responses

30 ii. Intervention ? Environmental modification ? Design assistive/orthotic devices ? Functional skill development iii. Teamwork ? Referral ? Awareness programmes ? Parent training programmes ? Master trainers programme ? Inter Disciplinary Planning ? Case Management
SPEECH THERAPIST AND AUDIOLOGIST i. Assessment ? Communication/Comprehension ? Expression/Auditory function ? Oral-Pharyngeal disorders/dysfunction. ii. Intervention ? Therapeutic Program ? Parent guidance ? Auditory training/Speech training ? Referral iii. Teamwork ? Interdisciplinary planning

31 CHILD DEVELOPMENT EXPERT i. Assessment ? Cognitive Development ? Needs and Resources of the child ? Child Behaviour ? Learning ? Mental Health ii. Intervention ? Play and Socialization ? Nutritional Plan ? Counselling parents to enhance overall child development ? Home organization ? Behaviour modification iii. Community and Teamwork ? Creating Awareness on child development ? Assisting other Team members ? Parent training programmes ? Master trainers programme ? Providing Information ? Social Worker i. Assessment ? Family needs/resources/support ? Family functioning style ? Community Resources ? Family conflicts ii. Intervention ? Individual counselling

32 ? Group counselling ? Environment modification ? Marital Counselling ? Family Counselling ? Family support ? Utilization of services iii. Teamwork ? Tap community resources ? Health education ? Environmental sanitation ? Research ? Referral
Psychiatrist i. Assessment ? Childhood disorders ? Attachment problems/anxiety ? Parental psychiatric problems ii. Intervention ? Prevention of disorders ? Educating and counseling parents iii. Teamwork ? Referral ? Interdisciplinary planning

33 1.6 Record Maintenance and Documentation 1.6.1 Concept of Documentation

Whatever is the educational facility in which the student is being educated; appropriate documentation is of utmost importance. Right from birth history and diagnosis to disability certification, school admission, assessment, curriculum planning, implementation and evaluation, future planning, vocational training and placement leading to economic independence - all have to have records at each stage.

Documentation simple means systematically storing information collected from various sources using appropriate procedures for predetermined purposes. 1.6.2 The Importance of Documentation Children's learning is enhanced Children become even more curious, interested, and confident when they think about the meaning of what they have done. The processes of preparing and displaying examples of the children's experience and effort provides a kind of debriefing or revisiting where new understandings can be clarified, deepened, and strengthened. Children also learn from and are stimulated by each other's work in ways made visible through the documents displayed. A display documenting the work of one child or of a group often encourages other children to become involved in a new topic and to adopt a new method of doing something. Children's ideas and work are taken seriously Careful and attractive displays can convey to children that their efforts, intentions, and ideas are taken seriously. These displays are not intended primarily to serve decorative or show-off purposes. An important element in the project approach is the preparation of documents for display by which one group of children can let others in the class working on other parts of the topic learn of their experience and findings.

34 Documentation encourages children to approach their work responsibly, with energy and commitment, showing both delight and satisfaction in the processes and the results. Children's learning made visible Documentation provides information about children's learning and progress. The focus is on how children making meaning, of how they come to understand. While teachers often gain important information and insight from their own first-hand observations of children, documentation of the children's work in a wide variety of media provides compelling public evidence of the intellectual capability and competence of young children. Documentation uncovers the learning process as it highlights children's theories, interests and relationships. Conversation or dialogue is used to present children's words as serious attempts to understand concepts and ideas. Teachers plan and evaluate with children Continuous planning is based on the evaluation of work as it progresses. As the children undertake complex individual or small group collaborative tasks over a period of several days or weeks, the teachers examine the work each day and discuss with the children their ideas and the possibilities of new options for the following days. Planning decisions can be made on the basis of what individual or groups of children have found interesting, stimulating, puzzling, or challenging. Experiences and activities are not planned too far in advance, so that new aspects of work can emerge based on children's interests and be documented. Teachers reflect on the work in progress and the discussion that surrounded it, and consider possible new directions the work might take. When teachers and children plan together with openness to each other's ideas, the activity is likely to be undertaken with greater interest than if the child had planned alone, or the teacher had been unaware of the challenge facing the child. The documentation provides a kind of ongoing planning and evaluation that can be done by the team of adults who work with the children.

35 Teacher research and progress As teachers examine the children's work and prepare the documentation of it, their own understanding of children's development and insight into their learning is deepened. Documentation provides a basis for tweaking teaching strategies, and a source of ideas for new strategies, while deepening teachers' awareness of each child's progress. Using information gained through documentation, teachers are able to make informed decisions about appropriate ways to support each child's development and learning. Documentation explains how one activity was pivotal in understanding an issue, connecting to previous learning, or provoking a new inquiry. Documentation helps teachers promote a positive exchange of ideas. Documentation highlights the issues or problems that emerge during a study or activity. Parents' appreciation and participation Documentation makes it possible for parents to become more aware of their children's experience in the school. Parents' comments on children's work can also contribute to the value of documentation. Through learning about the work in which their children are engaged, parents may be able to contribute ideas the teachers may not have thought of. The opportunity to examine the documentation of a project in progress can also help parents to think of ways they might contribute their time and energy in their child's classroom. There are many ways parents can be involved in documentation within the classroom: listening to children's intentions, helping them find the materials they need, making suggestions, helping children write their ideas, finding and reading books

36 1.7 Implication of Early Intervention for Preschool Inclusion 1.7.1 Definition of Early Childhood Education Early childhood inclusion embodies the values, policies, and practices that support the right of every infant and young child and his or her family, regardless of ability, to participate in a broad range of activities and contexts as full members of families, communities, and society. (National Association for the Education of Young Children Joint position statement) 1.7.2 Rationale for Inclusive Early Education The Ethical Issue The rights of children with disabilities to as full a life as possible is a major ethical force among advocates of inclusion. Dunn (1968) first brought the unfairness of segregated education for children with disabilities to the public consciousness. He asserted that special classes, for the most part, provided inadequate education. According to Derman-Sparks (1988-1989), the common goal is to gain acceptance in our educational system for children with noticeable different culture, intellectual or physical characteristics. The Socialization Issue Including young children with disabilities in the educational mainstream implies equal social status with children who are developing normally. Separating young children with handicaps from normal experiences creates distance, misunderstanding and rejection Separating these youngsters from real world means there must be re-entry problems. Re-entry problems can be avoided by not removing the child from normal settings. Developmental Issue Sensitive Periods Teachable Moments When a child is highly motivated and better able to acquire a particular skill It occurs during the daily routine and activities Imitation

37 The Cost Issue 1.7.3 Inclusive Programs for children from Birth to Age Two Relationships among caregivers and children Environment and Experiences accessing what is happening in the environment Making choices that respond to their overtures and also reflect their expressed intentions Engaging in experiences that evolve from simple to more complex Causing things to happen Playing alone and with peers Equipment Picture books Household items such as measuring cups and unbreakable bowls Vinyl-covered pillows to climb on Child proof mirrors Nesting toys Large beads that snap together Washable cloth of different colors and textures Dolls Balls Pull toys Music boxes and other musical toys Simple cause -effect toys Various types of containers etc.

38 Health, Safety and Nutrition Toys should be safe, washable, and too large for young children to swallow. Mouthed toys are replaced with clean ones so that the mouthed toys can be disinfected with a bleach solution. Electrical outlets are covered; extension cords are not exposed; hazardous substances are kept out of children's reach Personal items are labeled with the child's name. Diaper - changing areas are easily and routinely sanitized after each diaper change. Staff should be healthy and take precautions not to spread illness. Caregivers wash their hands before and after every diaper change and the feeding of each infant Adults are aware of the symptoms of common childhood illnesses, of children's allergies, and potential hazards in the environment. Infants always are held with their bodies at an appropriate angle ('head above the heart') when being fed from a bottle. Children who can sit up are fed with one or two other infants with a caregiver present to help if needed. Safe finger foods are encouraged. Only healthy foods are offered. Eating is considered a sociable, happy time. Reciprocal Relationships with Families Sharing important information with parents about their children Demonstrating respect for a family's culture, language, and life choices Having appropriate information that enables teachers to answer questions about child development and available community resources. Responding respectfully to parents questions, comments, and concerns. 1.7.4 Inclusive Programs for Children Ages three to Five Creating a caring community of learners Teaching to enhance development and learning

39 Constructing an Appropriate Curriculum Socio-emotional development Communication and literacy development Physical Development Aesthetic Development Assessing Children's learning and Development Reciprocal Relationships with Parents 1.7.5 Key Experiences in Pre School Curriculum Creative Representation Recognizing objects by sight, sound, touch, taste, and smell Imitating actions and sounds Relating models, pictures, and photographs to real places and things Pretending and role playing " Making models out of clay, blocks, and other materials Drawing and painting Language And Literacy Talking with others about personally meaningful experiences Describing objects, events, and relations Having fun with language: listening to stories and poems, making up stories and rhymes Writing in various ways: drawing, scribbling, letter like forms, invented spelling, and conventional forms Reading in various ways: reading storybooks, signs and symbols, one's own writing Dictating stories

40 Initiative and Social Relations Making and expressing choices, plans, and decisions Solving problems encountered in play Taking care of one's own needs Expressing feelings in words Participating in group routines Being sensitive to the feelings, interests, and needs of others Building relationships with children and adults Creating and experiencing collaborative play Dealing with social conflict Classification Exploring and describing similarities, differences, and the attributes of things Distinguishing and describing shapes Sorting and matching Using and describing something in several ways Holding more than one attribute in mind at a time Distinguishing between some and all Describing characteristics that something does not possess or what class it does not belong to Seriation Comparing attributes (longer/shorter, bigger/smaller) Arranging several things one after another in a series or pattern and describing the relationships (big/bigger/biggest, red/blue/red/blue) Fitting one ordered set of objects to another through trial and error (small cup-small saucer/medium cup-

41 medium saucer/big cup-big saucer) NUMBER Comparing the numbers of things in two sets to determine more,fewer, same number Arranging two sets of objects in one-to-one correspondence Counting objects Space Filling and emptying Fitting things together and taking them apart Changing the shape and arrangement of objects (wrapping, twisting, stretching, stacking, enclosing) Observing people, places, and things from different spatial viewpoints Experiencing and describing positions, directions, and distances in the play space, building, and neighborhood Interpreting spatial relations in drawings, pictures, and photographs Time Starting and stopping an action on signal Experiencing and describing rates of movement Experiencing and comparing time intervals Anticipating, remembering, and describing sequences of events Source: Reprinted by permission from Nancy Altman Brickman, ed., "Key Experiences in the Preschool Classroom," Supporting Young 1.8 Lets Us Sum up Early intervention is the first intervention strategy in the process of rehabilitation. The term Early Intervention refers to services given to very young children with

42 special needs, generally from birth to until the child turns five. For this reason, these programs are sometimes called "Birth to 5" or "Zero to 5". Early intervention may focus on the child alone or on the child and the family together. The principles of early intervention is to provide appropriate therapies for children with disabilities, to minimize these delays and maximize their chances of reaching normal milestones in development. Early intervention of children at risk is the most important and vital component in Rehabilitation of Persons with all disabilities recognized by WHO and all developed countries of the world. The UNCRPD stresses the importance of habilitation and rehabilitation beginning at the earliest possible stage and being based on individual needs and strengths. Early identification, availability of services, trained professionals and information and support to families are all considerations of quality early intervention services. EI programs may be centre - based, home based, hospital based or a combination. Each model has its advantages and limitation. In the home based model the trainer visits the house of the child with disability or developmental delay. The trainer interacts with the family members, observes their routine, practices, culture and social activities, available resources in terms of family members, finances, material resources and so on. A centre-based approach provides varied types of help at a central location. This is a system where the parents or care givers of the child take the child to a centre. At the centre, a group of experts, including a doctor, social worker, special educator and therapists for speech and motor aspects, attend to the child and train the parents/ caregiver to carry out tasks at home to foster the development of the child. The mixed intervention is simple a combination of home-based and centre based intervention strategies. Under this model, the parent and the child receive a combination of services. Children are the future citizens of the country. If the future citizens, the torch bearers of the country are grappling with such problems of disability and survival, then the future of the country is to say the least, grim. Disability in any form hampers normal development of children, and the challenge posed by disability in India is enormous. Despite the fact that so much has been done, there is still a much more to be done. The

43 crucial issues are to make services accessible, to involve parents and provide services to facilitate maximum development where children with disabilities reach their full potential. Governmental efforts, especially Ministry of Health should collect comprehensive data on children with disability and 5 year targets should be set for enrollment of children with disability and closely monitory action plans implemented. There is a need to establish adequate early detection and identification services in hospitals, PHC's community based health care services with referrals system to Early Intervention service. Routine screening for high risk pregnancies and babies will help in early detection of disabilities. All the above efforts must culminate to make our former President Dr. A.P.J. Abdul Kalam's dream project PURA (Provision of Urban Amenities in Rural Areas) a possibility. So the adage "Catch them young and watch them grow" best defines Early Intervention. Documentation is a vital process in any programme. It makes the programme more system dependent than a person dependent. Educators employ various methods for documenting evaluation data. They are IEP form, activity checklists, task analysis checklist, graphs, work samples and anecdotal records. Early childhood inclusion embodies the values, policies, and practices that support the right of every infant and young child and his or her family, regardless of ability, to participate in a board range of activities and contexts as full members of families, communities, and society. The reasons for inclusion are based on ethical, social, developmental and philosophical arguments. There are many benefits to participating in an inclusive early childhood program for children with developmental problems, including opportunities to interact with and imitate children who have acquired a higher level of language, play and social skills. For programs to be truly developmentally appropriate, the educators must think about children as individuals and design programs that meet the needs of individual children. Quality programs for infants and toddlers provide a safe, healthy, well-supervised environment filled with developmentally appropriate play materials and staffed by responsive caregivers,

44 For children from three to five years of age, a quality program provides many opportunities to learn by doing. Children acquire knowledge of the world through play. Child -directed and teacher -supported active learning is the key to quality program for children this age.

1.9 Check Your Progress

1. What do you understand by early intervention?
2. Explain the purposes of early intervention.
3. Write the scope of early intervention for children with disabilities
4. Explain the advantages and disadvantages of Home Base Intervention
5. Explain which model would be suitable for your locality
6. What are the stages of early Intervention Techniques?
7. Write in details the various approaches of early intervention?
8. Write the role of professional involved in team of early intervention
9. What is documentation? Discuss the importance of documentation.
10. Explain the concept of inclusive education
11. Write the roles of educator in promoting inclusive education for the preschoolers
12. Key curriculum for preschoolers in promoting inclusive education

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Unit - 5 Therapeutic Intervention

Structure 5.1 Introduction 5.2 Objectives 5.3 Occupational Therapy: Definition, Objectives, Scope, Modalities and Intervention 5.3.1 Definition of Occupational Therapy 5.3.2 Aims of Occupational Therapy 5.3.3 Objectives of Occupational Therapy 5.3.4 Scope of Occupational Therapy 5.3.5 Modalities of Occupational Therapy 5.3.6 The Intervention Process 5.4 Physiotherapy: Definition, Objective, Scope, Modalities and Intervention. 5.4.1 Definition of Physiotherapy 5.4.2 Aims and Objectives of Physiotherapy 5.4.3 Scope of Physiotherapy 5.4.4 Modalities of Physiotherapy 5.4.5 Intervention of Physiotherapy 5.5 Speech Therapy: Definition, Objectives, Scope, Types of Speech, Hearing and Language Disorders and Intervention 5.5.1 Definition of Speech and Language Therapy 5.5.2 Objectives of Speech Therapy 5.5.3 Scope of Speech Therapy 5.5.4 Types of Speech, Hearing and Language Disorder. 5.5.5 Speech and Language Intervention 164 5.6 Yoga and Play Therapy: Definition, Objectives, Scope and Intervention 5.6.1 Meaning and Definition of Yoga 5.6.2 Objectives of Yoga 5.6.3 Scope of Yoga Therapy 5.6.4 Yoga Intervention 5.6.5 Definition of Play Therapy 5.6.6 Scope of Play Therapy 5.6.7 Importance of Play Therapy 5.6.8 Objectives of Play Therapy 5.6.9 Intervention of Play Therapy 5.7 Therapeutic Intervention: Visual Arts and Performing Arts (Music, Drama, Dance, Movement and Sports) 5.7.1. Visual Arts and Performing Arts 5.7.2 Music therapy 5.7.3. Drama Therapy 5.7.4 Dance and Movement Therapy 5.7.5 Sports Activities for Children with Special Needs 5.8 Let us Sum Up 5.9 Check your Progress 5.10 Reference

5.1 Introduction Treatment of developmental disabilities can come in a variety of different forms. The best treatment regimens are the result of an individualized treatment plan formed by a team of health care multidisciplinary professionals. The plan will be based on the severity of the disability and should involve patients, families, teachers, and caregivers in all phases of planning, decision making, and treatment. The individualized treatment plan will take into consideration both the immediate needs of the patient, and the long term prognosis for development.

165 Occupational therapy, or OT for short, is a treatment therapy that helps people achieves independence in all facets of their lives. If a child has physical disabilities or developmental delays, occupational therapy can improve their cognitive (thinking), physical and major skills as well as address psychological, social, and environmental factors that impact the child's functioning. Physical therapy (PT), or sometimes called physiotherapy, focuses on improving gross and fine motor skills, balance and coordination, and strength and endurance. The child may be evaluated by a physical therapist to assess muscle and joint function, mobility, strength and endurance, oral motor skills such as feeding and talking, posture and balance, even the status of the heart and lungs. Speech therapy is a clinical program aimed at improving speech and language skills and oral motor abilities. This means talking, using sign language, or using a communication aid. Children who are able to talk may work on making their speech clearer, or on building their language skills by learning new words, learning to speak in sentences, or improving their listening skills. Dance and creative movement provide physical challenges in a structured, supportive environment for sensory integration. The intimate connection with music often makes dance feel less like exercise or physical therapy and more like leisure. Dance/Movement Therapy (DMT) has been used in the United States since World War II. Marian Chace, a dancer, choreographer, and teacher of modern dance in Washington D.C. during the 1930s and 1940s, first developed the mind body connection as a form of therapy for her dance students. She "questioned why pupils who had no intention of being professional came to take dance classes" and started gearing her classes toward the needs and interests of recreational dancers. In 1942, she was asked to work with returning soldiers from World War II at St. Elizabeth's Hospital in Washington D.C. Dance/movement therapy was seen as promising because it could so easily be a group treatment. Chace developed her methods working with institutionalized, often schizophrenic and psychotic, individuals. Music therapy enhances one's quality of life, involving relationships between a qualified music therapist and individual; between one individual and another; between the individual and his/her family; and between the music and the participants. These relationships are structured and adapted through the elements of music to create a positive environment and set the occasion for successful growth.

166 Music Therapy is a well-established, research-based profession in which music is used to accomplish therapeutic and educational goals. Recreational therapy is based on the idea of increasing a person's independence and ability to function through participation in creative arts, dance, sports, adventure programs and puzzles or logic games. It is a holistic approach to wellness. According to the American Therapeutic Recreation Association, recreational therapy "aims to improve an individual's functioning and keep them as active, healthy and independent as possible in their chosen life pursuits." In most cases, these goals are accomplished by combining a person's speech, fine motor or gross motor goals with community involvement, while engaging in the person's preferred interests. 5.2

Objectives After going through this unit you will be able to ?

Define the

different therapies like occupational, physio, speech, yoga and play, music, dance and movement. ? Discuss the aims and objectives of the different therapies. ? Narrate the scope and modalities of the therapies. ? Describe the intervention procedures of the therapies. 5.3 Occupational Therapy: Definition, Objectives, Scope, Modalities And Intervention. 5.3.1

Definition of Occupational Therapy Occupational therapy is a method of treatment for which the primary area of concern is the patient's ability to perform functions required in day to day life. This method of treatment is also concerned with the social, psychological and cognitive development of the patient. In the early years, occupational therapy was regarded as a means to keep long term convalescent patients occupied. It derived the name "Occupational therapy" owing to this. Its contribution was limited to the field of chronic illness - mental illness, tuberculosis, leprosy etc.

Occupational therapy is a client-centred health

profession concerned with

167 promoting health and well being through occupation. The primary goal of occupational therapy is to enable people to participate in the activities of everyday life. Occupational therapists achieve this outcome by working with people and communities to enhance their ability to engage in the occupations they want to, need to, or are expected to do, or by modifying the occupation or the environment to better support their occupational engagement. (WFOT 2012) "

Occupational therapy is the art and science of directing man's participation in selected tasks to restore, reinforce and enhance the performance, facilitate learning of those skills and functions essential for adaptation and productivity, to diminish or correct pathology and to promote and maintain health." (Council of Standards, American Occupational Therapy Association, 1972) 5.3.2 Aims of Occupational Therapy A person with intellectual disability is observed to have dysfunction in almost all performance components. The specific aims of occupational therapy for persons with intellectual disability are as follows. (a) To facilitate the development of performance components of the patients. (b) To enhance independence of the patients. (c) To provide sensory stimulation. (d) To improve hand functions. (e) To enhance gross motor functions. (f) To facilitate development of perceptual motor functions. (g) To reinforce social development. (h) To enhance independence skills. (i) To provide vocational training. (j) To correct mal adaptive behaviour. (k) To provide extrinsic adaptations.

168 5.3.3 Objectives of Occupational Therapy Occupational Therapists work with children who have difficulties with the practical and social skills necessary for their everyday life. An Occupational Therapist will aim to enable the child to be as physically, psychologically and socially independent as possible. Occupational Therapists work in close partnership with the child and their family, schools and other healthcare professionals. Together they have a shared responsibility for meeting the child's needs. In schools, for example, they evaluate the child's abilities, recommend and provide therapy, modify classroom equipment, and help the child participate as fully as possible in school programs and activities. A therapist may work with the child individually, lead small groups in the classroom, consult with a teacher to improve the functioning skills of the child etc. Occupational therapy is provided when there is a disruption in function in one or more of the following the areas: Gross Motor Skills: Movement of the large muscles in the arms, and legs. Abilities like rolling, crawling, walking, running, jumping, hopping, skipping etc. Fine Motor Skills: Movement and dexterity of the small muscles in the hands and fingers. Abilities like in-hand manipulation, reaching, carrying, shifting small objects etc. Cognitive Perceptual Skills: Abilities like attention, concentration, memory, comprehending information, thinking, reasoning, problem solving, understanding concept of shape, size and colors etc. Sensory Integration: ability to take in, sort out, and respond to the input received from the world. Sensory processing abilities like vestibular, proprioceptive, tactile, visual, auditory, gustatory and olfactory skills. Visual Motor Skills: A child's movement based on the perception of visual information. Abilities like copying. Motor Planning Skills: Ability to plan, implement, and sequence motor tasks. Oral Motor Skills: Movement of muscles in the mouth, lips, tongue, and jaw, including sucking, biting, chewing, blowing and licking. Play Skills: To develop age appropriate, purposeful play skills Socio-emotional Skills: Ability to interact with peers and others.

169 Activities of daily living: Self-care skills like daily dressing, feeding, grooming and toilet tasks. Also environment manipulation like handling switches, door knobs, phones, TV remote etc. Occupational therapists in schools collaborate with teachers, special educators, other school personnel, and parents to develop and implement individual or group programs, provide counselling, and support classroom activities. Occupational therapists design and develop equipment or techniques for improving existing mode of functioning. 5.3.4 Scope of Occupational Therapy Occupational Therapists work with parents/care givers and others to assess if a child has difficulties with practical and social skills. Occupational Therapists assess the physical, psychological and social functions of the individual identify areas of dysfunction and involves the individual in a structured programme of activity to overcome disability. Following assessment, the Occupational Therapist will design and implement programs with appropriate strategies in order to enable the child to maximize his/her potential. Occupational Therapists provide services to individuals often in conjunction with physicians, social workers, psychologists, and other therapists. Occupational therapists use qualitative and quantitative assessment methods, including standardized tests, as well as devices, to analyze and diagnose the nature and extent of dysfunction. Occupational therapists develop an individualized plan of care, tailored to each patient's needs. 5.3.5 Modalities of Occupational Therapy Occupational Therapy is a form of treatment which directs the patients to practice and

master human activities. Thus human activity is indeed the foremost modality of occupational therapy. The modalities of occupational therapy

are as 1. Human Activity. 2. Extrinsic adaptation: Extrinsic adaptation is a adaptation in the physical, natural or non human environment of the person. Here adaptation refers to the structural adjustment or change in factors in the environment.

170 3. Splints and pressure garments. 4. Therapist. 5. Environment 6. Teaching/ Learning Process. 5.3.6 The Intervention Process Occupational therapy intervention for people with intellectual disability is an on-going process that is both gradual and dynamic. Treatment is provided throughout the life cycle in accordance with the client's changing needs, desires and preferences in all areas of occupation. The intervention often requires repeated drills and practice to achieve internalization and learning, and performance in a variety of contexts to enable generalization. As is the case with respect to assessment, the intervention is preferably carried out in the client's various daily environments. This enables and encourages the client's participation in the many contexts of his/her life. Occupational therapy interventions for people with intellectual disabilities are specifically adapted to the client with respect to the degree and type of support needed as well as the context. Interventions may include direct treatment as well as environmental adaptations, guidance, monitoring and counseling (including of the family, the educational staff, the clinical staff, employers and others).

Examples of Occupational Therapy Intervention: Activities of daily living: including activities directed to the person's care of his/her bodily needs (ADL) such as personal hygiene, eating, dressing, and instrumental activities of daily life (IADL) such as preparing a meal or managing finances. This area represents a central focus of intervention in occupational therapy for this population. For example, with respect to activities related to eating, the intervention can range from adapting the feeding environment, choosing preferred food or bringing the food to one's mouth, to teaching more advanced skills such as organizing shopping, and meal preparation. Learning/Studies: These are activities necessary to be a student and to participate in a learning environment, including academic and non-academic activities. Intervention in this area covers a variety of educational settings such as day care centers for very young children, kindergartens and special education schools (ages 3-21 years), regular school settings and professional training facilities. The intervention is varied and may focus on

171 gaining basic learning-skills, such as understanding cause and effect processes and object permanence, or on more complicated skills, such as preparation for learning and writing, organization in time, in space and with accessories, adaptation to different learning environments, the use of information technologies and computers and gaining learning strategies. In addition, the intervention can include adapting various learning environments. Work: These are productive activities, whether for remuneration or not, that include preparing for work, producing a product and providing services. Intervention in this area covers a variety of work settings including: special educational settings in which students receive training to enter the work force, youth rehabilitation centers, adult sheltered-work facilities, an array of protected supportive community work systems, and placement-services for gaining open market positions. Intervention varies and may include basic work skills training (behavior norms, work routines), developing and practicing basic cognitive abilities, practicing motor skills, exposure to varied work opportunities, support and advice for developing areas of interest, identifying abilities and choosing suitable occupations, analyzing occupations and adapting them as needed, as well as supporting and assisting placement in various work settings in the community. Play: These are activities that are generally internally motivated and provide pleasure, entertainment and learning. Play-intervention, as an occupational therapy goal in this population, is directed towards the most basic experiencing of play as a source of pleasure, as well as providing the client with an opportunity to participate in play activities. The intervention includes drills in basic skills such as the use of equipment, recognizing rules and agreed-upon behavior patterns, or choosing suitable play activities. In addition, play represents a treatment method for learning and practicing a variety of social, motor and functional skills. Leisure: These are non-obligatory activities that are internally motivated and are performed at times that are not devoted to work, studies, self-care or sleep. Research reveals that people within this population have a relatively large amount of time to devote to leisure, whereas their participation in leisure activities is minimal (Buttimer & Teirney, 2005). Therefore, coping with leisure within this population is a central topic. Intervention in this area may focus on exposure to varied leisure opportunities, identification and choice of areas of interest, planning leisure time and participation in activities that lead to a perception of capability, pleasure, control and satisfaction.

172 Social participation: These are activities related to agreed-upon behavior patterns expected of an individual within a given social system (e.g. community, family or with friends). The intervention within occupational therapy encourages the person to gain skills in the various areas or occupation and thus supports and strengthens social participation. For this population, an emphasis is placed upon understanding acceptable social norms and as well as learning and practicing activities that lead to satisfactory social interactions. Accessibility and Environmental Modification: Occupational therapy practice relates to the person, the occupation and the

environment. The occupational therapist's broad knowledge base in the areas of function and limitation enables him/her to identify, through performance analysis in the different areas of occupation, environments and/or tasks that should be modified. The various limitations that characterize the population of people with intellectual disabilities require both general and client-specific environmental modifications to ensure accessibility. The characteristic difficulty in problem-solving, initiative and coping with unfamiliar situations, amplifies the need for accessibility modifications for this population. These accessibility modifications include changes in the environment (as in widening passageways, modifying playgrounds or adding symbol signs), in the equipment (such as adapting seating systems or adapting feeding aids), or in the task (such as changing the complexity of instructions or dividing a task into sub-stages). Assistive technology is one of the methods used to adapt the environment and includes modifications of hardware; software and various combinations thereof (such as a virtual keyboard, a touch screen, a motorized wheelchair, switch systems, computer programs and internet sites, adapted content amount, or voice output devices). Thus, for example, a switch can be modified to be activated through the person's head or hand. Other modifications of the switch may include size, colour, texture, or sensitivity (such as speed or pressure response). Assistive technology promotes a variety of functions related to the individual, the occupation and the environment. In addition, it allows for the modification of an individual's environment in the manner in which he/she requires, by relating to his personal abilities, wants, areas of interest and specific limitations and difficulties. Environmental modification is likely to significantly improve a person's ability to participate in all areas of occupation, his or her level of independence and the degree of supports required.

173 In summary, the occupational therapist, as part of a therapeutic, rehabilitative and educational profession plays a central role within the support system available to people with intellectual and developmental disabilities, throughout the life cycle. As such, occupational therapists hold key positions as leaders in this area. Working with people with intellectual and developmental disabilities requires consideration of function, independence and participation in the various areas of occupation, which enables the occupational therapist to utilize all the areas of knowledge and expertise included in the practice of occupational therapy. 5.4

Physiotherapy: Definition, Objective, Scope, Modalities and Intervention 5.4.1 Definition of Physiotherapy It is also called physical therapy. The treatment of physical dysfunction or injury by the use of therapeutic exercise and the application of physical modalities (like heat, light, cold, current, water, sound waves). Assistive devices are also used as a part of the treatment programme. They are intended to restore or facilitate normal function or development. 5.4.2 Aims and Objectives of Physiotherapy

Physiotherapy in the field of mental retardation is aimed at improving overall motor functions of the child to the maximum extent possible, so as to make the child independent in walking and carrying out activities of daily living. If it is not possible for the person to walk, and carry out activities independently, then aids and appliances are trained to the person to use it. (A) Objectives of physiotherapy in general 1. Reduces or relieves pain, muscle spasm, tenderness of muscles. 2. It helps to reduce or relieve swelling. 3. It helps to reduce or relieve inflammation (means the response of the body in the form of pain, swelling, muscle spasm and tenderness of the muscles etc. in the presence of any foreign body). 4. To improve ventilation of lungs, by giving, deep breathing exercises and postural drainage.

174 5. To encourage correct weight bearing and weight transference on both sides of the body. 6. Re-education of affected or paralysed muscles. 7. It is effective in healing of infected wounds. 8. It helps to check the abnormal growth of bone (bony spurs). 9. Breaking up of adhesion formation (gluing of joint structures by synovial fluid). 10. To keep the person physically fit. 11. To teach relaxation. 12. Stimulation of sensory and motor nerves if sensations are reduced or lost. 13. Post fracture and dislocation, management. (B) Objectives of physiotherapy in relation to Intellectual Disability 1. To facilitate the development of child gross motor and fine motor. 2. To prevent or correct contractures and deformities. 3. Prevent or correct wasting and atrophy of muscle. 4. To normalize muscle tone. 5. To maintain or improve the muscle power. 6. To maintain and improve the joint range of movement. 7. To emphasize the importance of handling and positioning the child. 8. To make the child independent in walking and activities of daily living. 9. Provide aids and appliances and to train the person and parents how to use assistive devices. 10. To improve posture, gait, balance coordination. 11. Inhibition of abnormal reflex activity, abnormal patterns of movement and abnormal muscle tone and facilitation of normal in place of abnormal. 12. To keep the children physically fit. 5.4.3 Scope of Physiotherapy Physiotherapy has scope in treating a wide range of conditions. It plays an important

175 role in all the branches of medical sciences, especially Orthopaedics, Paediatrics, Neurology, Cardio thoracic, Surgery, Sport Medicine etc. In set ups like leprosy, paraplegic and poliomyelitis after plastic surgery, burns clinics, spinal cord injury centres and in assistive devices manufacturing units etc. Physiotherapy has three major functions in the management of children with intellectual disability. 1. To facilitate motor development 2. To prevent and correct contractures and deformities. 4. To make the child as independent as possible and functional (locomotor function and activities of daily living). 5.4.4 Modalities of Physiotherapy 1. Hydrotherapy: Hydrotherapy, or water therapy, is the use of water (hot, cold, steam, or ice) to relieve discomfort and promote physical well-being. 2. Electrotherapy: Electrotherapy is the use of electrical energy as a medical treatment. 3. Exercise Therapy: Exercise Therapy is a regimen or plan of physical activities designed and prescribed for specific therapeutic goals. 4. Massage or Manipulation 5. Gait: Gait training is a type of physical therapy. It can help improve your ability to stand and walk. 5.4.5. Intervention of Physiotherapy Role of Physiotherapist in the field of Intellectual Disability ? Diagnostician: Here the physiotherapists assess the client and order for the necessary investigation, on the basis of this therapist arises at diagnosis. According to the diagnosis therapy will be planned. ? Interventionist: Therapist plays a role as interventionist in setting intervention goals, planning and implementation of therapy programme, giving follow - up and

176 regular evaluation of the client, modifying programme as per the clients need. ? Team member: Therapist treated as a team member as the team member in multidisciplinary approach, this is the most commonly seen approach in field of mental retardation. In Trans disciplinary approach therapist plays a role as a team member by gathering information and helps in planning intervention along with other experts of the team. In certain condition therapist become a case manager and given input. ? Providing Information and guidance: As the parents need information guidance regarding the condition of the child and therapy, the therapist gives proper information to parents and also to other professional whenever needed. ? Counsellor: Physiotherapist plays a counsellor role in the field of mental retardation. Parent counselling is an important aspect, which should be included in intervention programme. The parents of the clients may not be aware of the condition of child and the facilities available for their child. They will come to you in a state of confusion and anxiety to know what happening with their child. Before as part of planning and intervention programme therapist should give proper information to the parents regarding the following things: ? Condition of the child. ? Child's needs and abilities. ? How the therapy is going to help the child in improving his functional abilities. ? Proper instructions given to the parents. ? Training is given to the parents how to give therapy at home. ? What are the facilities and services available for the persons with intellectual disability. ? Trainer: Therapist plays a role of trainer, as the therapist will train the parents how to give therapy at home and conducts classes and workshops for parents and other professional, to make them aware of disability and affects of intervention on the clients. ? Researcher: Research is an important aspect in the field of intellectual disability. Therapist also plays a role as a researcher by doing research on different aspects

177 and population study. To innovate new techniques and equipment for making the intervention better and to get better outcome results. ? Leader: Therapist plays a role of leader of the team voicing on behalf of the client and by giving guidelines to the former self-help groups by the parents. ? As an administrative officer: Therapist plays a role of administrative officer by heading and organization and establishing an institution or center to serve the people better. ? Provider of referral: Therapist will give referrals to the concern professionals to obtain information of the clients and to related services outside the institute for investigations or for expert opinion. 5.5 Speech Therapy: Definition, Objectives, Scope, Types of Speech, Hearing and Language Disorders and Intervention 5.5.1 Definition of Speech and Language Therapy: Speech and language therapy provides treatment, support and care for children and adults who have difficulties with communication, or with eating, drinking and swallowing. Speech and language therapists (SLTs) are allied health professionals. They work with parents, carers and other professionals, such as teachers, occupational therapists and doctors. 5.5.2 Objectives of Speech Therapy A speech pathologist's narrow, well-defined objectives work toward achieving broad therapeutic goals. This professional develops an individualized treatment plan for each patient, which often includes time-based objectives. For example, his objectives may include helping a patient correctly say several new sounds by the end of a quarter, marking period or year. Other objectives can include helping a patient to understand and to explain a speaker's gestures, demonstrate newly learned conversation strategies, explain the perception of body language, speak for a period of time without stuttering and improve reading comprehension to a specific level. A speech language pathologist sets broad but specific goals for each of his patients. Specific goals can include helping patients develop clearer speech, learn to use alternate

178 methods of communication, develop better reading and writing skills, and strengthen throat and neck muscles. Goals also may include coordinating treatment programs with other professionals or referring patients for other treatments. For example, a patient with a swallowing disorder may benefit from the collaborative care of a speech language pathologist and a medical doctor.

5.5.3 Scope of Speech therapy

Speech Therapy is an Allied Health Science subject. Medical advancement in this field, awareness of the need for early intervention etc has increased the scope of Speech Therapy. A number of Speech Therapy courses are available now in India and abroad. Speech Therapy has its necessity in teaching and training children with intellectual disability.

5.5.4 Types of Speech, Language and Hearing Disorders

The most intensive period of speech and language development is during the three of life a period when the brain is developing and maturing. These skills appear to develop best in a world that is rich with sounds, sights, and consistent exposure to the speech and language of others. At the root of this development is the desire to communicate or interact with the world. The beginning sign of communication occur in the first few days of life where in infant learns that a cry will bring food, comfort, and companionship. Research has shown that by 6 months of age, most children recognize the basic sounds of their native language.

5.5.4 (a) Speech and Language Disorders

A speech disorder refers to a problem with the actual production of sounds. A language disorder refers to a problem understanding or putting words together to communicate ideas. Speech disorders include:

1. Articulation disorders: difficulties producing sounds in syllables or saying words incorrectly to the point that listeners can't understand what's being said.
3. Fluency disorders: problems such as stuttering, in which the flow of speech is

179 interrupted by abnormal stoppages, partial-word repetitions ("b-b-boy"), or prolonging sounds and syllables (sssssnake).

4. Resonance or voice disorders: problems with the pitch, volume, or quality of the voice that distract listeners from what's being said. These types of disorders may also cause pain or discomfort for a child when speaking.

Language disorders can be either receptive or expressive:

1. Receptive disorders: difficulties understanding or processing language.
2. Expressive disorders: difficulty putting words together, limited vocabulary, or inability to use language in a socially appropriate way.
3. Cognitive-communication disorders: difficulty with communication skills that involve memory, attention, perception, organization, regulation, and problem solving.

5.5.4 (b) Hearing disorders

There are four types of hearing loss: ? Auditory Processing Disorders ? Conductive ? Sensorineural ? Mixed.

Auditory Processing Disorders

Auditory Processing Disorders occur when the brain has problems processing the information contained in sound, such as understanding speech and working out where sounds are coming from.

Conductive Hearing Loss

Conductive Hearing Loss occurs when there is a problem with the Outer or Middle Ear which interferes with the passing sound to the Inner Ear. It can be caused by such things as too much earwax, Ear Infections, a punctured eardrum, a fluid build-up, or abnormal bone growth in the Middle Ear such as Otosclerosis. It is more common in children and indigenous populations. Surgery and some types of hearing technologies can be used to treat Conductive Hearing

180 Loss such as Bone Conduction Hearing Aids, Bone Anchored Hearing Devices and Middle Ear Implants.

Sensorineural Hearing Loss

Sensorineural Hearing Loss occurs when the hearing organ, the Cochlea, and/or the auditory nerve is damaged or malfunctions so it is unable to accurately send the electrical information to the brain. Sensorineural Hearing Loss is almost always permanent. It can be genetic or caused by the natural aging process, diseases, accidents or exposure to loud noises such as Noise-induced Hearing Loss and certain kinds of chemicals and medications. Auditory Neuropathy is another form where the nerves that carry sound information to the brain are damaged or malfunction. Technologies such as Hearing Aids, Cochlear Implants and Hybrid Cochlear Implants can help reduce the effects of having Sensorineural Hearing Loss.

Mixed Hearing Loss

A Mixed Hearing Loss occurs when both Conductive Hearing Loss and Sensorineural Hearing Loss are present. The sensorineural component is permanent, while the conductive component can either be permanent or temporary. For example, a Mixed Hearing Loss can occur when a person with Presbycusis also has an Ear Infection.

5.5.5 Speech and Language Intervention

In speech-language therapy, a speech language pathologist will work with a child one- to-one, in a small group, or directly in a classroom to overcome difficulties involved with a specific disorder. Therapists use a variety of strategies, including:

Language intervention activities: The SLP will interact with a child by playing and talking, using pictures, books, objects, or ongoing events to stimulate language development. The therapist may also model correct vocabulary and grammar and use repetition exercises to build language skills.

Articulation therapy: Articulation, or sound production, exercises involve having the therapist model correct sounds and syllables in words and sentences for a child, often during play activities. The level of play is age-appropriate and related to the child's specific needs. The SLP will physically show the child how to make certain

181 sounds, such as the "r" sound, and may demonstrate how to move the tongue to produce specific sounds. Oral-motor/feeding and swallowing therapy: The SLP may use a variety of oral exercises -including facial massage and various tongue, lip, and jaw exercises - to strengthen the muscles of the mouth for eating, drinking, and swallowing. The SLP may also introduce different food textures and temperatures to increase a child's oral awareness during eating and swallowing. General guidelines for interventions Selection of Specific goals Organizing all the gathered information Structure the environment Selection of relevant materials Transformation and adaptation of the material Use of object from the environment Maintenance of schedule Principles for therapy Highlighting new or relevant information Pre-organized information Trained rehearsal strategies Using over learning & repetition Training in natural environment Early Intervention Following proper schedule

5.6 Yoga and Play Therapy: Definition, Objectives, Scope and Intervention

5.6.1 Meaning and Definition of Yoga

The word yoga comes from the Sanskrit root 'Yug' meaning to join or yoke, implying the integration (or joining) of every aspect of human being from the inner most to the external. Yoga is practical philosophy that aims at uniting the body, mind, and spirit for

5.6.2 Objectives of Yoga

182 health and fulfillment. The father of modern yogashashtra Patanjali Maharshi defines yoga as 'Yogaschitta Vritti Nirodhaha' that is yoga is controlling the nature of the mind. The ultimate aim of this philosophy is to strike a balance between mind and body and attain self- enlightenment. To achieve this, yoga uses movement, breath, posture, relaxation and meditation in order to establish a healthy, lively and balanced approach to life. Though the exact origins of Yoga are unknown but Yoga is considered to be the oldest physical discipline in existence. Yoga, thus symbolizes balance in every area of life. Yoga is one of the six schools of ancient Indian Philosophy. It is the practice that enables one to achieve higher levels of performance, bringing out the hidden potentials from within. Systematic Yoga practice will increase the physiological and psychological well being. Yoga practice reduces tension, stress, anxiety, weakness, helplessness, fear, negative thoughts etc. Which are increasing day by day in this mechanical human life. It treats the prolonged diseases or deficiencies like diabetes, asthma, heart problems, pains, sprains, indigestion etc. and makes the body active and good looking. Yoga practice equips the practitioners with devotion, attention, and concentration and alertness in every activity that he does. He also discharges his responsibilities with dedication thereby get respect and honor at his work. Man can prove his life worth living by developing his self physically and psychologically that contribute for the development of spiritual instinct in him. As soon as one is habituated for yoga practice, there would be number of changes in his routine activities, habits, thoughts, food habits, behaviors etc. Improvement in balance is one of the major benefits of Yoga. Improved balance is referred not only to the sharp physical coordination but also to the balance between the left and right, front and back and high and low aspects of one's body. Along with a host of benefits, Yoga also helps in developing and attaining personal values. Yoga erases a variety of ills in human beings. These may range from feelings of frustration, persecution and insecurity. Yoga greatly helps in the development of personal values. Personal values are those values which an individual develops and lives by all through his life.

183 Yoga and social values are closely related to each other. Social values are a set of philosophy that an individual carries for all his life. Yoga possesses great power to inculcate those values that go a long way in making a man complete. Yoga helps an individual not only to realize his own self but also understand other issues around him/her. Yogic theory and practice lead to increased self-knowledge. Yogic practices like breathing and posture exercises help in attaining and maintaining health, physical and mental, and relaxation. The knowledge gained through Yoga is not simply that of the practical kind relating to techniques, but of a spiritual sort pertaining to grasping something about the nature self and other matters. 5.6.3 Scope of Yoga Therapy Yoga is certainly more than mastering its postures and asanas and increasing the strength and flexibility of body. It indicates towards healing of mind and body and attaining the state of self-enlightenment. It is said that in early periods when Yoga was just introduced, the main purpose was to heal community members and the practitioners act as religious mediators. Needless to say, practicing of Yoga includes the traditional aspects too such as practicing different poses, chanting of mantra, observing breathing habit and controlling thoughts coming to mind with the help of meditation. Today, it has been practiced for fitness, healthy body and mind, strength, flexibility, emotional well-being and much more. The main purpose of practicing Yoga is to taking control over the body, mind and emotional aspects. The cessation of bad thoughts creates a positive vibe around the person and makes him healthy overall. 5.6.4 Yoga Intervention Yoga is an ancient Indian practice which involves moving the body and training the mind to achieve balance and well-being. The purpose of traditional yoga is for each individual to be healthy, both physically and mentally, and able to reach his or her highest potential as a person. Yoga aim is to prepare the body for meditation through breathing and physical exercises. Yoga emphasizes body-mind wellness through postures or asanas which tone and strengthen our muscles and increase our flexibility. The different asanas, particularly the twists and inversions, stimulate internal organs, as well as the nervous system, and promote circulation in all the body's major organs and glands. Importance of yoga for children with intellectual disability 1. Helps to co-ordinate the activities of the mind and body.

184 2. Tends to reduce the distracted state of mind and helping the mind to deal on the present activity. 4. Helps to improve his adaptive behavior to a degree unobtainable before. 5. Actively increase the ability to concentrate on the present activity. 6. Aims at improving general health, concentration, self-reliance and social relationship of the persons with mental retardation. 6. Yoga has been tried as an adjunct in education of children with mental retardation and attention deficit hyperactivity disorder. 5.6.5 Definition of Play Therapy Play Therapy uses a variety of play and creative arts techniques (the 'Play Therapy Tool-Kit (TM)' to alleviate chronic, mild and moderate psychological and emotional conditions in children that are causing behavioural problems and/or are preventing children from realising their potential. The Play Therapist works integratively using a wide range of play and creative arts techniques, mostly responding to the child's wishes. This distinguishes the Play Therapist from more specialised therapists (Art, Music, Drama etc). The greater depth of skills and experience distinguishes a play therapist from those using therapeutic play skills. Play therapy utilizes play, children's natural medium of expression, to help them express their feelings more easily through toys instead of words. Association for Play Therapy (APT) defines play therapy as "the systematic use of a theoretical model to establish an interpersonal process wherein trained play therapists use the therapeutic powers of play to help clients prevent or resolve psychosocial difficulties and achieve optimal growth and development." In the textbook Play Therapy: The Art of the Relationship (2nd ed.), Landreth (2002) defined child-centered play therapy: A dynamic interpersonal relationship between a child (or person of any age) and a therapist trained in play therapy procedures who provides selected play materials and facilitates the development of a safe relationship for the child (or person of any age) to fully express and explore self (feelings, thoughts, experiences, and behaviors) through play, the child's natural medium of communication, for optimal growth and development.

185 5.6.6 Scope of Play Therapy Children are referred for play therapy to resolve their problems (Carmichael; 2006; Schaefer. 1993). Often, children have used up their own problem solving tools, and they misbehave. may act out at home, with friends, and at school (Landreth, 2002). Play therapy allows trained mental health practitioners who specialize in play therapy. to assess and understand children's pia). Further. play therapy is utilized to help children cope with difficult emotions and find solutions to problems (Moustakas, 1997; Reddy, Files-Hall, & Schaefer, 2005). l3y confronting problems in the clinical Play Therapy setting, children find healthier solutions. Play therapy allows children to change the way they think about, feel toward, and resolve their concerns (Kaugars & Russ, 200 l). Even the most troubling problems can be confronted in play therapy and lasting resolutions can be discovered, rehearsed, mastered and adapted into lifelong strategies (Russ, 2004). 5.6.7 Importance of Play therapy It is difficult for most children below age ten to eleven to sit still for sustained periods of time. Play therapy provides for children's need to be physically active. In play, children discharge energy, prepare for life's duties, achieve difficult goals and relieve frustrations. As children play, they are expressing the individuality of their personalities and drawing upon inner resources which can become incorporated into their personality. Virginia M. Axline (1974) who developed the child-centered play therapy asserted that: "A play experience is therapeutic because it provides a secure relationship between the child and the adult, so that the child has the freedom and room to state himself in his own terms, exactly as he is at the moment in his own way and in his own time. " Play therapy helps to actualize the ultimate objectives of elementary schools facilitating the intellectual, emotional, physical and social development of children from the learning opportunities and experiences offered in school.

186 5.6.8 Objectives of play therapy Develop a more positive self-concept Assume greater self-responsibility Become more self-accepting Become more self-directing Become more self-reliant Become more trusting of self Experience a feeling of control Become sensitive to the process of coping Develop an internal source of evaluation Engage in self-determined decision making 5.6.9 Intervention of Playas a therapy results in Developing a more positive self-concept Assume greater self-responsibility Become more self-accepting Become more self-directing Become more self-reliant Become more trusting of self Experience a feeling of control Become sensitive to the process of coping Develop an internal source of evaluation Engage in self-determined decision making 5.7 Therapeutic Intervention: Visual Arts and Performing Arts (Music, Drama, Dance, Movement and Sports) 5.7.1 Visual Arts and Performing Arts : Art reflects human emotions and human beings spontaneously express their frame of

187 mind through various art forms. Thus the intellectual mind merges with the artistic streak, giving birth to art. The visual arts are those creations we can look at, such as a drawing or a painting. For example Drawing, painting, sculpture, architecture, photography, film, printmaking. It also includes the decorative arts of: ceramics, furniture and interior design, jewellery making, metal crafting and wood working. The literature available for utilizing art education for exceptional students is generally addressed to art education teachers to use in their classroom. However, expanding the use of art in the education of children with special needs into general and special education is advantageous to these individuals. The art educator can evolve to be a resource and perhaps a liaison between the special and general educator. Thus, to improve the education afforded to students with special needs, art can act as a bridge between general, and art educators to enhance the communication and cooperation between these specialists. Creating a cohesive network between art educators, special and general educators, draws upon the unique perspective that each educator has that can help the others in bolstering special education programs. The visual arts are a powerful teaching tool that can enhance the cognitive, emotional and social development of children. Children in special education programs are particularly in need of the assistance that the arts can provide. The performing arts range from vocal and instrumental music, dance and theatre to pantomime, sung verse and beyond. They include numerous cultural expressions that reflect human creativity and that are also found, to some extent, in many other intangible cultural heritage domains. Music is perhaps the most universal of the performing arts and is found in every society, most often as an integral part of other performing art forms and other domains of intangible cultural heritage including rituals, festive events or oral traditions. 5.7.2 Music Therapy Music therapy is a well-established allied health profession similar to occupational and physical therapy. It consists of using music therapeutically to address behavioral, social, psychological, communicative, physical, sensory-motor, and/or cognitive functioning. Because music therapy is a powerful and non-threatening medium, unique outcomes

188 are possible. For individuals with diagnoses on the autism spectrum, music therapy provides a unique variety of music experiences in an intentional and developmentally appropriate manner to effect changes in behavior and facilitate development of skills. Music therapy may include the use of behavioral, biomedical, developmental, educational, humanistic, adaptive music instruction, and/or other models. Music therapy enhances one's quality of life, involving relationships between a qualified music therapist and individual; between one individual and another; between the individual and his / her family; and between the music and the participants. These relationships are structured and adapted through the elements of music to create a positive environment and set the occasion for successful growth. The interventions used in Music Therapy aid in fostering skills across the entire developmental spectrum for children with special needs. Music Therapists encourage a child's sense of exploration and wonder as they focus on the goals targeted in your child's Individualized Education Program (IEP). How Does Music Therapy Make a Difference with Young Children? Music stimulates all of the senses and involves the child at many levels. This "multi-modal approach" facilitates many developmental skills. Quality learning and maximum participation occur when children are permitted to experience the joy of play. The medium of music therapy allows this play to occur naturally and frequently. Music is highly motivating, yet it can also have a calming and relaxing effect. Enjoyable music activities are designed to be success-oriented and make children feel better about themselves. Music therapy can help a child manage pain and stressful situations. Music can encourage socialization, self-expression, communication, and motor development. Because the brain processes music in both hemispheres, music can stimulate cognitive functioning and may be used for remediation of some speech/ language skills.

189 5.7.3 Drama Therapy Drama therapy is the intentional use of drama and/or theater processes to achieve therapeutic goals. Drama therapy is active and experiential. This approach can provide the context for participants to tell their stories, set goals and solve problems, express feelings, or achieve catharsis. Through drama, the depth and breadth of inner experience can be actively explored and interpersonal relationship skills can be enhanced. Participants can expand their repertoire of dramatic roles to find that their own life roles have been strengthened. 5.7.4 Dance / Movement Therapy Dance/movement therapy, a creative arts therapy, is rooted in the expressive nature of dance itself. Dance is the most fundamental of the arts, involving a direct expression and experience of oneself through the body. It is a basic form of authentic communication, and as such it is an especially effective medium for therapy. Based in the belief that the body, the mind and the spirit are interconnected, dance/movement therapy is defined by the American Dance Therapy Association as "the psychotherapeutic use of movement as a process that furthers the emotional, cognitive, social and physical integration of the individual." Benefits of Dance and Movement Therapy: Dance Movement therapy can help children with special needs in varied ways and in all the areas of impairment. The benefits experienced are as follows: It helps in improving attention and concentration and thus helps in furthering education Dance as a way of expression of emotion enables children to express through movements It helps in forming better relation Due to liking towards repetitive movements, a therapist can repeat a movement pattern which the patient needs to learn and when they start imitating the movement vocabulary develops. This helps them in learning different patterns of movements required for daily life activities

190 Group sessions in dance movement therapy enables in developing social skills and communications of autistic person. Doing a choreographed dance movement sequence in a series of sessions in a row helps in improving memory and recapitulation skills. Touch therapy helps in developing trust on others as well as helps in reducing sensitivity to physical contact and touch. Dance movement therapy helps in improving body image of an autistic person. Dance/movement therapists work with individuals of all ages, groups and families in a wide variety of settings. They focus on helping their clients improve self-esteem and body image, develop effective communication skills and relationships, expand their movement vocabulary, gain insight into patterns of behavior, as well as create new options for coping with problems. Movement is the primary medium dance/movement therapists use for observation, assessment, research, therapeutic interaction, and interventions. Dance/movement therapists work in settings that include psychiatric and rehabilitation facilities, schools, nursing homes, drug treatment centers, counseling centers, medical facilities, crisis centers, and wellness and alternative health care centers. Dance/movement therapy can be a powerful tool for stress management and the prevention of physical and mental health problems. Dance/movement therapists integrate the dancer's special knowledge of the body, movement, and expression with the skills of psychotherapy, counseling, and rehabilitation to help individuals with a wide array of treatment needs. Social, emotional, cognitive, and/or physical problems can be addressed through DMT via group and individual sessions in many different types of settings from hospitals and clinics to schools. The fact that dance/movement therapists are immersed in the language of the body, rather than focusing solely on the verbal, lends characteristics to their work that set it apart from other types of therapy.

5.7.5 Sports Activities for Children with Special Needs All individuals benefit from regular physical activity and children with special needs especially. Children with special needs are benefitted in the following ways from physical or sports activities. We can see improvements in muscle strength, coordination, and flexibility. Improve exercise endurance, cardiovascular efficiency, and possibly increased life expectancy .

191 Experience better balance, motor skills and body awareness. Will show improvement in behavior, academics, self-confidence and building friendships. Will have positive changes in their health, quality of life and boost to their self-esteem. Gets to experience a sense of accomplishment and possibly the taste of winning or personal satisfaction. Experience increases in attention span, on-task behavior, and level of correct responding. Will increase appetite and improve quality of sleep. Will see a decrease in secondary health complications like obesity, high blood pressure, low HDL ("good") cholesterol and diabetes. Will find an outlet for their physical energy, will help them cope with stress, anxiety and depression. Sports and activities especially good for special needs children: Swimming Bicycling Soccer Football Handball Gymnastics Bocce (is a ball sport) Weightlifting Sports, especially fundamental and movement education based sports like gymnastics, provide tremendous benefits for children with special needs. Physical education programs can considerably improve the lifestyle of a disabled child and are highly recommended. These programs may help control obesity, promote activeness, increase a child's self-image and social skills, and increase motivation. The physical activity along with support,

192 rewards, and interaction can, among other benefits, be very helpful to these children and their families. Physical Improvements - Children suffering from cognitive disabilities are most likely going to suffer from physical impairments as well. These children have substantial problems with motor skills in areas such as hopping, skipping, and jumping. Involvement in gymnastics can help these individuals develop fundamental motor and physical fitness skills. Self-Esteem - Developing a sense of self-esteem and confidence is an extremely important part of special education. These children need to be involved in environments where they feel that they are contributing successfully to a group. Their abilities in all other skill areas will improve as a result of a positive self-image and confidence. Cognitive Benefits - The hands-on aspect of sports leads to cognitive skill improvement in children with disabilities and allows them to discover and access strengths that cannot be challenged in the traditional classroom setting. The inherent structure of sport, with its organization and rules, can be used as a learning tool for introducing and practicing self regulation and decision making skills. Additionally, children can learn verbal communication and interaction with peers through involvement in sport. Special Olympics The mission of Special Olympics is to provide year-round sports training and athletic competition in a variety of Olympic-type sports for children and adults with intellectual disabilities. This gives them continuing opportunities to develop physical fitness, demonstrate courage, experience joy and participate in a sharing of gifts, skills and friendship with their families, other Special Olympics athletes and the community. The Special Olympics is the only organization authorized by the International Olympic Committee to use the word "Olympics" worldwide. Athletes compete in 32 sports, including snowboarding, judo, cricket, soccer. The Special Olympics program Healthy Athletes offers 1.4 million free health examinations in more than 120 countries to athletes at Special Olympics competitions. Health professionals perform a full exam in the categories of podiatry, physical therapy, audiology, vision, dentistry, physical therapy and more and more. More than 3.1 million athletes from over 175 countries take part in the Special Olympics.

193 Special Olympics athletes are divided to compete in categories based on gender, age, and ability. The Special Olympics athlete oath is "Let me win. But if I cannot win, let me be brave in the attempt." Special Olympics World Games are held every two years, alternating with Summer and Winter Games. 5.8 Let us Sum Up 1. "Occupational therapy is the art and science of directing man's participation in selected tasks to restore, reinforce and enhance the performance, facilitate learning of those skills and functions essential for adaptation and productivity, to diminish or correct pathology and to promote and maintain health." (Council of Standards, American Occupational Therapy Association, 1972). 2. An Occupational Therapist will aim to enable the child to be as physically, psychologically and socially independent as possible. Occupational Therapists work in close partnership with the child and their family, schools and other healthcare professionals. Together they have a shared responsibility for meeting the child's needs. In schools, for example, they evaluate the child's abilities, recommend and provide therapy, modify classroom equipment, and help the child participate as fully as possible in school programs and activities. 3. Occupational therapy interventions for people with intellectual disabilities are specifically adapted to the client with respect to the degree and type of support needed as well as the context. Interventions may include direct treatment as well as environmental adaptations, guidance, monitoring and counseling (including of the family, the educational staff, the clinical staff, employers and others). 4. Physiotherapy has scope in treating a wide range of conditions. It play an important role in all the branches of medical sciences, especially Orthopaedics, Paediatrics, Neurology, Cardio thoracic, Surgery, Sport Medicine etc. In set ups like leprosy, paraplegic and poliomyelitis after plastic surgery, burns clinics, spinal cord injury centres and in assistive devices manufacturing units etc. 5. A speech language pathologist sets broad but specific goals for each of his patients. Specific goals can include helping patients develop clearer speech, learn to use

194 alternate methods of communication, develop better reading and writing skills, and strengthen throat and neck muscles. Goals also may include coordinating treatment programs with other professionals or referring patients for other treatments. For example, a patient with a swallowing disorder may benefit from the collaborative care of a speech language pathologist and a medical doctor. 6. Yoga is one of the six schools of ancient Indian Philosophy. It is the practice that enables one to achieve higher levels of performance, bringing out the hidden potentials from within. Systematic Yoga practice will increase the physiological and psychological well being. 7. Music therapists involve children in singing, listening, moving, playing, and in creative activities that may help them become better learners. Music therapists work on developing a child's self-awareness, confidence, readiness skills, coping skills, and social behavior and may also provide pain management techniques. They explore which styles of music, techniques and instruments are most effective or motivating for each individual child and expand upon the child's natural, spontaneous play in order to address areas of need. 5.9 Check Your Progress A.1.What is the difference between Occupational Therapy and Physiotherapy? 2. Explain the objectives of the different therapies applicable for children with special needs? 3. Discuss about Dance and Movement Therapy. B.1. Discuss about the importance of yoga for children with special needs. 2. Prepare a short note on Therapeutic Application of Drama. C. After going through the Unit you may like to have further discussions on some points and clarification on other.

195 1) Points for Discussion

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..... 2) Points for Clarification

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Unit - 3

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The Montessori Method (1879-1950) 3.5.2 Fernald's VAKT approach Grace Fernald (1879-1950) 3.5.3 Orton-Gillingham approach to mental 3.5.4 Alternative and Augmentative Communication 3.6 Teaching Strategies 3.6.1 Task Analysis 3.6.2 Behavioural Objectives 3.6.3 Chaining 3.6.4 Shaping 3.6.5 Modelling 3.6.6 Prompting 3.6.7 Rading 3.6.8 Reinforcement 3.6.9 Role Play Method 3.6.10 Play Way Method 3.7 Development and Use of TLM for ID 3.7.1 Teaching Material 3.7.2 Teaching Learning Material (TLM)

92 3.7.3 Types of TLM 3.7.4 Need for TLM 3.7.5 Effective use of TLM 3.8 Let Us Sum Up 3.9 Check Your Progress 3.10 Reference 3.1 Introduction It is observed that regular educator or special educator employs various strategies according to the content/ skills while teaching children in classroom. The children with Mental Retardation have less capacity to learn skills, to maintain and to generalise the learnt skill due to the intellectual impairment. Hence, special teaching strategies and techniques need to be used with the children with Mental Retardation for individualized or classroom teaching. The various teaching strategies such as task analysis, modelling, Errorless Discrimination Learning (EDL), shaping, chaining, prompting and fading are commonly used while teaching the children with Mental Retardation. In addition to this use of appropriate rewards and reinforcement is also essential for their learning. There are certain basic fundamental principles which may be followed when teaching children with mental retardation. The individual educational plan which is based on the need of the child is always based on these teaching principles. Based on these principles multi-sensory approaches are used that teaches all children regardless of their preferred learning style.

There are some special teaching strategies for children with mental retardation like; Montessori method; Fernald VAKT Approach and Orton-Gillingham Approach. Due to less capacity of intellectual functioning the teachers have to employ various teaching strategies and techniques for their teaching. In addition to reinforcement techniques (used for learning) are much effective for their skill development. To do so, development and use of proper TLM must be introduced by the teacher which will be helpful to achieve the objective of learning and the process to reach the goal desirably. 3.2 Objectives After completing the unit, you will be able to understand: • Importance of instructional hierarchy for teaching children with mental retardation

93 • Teaching procedure and Importance of different stages of learning • Different principles of teaching • The meaning, nature and concept of the multisensory approaches. • Need and importance of multisensory approaches for children with mental retardation. • Alternative and augmentative communication and its implication for the children with special needs. • The importance of various teaching strategies and their correct uses • The reinforcement techniques in teaching children with mental retardation. • The concept of TLM • Advantage of using TLM • TLM for different curriculum level 3.1 Stages of Learning Stages of Learning The instructional hierarchy of acquisition, fluency, maintenance and generalization is followed in special education for children with mental retardation. Understanding of these stages by the teacher helps in setting goals, maintaining learnt skills and generalisation of skills. Acquisition This is the stage of learning of the new task. The child is formally introduced to the task in this stage for the first time. With repeated errors in the beginning stage gradually the child masters with the high level of accuracy. The task is carefully analyzed for structured teaching. Consistency in the teaching pattern and repetition of the same prompt and environment is necessary at this stage. All this helps, the child in attaining the skills with conditioning. The higher interaction between teacher and student must be effective for learning Fluency When the child learns to perform the skill / activity with accuracy fluency of the skill learnt is emphasized. Plenty of opportunity for practice is provided. As the activity in

94 this stage are in repetitive; regular feedback and reward helps to sustain the motivation of the trainee. Fluency is an aspect that can't be ignored as it finally tells us that the child is performing the skills without experiencing any difficulty. Maintenance Learnt skill if not re-taught or practiced tends to be forgotten. We must ensure that children maintain the learnt skills with accuracy and fluency. At the end of this stage children need to complete the task independently with accuracy and fluency. Acquisition Stage is an antecedent to the stages of maintenance and generalization stage is subsequent stage to maintenance. In maintenance the child should be able to perform the task without applying the original task training procedure. Through over learning trials and distributed learning technique for appropriate practice can be given for maintenance. Over Learning Here half of learning work given at acquisition stage is given for repeated practice. When a task at acquisition stage is taught for one hour for one month; in over learning stage the task shall be taught for 30 minutes for 15 days only. Distributed Practice Across a designated period of time when the task is systematically distributed it is called distributed practice. It is targeted at long term memory and execution of generalization stage of learning. Here the task is practiced intermittently like twice a week for 30 minute and to be continued for several weeks. Generalization When a behaviour/skill is demonstrated in other circumstances than in which the child was trained is referred to as generalization. Under the same circumstances if similar behaviour occurs which is different from the learnt behaviour is also referred to as generalization. The two types of Generalization are :- (a) Stimulus generalization: Similar response to new stimulus having common characteristics of the previously learnt stimulus. E.g. student have learnt number 1-10 in his book / flash card. Identifying the number in any other place like buses, trains, house, calendar etc., shall be referred to stimulus generalization. (b) Response generalization: Learning to apply a learnt skill in other related activity

95 is referred to response generalization. Students who have learnt to stitch (hemming) in piece of cloth shall stitch (hemming) on the clothes or material requiring hemming. 3.4 Principles of Teaching Introduction : There are certain basic fundamental principles which may be followed when teaching children with mental retardation. The individual educational plan which is based on the need of the child is always based on these teaching principles. Objective : After completing the unit you will be able to understand • Different principles of teaching • Importance of the Principles for Teaching Children with Mental Retardation Teaching Principles : 1. Simple to Complex - Teaching always starts with these step where the child is able to do the certain skill successfully. The success of the child motivates him to learn more to reach the goal. The goal should be set as if the child is able to finish. Too high goal must be avoided in the first stage of learning. Simple steps lead to the gradual complex steps as for example while teaching common names of colour, the child at first learns to name one colour first then gradually other names of the colour should be added. 2. Known to unknown - While teaching child with mental retardation, the starting point should be where the child already knew. From the known level, the teacher will help him to go to the unknown level which is higher. The known level must be matched with the current level of the child. Assessment data will be helpful for this purpose. The child must be given the opportunity to indicate what he knew. A child must feel confident while going upper level. Viz. While teaching the number concept from 10 to 15, the lesson must be started from 1 to 10, then gradually move to 15 chronologically. 3. Concrete to abstract - The abstract concept is much higher than concrete one. The children with mental retardation can be able to handle concrete concept better than abstract one. So for teaching, the teacher must start from concrete to abstract direction. While teaching this concrete object along with the picture, can be helpful for teaching. Concrete objects must be present as far as possible while teaching. As for example, to teach the concept of evening, one must be refer to activities related to evening, pictures of evening etc. To teach the concept of evening.

96 4. Whole to Part - Another principle is whole to part where any concept must be started as a whole. The children must learn the concept as it is. Then the part of it can be given, For Example While teaching about Banana first the name of the Banana will be given then the other details such as peeling of skin, taste, texture can be taught. 3.5 Multi sensorial approach Introduction The word multisensory means "relating to or involving several bodily senses". Hence, multi sensory learning is the process of learning through the use of two or more senses. This may include combining visual, auditory, tactile- kinesthetic, and/or even olfactory and gustatory senses. (Scott 1993). A multi sensory approach is one that integrates sensory activities. The students see, hear and touch.

Activities such as tracing, hearing, writing and seeing represent. The four modalities of touch, auditory, kinesthetic, and vision respectively. For example, to teach spelling Graham and Freeman (1986) use a strategy that incorporates the four modalities. Students say the word, write the word, check the word, trace the word, write the word from memory and check, and then repeat the entire process.

In essence, a multisensory approach incorporates the learning styles for visual, auditory, kinesthetic, and tactile learners. This approach does not single out specific students. A

multisensory approach is an eclectic approach that teaches all children regardless of their preferred learning style. Most teaching in schools is done using either sight or hearing (auditory sensations). A child with mental retardation may experience difficulties with either or both of these senses alone due to their limited cognitive abilities. Therefore involve more senses, especially the use of touch and movement (kinetic). This will give the child's brain tactile and kinesthetic memories to hang on to, as well as the visual and auditory ones: Empirical studies support to multi sensory teaching. In a study executed across classrooms in Queensland, Australia, 'Morton, Jones and Toohey (1982) implemented a multi sensory teaching programmed, called Multi sensory Basic Fact Program (MBFP), into remedial classrooms for students in grades two through six. This programme incorporates visual learning through pictures as teacher provides oral prompts. Students are also involved kinesthetically when learning new concepts by tapping or finger tracing. To test the usefulness of this multi- sensory teaching program,

97 these students were given an addition — facts test before beginning the program and again after the 11- week instruction phase. All of the grade levels except grade two (possible because they were not yet at the stage in which the material could be absorbed) showed marked improvement from pretest to posttest. And, although the students had not reviewed the information before the follow up test, they retained their knowledge of the concept after a three week period. • Following are a few of the popular and well tested multisensory teaching methods that are found effective on children with mental retardation. • Montessori method • Fernald VAKT Approach • Orton-Gillingham Approach 3.5.1 The Montessori Method The Montessori Method derives its name from Maria Montessori (1870-1952), the founder of this method. Maria Montessori was an Italian doctor; she became the first Italian woman to get the status of Doctor of Medicine, who later on became one of the greatest educationists of the world. Dr. Maria Montessori developed Montessori Method as an outgrowth of her post-graduate research into the intellectual development of children with intellectual and developmental disabilities. Building on the work of French physicians Jean Itard and Eduard Seguin, she developed an environment for the scientific study of children with physical and mental disabilities. By 1906, Montessori was well- known enough that she was asked to head a day-care center in Rome's poor San Lorenzo district. She used the opportunity to observe the children's interactions with sensorial materials (developed to appeal to the senses), refining them, and developing new materials which the children could work. Hallmark of Montessori Method of education. Montessori, teachers observe children's exploratory attempts of behavior with an implication of the trust that a child will "know" and pursue what she or he most needs in order to become an adult. Montessori sensorial material 1.- The cylinder blocks:-There are 4 cylinder blocks. The purpose of the cylinder blocks are to provide various size dimensions so the child can distinguish between large and small, tall-and short, thick and thin, or a combination of the both. There are several activities that can be done with the cylinder blocks. The main activity involves removing the cylinders from the block and replacing them

98 2-The pink tower:- The pink tower work has 10 pink cubes. The smallest cube is 1 cubic centimeter and the largest cube is 10 cubic centimeters. The work is designed to provide the child with a concept of "big" and "small. The Child starts. With the largest cube and puts the 2nd largest cube on top of it. The work continues until all 10 cubes are stacked on top of each other 3- The broad stair:-The broad stair is designed to teach the concepts of "thick" and "thin." The broad stairs are 10 sets of wooden prisms with a natural or brown stain finish. The work is designed to provide the child with a concept of "big" and "small. The child starts with the largest cube and puts the 2nd largest cube on top of it. The work continues until all 10 cubes are stacked on top of each other 4-The red rods:-The red rods are 10 red rods with equal diameter. They vary only in length. The smallest is 10 cm long and the largest is one meter long. Each rod is 1 square inch thick. By holding the ends of the rods with two hands, the material is designed to give the child a sense of long and short in a very concrete manner 5-The colored cylinders :- There are 4 boxes of cylinders, yellow cylinders that vary in height and width. The shortest cylinder is the thinnest and the tallest cylinder is the thickest. Red cylinders are of the same height but vary in width. Blue cylinders have the same width but vary in height. Green cylinders vary in height and width. The smallest cylinder is the thickest and the tallest cylinder is the thinnest. The child can do a variety of exercises with these materials, including matching them with the cylinder blocks, stacking them on top of each other to form a tower, and arranging them in size or different patterns. When the yellow, red, and green cylinders are placed on top of each other, they all are the same height 6-The trinomial cube:-The trinomial cube is similar to the binomial cube, but has the following pieces: The binomial cube is a cube that has the following pieces: 1 red cube, 6 black and red prisms (varying in size) 1 blue cube and 6 black cube, blue prisms (varying in size) 1 yellow cube' and 6 black and yellow prisms (varying in size). The Montessori Method of teaching may be divided in to four parts as given below • Sensory training • Training in practical life activities • Motor training • Language and arithmetic teaching

99 Sensory training Madam Montessori gives much importance to sensory training as she regards senses as the gateways of knowledge. Different kinds of material are used to develop sensory training in children. You may be aware that there is exclusive teacher training programmes for Montessori approach. Montessori training materials are universally used. Given here (in the box above) is a sample description of the training material and their purpose. Training in practical life activities According to Dr. Montessori, exercises are called 'exercises in Practical Life' because in the children's everyday life on which all house work is entrusted to the little ones, they execute with devotion and accuracy their domestic chores, becoming singularly calmed and dignified. The students are required to sweep their rooms, dust and clean the furniture, and arrange it as they like. They learn dressing, undressing, and washing themselves. They are expected to hang up their clothes tidily. They lay their tables. The children take .tunas in various household duties and learn by imitation to conquer their difficulties in the process. Enthusiasm and delight, fellow feeling and mutual aid are characteristics of the children learning jobs. The students learn how to wash their hands, use their own soap and towels, comb their hair, cut their nails and brush their teeth. The main purpose is to give children training in self- reliance and independence and also to be independent. As teachers of children with mental retardation, you will see the relevance of Montessori Method in training in independent living skills. Motor training These practical life exercises are considered to be very helpful for motor education. Muscular education is imparted to enhance the movements of walking, sitting and holding objects. The care of child's own body, managing the house hold affairs, gardening and manual work and rhythmic movements provide motor education. Children also learn how to walk in straight lines and to balance properly. Language and arithmetic teaching Madam Montessori is of the opinion that muscular skill' in children is very easily developed and therefore, the teaching of writing should precede the teaching of reading. According to her, writing is a purely mechanical activity and reading partly intellectual. • Teaching writing. There are three factors involved in writing. i) Movements which help in reproducing the forms of letters. ii) Manipulation of the pen iii) the phonetic analysis of words in writing dictation. The letters of the alphabet are cut in sand paper and pasted on card- boards. The students are asked to pass their fingers on them. The students learn to establish the visual muscular images of the letters. At the same time, the phonetic sounds are also-taught stages-association, .recognition, and recall: There are certain exercises through which the students are taught the handling of the pen:

100 • Teaching reading. Montessori was not in favor of reading the sentence aloud. The child is handed over a card on which the names of the familiar objects are written and pasted. The child is asked to translate the writing slowly into sounds and then he is asked to read faster. After some practice, the child learns the correct pronunciation of the word. Then the child is asked to attach the cards with objects lying there. • Teaching of number. A 'long stair' is used in the teaching of numbers. It consists of a set of ten rods varying in length from 1 to 10 decimeters. It is divided into parts painted red and blue alternatively. The child learns first to arrange the rods of size and then he counts the red and blue divisions and names the rods as one, two three and so on. The signs of the numbers are cut in sand paper and the same procedures of the three stages- associations, recognition and recall is followed. Role of the teacher Traditionally, the Montessori teacher is called a Director or Directress, because the role is to direct rather than teach. The role of the directress includes: making the children the center of learning, encouraging the children to use the freedom provided to them and observing the children in order to prepare the best possible environment. This includes recognizing sensitive periods and diverting unacceptable behavior into meaningful tasks. Child without letting him feels her presence too much. The directress is there to "prepare the path and step aside and let the child walk." Although the Montessori directress believes in freedom for the child and in the child's ability to exercise that freedom, this does not mean the child is free to make unlimited choices. Within the framework of choices provided by the Directress, the student is free to choose. The child must know how to properly use the materials before he/she may work with them. Choice is a product of self-control and discipline. There is external order and rules to the environment which yield the internal order of control. Merits of the Montessori Method The chief merits of the Montessori Method are: • Reverence for small children To Madam Montessori "the child is god". Her school was the temple and duty of the temple was the recognition of the essence of the childhood. She further writes, "to-day there stands forth one urgent need_ the reform of the methods in education and instruction, and he who struggles towards this end is struggling for the regeneration of man".

101 • Scientific bases of the method is based upon scientific grounds. Madam Montessori was a scientist and she applied scientific principles based on experience and observation and not upon prejudice. • Individual teaching Individualism is the key- note of the Montessori Method. Her method is a reaction against collective teaching. As observed by John Adams, Dr. Montessoi "has rung the death knell of class teaching". • Freedom for Children She ranks among the forefront educators who want to give education in an atmosphere of complete freedom. In her method discipline is that of self-control and self directed activity. • Sense training The Montessori Method aims at educating the children through the sense training. It is based upon the maxims 'proceed from concrete to abstract', from 'general to specific'. • Unique method of reading and writing The focus is on the muscular movements in the process of writing. Properly graded and correlated exercises for reading and writing are provided. • Learning through living Practical exercises in school enable children to learn good habits of cleanliness and order. The students learn the lesson of dignity of labour and self help by attending to their needs themselves. • Training in Social Life Though this method is individualistic in nature, yet it is full of social values such as serving at the table, having lunch together, and cleaning plates and the students perform many other activities cooperatively. Compare Montessori method of teaching to the traditional approach used in teaching children with mental retardation and analyze. 3.5.2 Fernald's VAKT approach [Grace Fernald (1879-1950)] Fernald's VAKT approach Grace Fernald (1879-1950) was an influential figure in early twentieth century literacy education. VAKT refers to Visual, Auditory, Kinesthetic and Tactile sensory approach. Fernald established "the first clinic for remedial instruction in 1921 at the University of California, Los Angeles" (Smith, 2002, p.181). Fernald's kinesthetic spelling and reading method prompted struggling students to trace words. Fernald's notion of incorporating the physical with the auditory, verbal, and visual

102 elements of reading instruction, now known as VAKT multimodal learning, or multisensory imagery, continues to guide educators today. •

The same word may be written again in children's own stories. It may be important to learn spelling of words. The relevance of VAKT method to mental retardation and remedial instruction in resource settings This is one of the most effective methods in teaching children with mental retardation. As they often exhibit weak memory, they may have problem in remembering the alphabets and their sounds. Therefore it is difficult for they-i to read any particular language. This can lead to difficulties in leading an independent life for example. Reading sight words (toilet, bus stop, railway station and so on). Empirical evidence lends support to this approach for teaching word identification to students with severe reading disabilities (Berms and Eyer, 1970; Cotterell, 1972; Fernald, 1943; Kress and Johnson, 1970; Thorpe and Borden, 1985). Teaching a sight word A sight word is a word for which students can recognize the pronunciation and meaning automatically. When reading words by sight, words are accessed from information in memory, that is, from one's storehouse of words. For emergent readers, visual cues assist in recognizing familiar words when they are highly contextualized. Procedures: Write each word on a word card. The procedure for teaching these words is as follows: 1. Discuss the words with students to ensure that they understand the meanings of the words as the words are being used in the text. 2. Present the words to the students' one word at a time. Each word is exposed for five seconds, and the teacher says the word twice. 3. Ask students to identify the word on each card. Provide corrective feedback by verifying the correctly identified words, giving the correct word for any word that is miscalled. and saying the word if students do not respond in five seconds. 4. Present the words again, using the format given in step 2. 5. Have students identify each word, using the format given in step 3. Repeat this step at least two more times or until they can automatically recognize all the words.

103 Procedure- The sight word association procedure uses corrective feedback and drill and practice to assist students in associating spoken words with written form. Picture association technique-On a separate card, draw a simple picture, or find a picture and attach it to the card. In some cases, the students may want to draw their own pictures. Use the following procedure to teach the picture—word association: • The same word may be written again in children's own stories. It may be important to learn spelling of words. The relevance of VAKT method to mental retardation and remedial instruction in resource settings This is one of the most effective methods in teaching children with mental retardation. As they often exhibit weak memory, they may have problem in remembering the alphabets and their sounds. Therefore it is difficult for they-i to read any particular language. This can lead to difficulties in leading an independent life for example. Reading sight words (toilet, bus stop, railway station and so on). Empirical evidence lends support to this approach for teaching word identification to students with severe reading disabilities (Berms and Eyer, 1970; Cotterell, 1972; Fernald, 1943; Kress and Johnson, 1970; Thorpe and Borden, 1985). Teaching a sight word A sight word is a word for which students can recognize the pronunciation and meaning automatically. When reading words by sight, tjie words are accessed from information in memory, that is, from one's storehouse of words. For emergent readers, visual cues assist in recognizing familiar words when they are highly contextualized. Procedures: Write each word on a word card. The procedure for teaching these words is as follows: 1. Discuss the words with students to ensure that they understand the meanings of the words as the words are being used in the text. 2. Present the words to the students' one word at a time. Each word is exposed for five seconds, and the teacher says the word twice. 3. Ask students to identify the word on each card. Provide corrective feedback by verifying the correctly identified words, giving the correct word for any word that

104 is miscalled. and saying the word if students do not respond in five seconds. 4. Present the words again, using the format given in step 2. 5. Have students identify each word, using the format given in step 3. Repeat this step at least two more times or until they can automatically recognize all the words. The sight word association procedure uses corrective feedback and drill and practice to assist students in associating spoken words with written form. Picture association technique—On a separate card, draw a simple picture, or find a picture and attach it to the card. In some cases, the students may want to draw their own pictures. Use the following procedure to teach the picture—word association: 1. Place each picture in front of the students, labeling each one as you present it. Have the students practice repeating the names of the pictures. 2. Place the next to picture the word it represents, again saying the name of the word. Have the students practice saying the names of the words. 3. Have the students match the words to the pictures and say the name of the word while matching it. Repeat this process until students' easily match the pictures and words. 4. Place the words in front of the students, and have them identify the words as you say them. If they cannot identify the correct words, have them think of the pictures to aids in their recognition. If they still cannot point to the words, show them the picture that goes with the word. 5. Have students recall the words by showing the word cards one at a time. Again, if students can not recall a word, have them think of the picture. If they still cannot think of the world, tell them to look at the picture that goes with them world. 6. Continue this procedure until the students can identify all the words at an automatic level. 7. Have students review the words on subsequent days and, most important, give them plenty of opportunities to read the words in next. When a student is reading and cannot identify a words, encourage the students to think of the picture

105 Merits of Fernald VAKT approach:-

- Basic sight words fairly quickly, albeit one word at a time.
- Another benefit of this technique is that spelling of sight words is concurrently learned.
- Learners find it easier to learn to read and write when each sound has its own symbol.
- As learners are successful in reading in the very beginning stages of teaching reading. it creates a feeling of success and enthusiasm for the learner.
- The learner will be better at self-expression at an early stage

3.5.3 Orton and Gillingham approach The Orton-Gillingham method was introduced by Samuel Torrey Orton, (1879-1948), a Neuro psychiatrist and pathologist, and Anna Gillingham, (1878-1963), an educator and psychologist.

Dr. Samuel Torrey Orton and his colleagues began using multisensory techniques in the mid-1920 at the mobile mental health clinic he directed in Iowa. Orton was influenced by the kinesthetic method described by Grace Fernald and Helen Keller. He suggested that kinesthetic-tactile reinforcement of visual and auditory associations could correct the tendency of reversing letters and transposing the sequence of letters while reading and writing. Orton noted that each child presents an individual problem, not only because of the diverse influence of a considerable number of environmental conditions, but also because of the relative part played by each of the three major functions entering in to language faculty; vision, audition and kinesthetic varies, remarkably in different children as does the emotional reaction to his disability. Importance

- The Orton-Gillingham method is important to a student's reading development because it is systematic and also individually tailored to fit each child.
- Orton- Gillingham is an approach, not a method. This means that it is flexible and focuses on the needs of the individual student.
- While the tutor carefully constructs each lesson in advance, he is able to make appropriate changes in the moment when needed. This is also called "diagnostic teaching."

During his life time, Drton directed many research projects dealing with developmental reading disabilities. It was during one of these projects that he met

106 Anna Gillingham (1878-1963), a teacher and a psychologist in the field of language disabilities. Together they developed procedures and comprehensive materials for early identification and remediation of dyslexic. Their programme is known today as the Orton- Gillingham approach. Anna Gillingham and Bessie Stillman based their original 1936 teaching material for the "alphabetic method" on Dr. Orton's theories. They combined multisensory techniques with teaching the structure of written English, including the sounds (phonemes), meaning units (morphemes such as prefixes, suffixes, and roots) and common spelling rules.

- The Orton- Gillingham approach is a structured; multi sensory phonics approach.
- It is systematic; proceeding from simple to more complex and cumulative in that new information builds on that which has been previously learned.
- Multisensory reinforcement and practice cement new learning in to long- term memory.
- This comprehensive approach to reading instruction benefits all students.

Step 1 The educator shows a flash card with one letter on it. The educator says the name of the letter and the learner repeats the name. When the learner has mastered this, the educator says the sound of the letter and the learner repeats the sound. When this has been mastered, the educator shows the flash card, asks what the letter says and the learner gives the sound of the letter. Step 2 without showing the flash card, the educator now gives the sound of the letter and asks which letter makes that sound. The learner then gives the name of the letter. This helps the learner very much with spelling in future. Step 3 The educator now writes the letter and explains how it is written and in this manner teaches the learner how to form the letter properly — teaching writing skills. The learner then traces over the letter on the lines the educator wrote, copies it, writes it again from memory, or writes it in the air with eyes closed. Lastly the educator then makes the sound of the letter and the learner has to write the letter, which makes that sound. Once the first lot of letters has been mastered, learners learn to blend them into words by forming simple consonant-vowel-consonant words (mat, hit, jab). Once learners can blend, spelling is introduced. The educator says the word; the learner first repeats the word, then names the letters, writes them down and says the word once the whole word has been written down. Once the learner can write any phonetically pure three-letter word, the learner can start writing stories using these three letter words (simple consonant- vowel-consonant words such as cat, run).

107 The educator introduces non-phonetic words using lots of drill work. Once the learner can read, write and spell the short 3 letter words with ease, consonant blends are introduced. Syllabification, dictionary skills and more spelling rules are introduced afterwards. To be successful with the approach, it has to be followed rigidly. It does not include meaningful, interesting activities and puts little emphasis on comprehension, but it can be a successful method to use for learners who find it very difficult to learn to read. The relevance of Orton-Gillingham method to mental retardation and remedial instruction in resource settings This reading remediation method that built associations between the modalities such as "having the child trace [the letter] over a pattern drawn by the teacher, at the same time giving its sound or phonetic equivalent- (Orton, 1937, p. 159) or teaching spelling through analysis and writing of the sequence of sounds in words. It is very useful for children with mental retardation. as they difficulty in learning any second language. Both special education and general education teachers have found this practice an effective and efficient way to organize word identification instruction. Students report that they enjoy the activity and manipulating the letters (Cunningham, 1991; Schumm and Vaughn, 1995). However. Schumm and Vaughn (1995) found it necessary to develop simpler lessons and to focus more on teaching word families with less able readers, Teaching phonic generalizations Procedures: This method teaches students how to identify words by teaching phonic generalizations and how to apply these generalizations in reading and spelling. It is designed to be used as the exclusive method for teaching reading, spelling, and penmanship for a two-year period at minimum. Initially, students who use this method should read only materials that are designed to conform with the method. Other written information, such as content area textbooks, should be read to the students Teaching letters and sounds Procedures: The teaching of letter names and letter sounds employs associations between visual, auditory, and kinesthetic inputs. Each new sound— symbol relationship or phonogram is taught by having the students make three associations:

- Association I (reading). Students learn to associate the written letter with the letter name and then with the letter sound. The teacher shows the students the letter. The students repeat the name. The letter sound is learned by using the same procedure.
- Association II (oral spelling). Students learn to associate the oral sound

108 with the name of the letter. To do this, the teacher says the sound and asks the students to give its corresponding letter.

- Association III (written spelling). The students learn to write the letter through the teacher modeling, tracing, copying, and writing the letter from memory. The students then associate the letter sound with the written letter by the teacher directing them to write the letter that has the sound.

Merits of Orton-Gillingham approach

- Personalized: Orton Gillingham approach is highly personalized in nature. It caters to the individual needs of the learners. In this method, teaching begins with recognizing the differing needs of learners.
- Multisensory: It uses all the learning pathways: seeing, hearing, feeling, and awareness of motion, brought together by the thinking brain. The teacher engages in multisensory

3.5.4 Alternative and augmentative communication .

Definition The American Speech-Language-Hearing Association (ASHA, 2005) defines AAC as: "...Attempts to study and when necessary compensate for temporary or permanent impairments, activity limitations, and participation restrictions of persons with severe disorders of speech-language production and/or comprehension, including spoken and written models of communication." AAC methods provide a means of self-expression for individuals whose oral communication is severely restricted. AAC allows these individuals to express their wants, needs, ideas, and opinions. Quality of life and independence are often greatly improved when AAC is introduced as these individuals are able to participate in more and more daily communication exchanges. AAC methods supplement deficient oral communication, and so anyone with impairment in this area may benefit from their use. Populations commonly served by AAC include persons with

- mental retardation,
- autism,
- cerebral palsy, and
- Developmental aphasia of speech.

Some individuals with acquired impairments may also use AAC. These conditions include

- multiple sclerosis,
- amyotrophic lateral sclerosis,
- traumatic brain injury,
- stroke, and
- Spinal cord injury

may also use AAC.

Types of augmentative and alternative communication:

- AAC systems fall in to two major categories, namely Aided system and unaided system (Lloyd, 1985).

1) Aided system:-Aided system requires use of some sort of device, electronic or non-electronic, that is used to transmit or receive messages, such as communication books

109 or voice output devices using symbols such as photographs, line drawings, words or letters, a picture or wood board, a textbook, or a computerized aid. Since the skills, areas of difficulty and communication requirements of AAC users vary greatly, an equally diverse range of communication aids and devices exist to meet these demands. The aided system includes the following types of aids:—

- Communication Boards: Basically, a communication board is any type of flat surface containing written or pictorial symbols from which a student makes a selection to communicate a specific message. Communication board can take many forms, such as a single drawing for a card with the word placed on a table. Students learn to use these one symbol boards to obtain desired items. When more than one symbol is displayed, the student must choose among them. Initially a display may contain only few choices, such as one picture and two gross distracters (e.g., a blank card and a partial drawing). Later the complexity and number of target symbols and distracters may be gradually increased.

Single purpose displays: Small displays can be designed for specific situation or needs. Examples include,

- a) multiple — pocket plastic slide protector with pictures for specific activity such as bathing or dressing-
- (b) a page of pictures of items to be ordered in a fast food restaurant
- (c) a new information pocket to hold news papers clippings, photos or mementos of recent events to facilitate initiating conversation.

Multiple Displays: For general purpose, multiple displays can be combined in to one unit for multipage, or multiple sheet, display such as notebook or flip chart. Multiple displays can range in complexity, depending on the needs of the learner. When a student has learned to use a multiple display, organization of vocabulary across pages becomes important. One possibility to arrange the vocabulary by category, with the pages coded by color for each one (e.g. food on blue paper, leisure and recreation items on pink.).

- Conversation Aids: Some aids are designed specifically to enable conversation between peers. One such communication book is organized by topic according to home, school and community environment. First, the student, parents, teachers and other service providers for interest of the student. Then they select photo and drawing for places, people, objects, and activities for each topic. They place the photos and drawing in a small photo album and attach it to the student's belt. With training and frequent changes of photos, photos, the students learn to use the topic-setting album to converse with peers.

110 • Electronic Aids - Simple electronic devices such as tape recorder can serve some communication needs. In one such application, students used tape- recorded messages to gain teachers attention from across the room or to obtain a drink at a shopping mall. The students, who have multiple disabilities, including profound mental retardation, use' individually tailored micro switches to control the tape recorders., Other communication needs can be met through high- technology devices, including personal computers and microprocessors- based dedicated aids designed and programmed specifically for AAC. An example is the lapboard- sized Touch Talker, which has a display monitor, voice output, and a pressure- sensitive keyboard on which overlays of student- tailored symbols may be placed. Various peripherals are also available, such as the Dunamis Power Pad and the Unicorn Keyboard, which are pressure sensitive key boards that can use pictures or photos of various sizes. Usually the input mode for the device can be selected for the individual's motor or sensory needs. Input modes also, include standard keyboards, expanded keyboards, touch- sensitive screens, micro switches and voice recognition devices or software. There are also various output modes, such as screen displays, printed copy, and voice output communication aids (VOCAs). The output mode of synthesized speech offers several advantages, including greater conversational control, maintenance of normal eye contact. Speed can often be adapted for the student, as can variations such as row- column scanning and joystick- directed scanning. Even with such techniques, scanning is usually slower than direct selection. However ever, like the human- aided form, electronic scanning requires only one reliable motor response, so it can give an individual at least one independent means of communicating. An interesting way to teach electronic scanning is through a video- computer game. Encoding: The third general category of response mode is encoding. The technique in which each vocabulary item is written on a list or remembered (by the student or computer) with a code of two or more letters, numerals, or colors. The student uses this code to retrieve the vocabulary, there by having relatively rapid access to a large number of choices. Symbol system: Symbols for objects of some sort must be displayed on an aid so that the student can select or compose a message. Options commonly used by person who have limited language skills, include objects, photographs and pictorial symbols Objects: some students do not understand that pictures can be used to refer to

111 objects or events. When this is true, objects can be used. Students can use pointing or scanning to select objects placed in a sectioned display box, attached to a board in some way. Photographs: Mirenda and Locke (1989) found that individuals who had mental retardation understood miniature objects less often then they understood photos. Photos of a student's cup. Preferred game or a favorite snack may be useful as symbols. A photo may be identical to its referent a photo of the exact cup a student uses at snack time) or may he non-identical (a photo of any cup). Miranda and Locke (1989) found that when asked to match objects to photos, individuals who had mental retardation did equally well with non-identical and identical color photos. They also did as well with non-identical color photos as with identical; woman. black and white photos. To help students learn the relationship between a photo and its referent. Dixon (1981) found that cutting out the figure of the photo and training cutout- to- object matching was effective for three out of the four students with whom it was tried. She also found that the three students who learned to match cutouts with objects generalized this skill to matching whole photos with objects. Pictorial symbols: Whether drawn or purchased, pictures are commonly used symbols. Some students can recognize certain types of pictures and not others and so individualized screening is essential. Screening will also indicate the best size and position of pictures for the students. If a student can match non-identical pictures with their referent, standard symbol sets may be considered. A factor that appears to influence how easily various pictorial symbols are learned is their recognizability, or iconicity. Iconicity may be thought of as a continuum from transparent (obvious easy to guess, iconic), to opaque (not at all obvious or guessable). Symbols between these two extremes are translucent, that is, those for which the relationship between symbol and referent is understandable once both have been explained. Unaided AAC Unaided AAC systems are those that do not require any external device for their use. in which the individual uses only hand or body motions to communicate. It includes facial pantomimes are that they are always available to the user, usually understood by the listener, and are efficient means of communicating. Gestures are one means of referring to people, objects or events in the immediate environment. Used with or without accompanying vocalization, gestures can serve many purposes, including: a) Requesting objects (e.g., through pointing) b) Establishing or maintaining social contact (e.g.,

112 offering a toy to play with or pointing to a nearby chair to ask a friend to sit there) Rejecting or terminating an object or event (e.g., holding up hand in a “stop” motion or employing the time out signal used in some sports) d) Expressing a body state or an emotion (e.g., shivering and crossing one’s arms to indicate being cold or giving a high fives with a peer. These examples are conventional gestures, which “convey specific meaning according to conversation agreed upon by learner’s society and culture. Sign Language. While gestures are not language symbols, manual signs are. There are several different sign languages, such as Indian sign Language, American Sign Language, British Sign Language, and Japanese sign language. Each has its own signs and its own rules of grammar. Sign language is predominantly used with children with hearing impairment. Signing systems: Signing systems are also used generally for communication with persons with hearing impairment, since sign languages are quite different from spoken languages; signing systems have been designed to allow simultaneous signing and speaking. Each of these systems follows the grammar and word order of the spoken language it is designed to parallel. Thus, signing systems are not separate languages. Points to remember • The goal of AAC instruction is functional communication in a variety of natural settings, with a variety of partners and for variety of purposes. While this goal requires teaching technical aspects of AAC skills and assuming the individual will be able to use them when needed, interventionists teach the communication skills needed for daily interaction. • Given the goal of functional communication and concern for generalization and spontaneity, communication must be taught during daily routines and activities in the sites where it normally occurs. Analysis of natural context should point to actual and potential communication needs, partners and naturally occurring cues and consequences • Communication skills may be embedded within other activities, for instances, in a task analysis on playing grip ball, a step such as “say good catch” could be embedded. With the expected communication behaviors being thumbs- gestures, a brief vocalization, and a smile. Likewise, a task analysis on reporting to work could be expanded to embed a step such as “check to see if there are any special jobs today”. The student would be taught to approach the supervisor with wallet – sized card containing the written message Is there any change in routine today?”. Many daily routines provides 113 opportunities for embedded communication such as asking a peer to help open ketchup packet at lunch, • Whether embedded in to other tasks or made in to separate routines, communication skills must be learned in real and meaningful natural context. • Successful augmentative and alternative communication (AAC) services require a collaborative team approach, involving the individual who requires AAC, their families, and members from various professional disciplines ,It is often unrealistic to assume that all AAC services will take place with the client and all professionals present at the same time and location. Effective communication between team members is thus required, to enable this, AAC team members must not only be comfortable with their own roles but they must also become acquainted with the roles of other team members. This ensures that team members receive information pertinent to their specific roles in an appropriate, timely fashion, thereby maximizing the quality of AAC services. 3.6 Teaching Strategies: There are some special teaching strategies for children with mental retardation. Due to less capacity of intellectual functioning the teachers have to employ various teaching strategies and techniques for their teaching. Task analysis, prompting and fading, Chaining etc. are most common strategies for them-In addition to reinforcement techniques (used for learning) are much effective for their skill development. 3.6.1 Task Analysis All mentally handicapped children learn easily through small steps. Instead of teaching a behavioural objective as a whole, the teacher can split it into several small steps. Each step can be taught one at a time, until the child reaches the specified behavioural objective as a whole. Task analysis is simply the procedure of teaching a behavioural objective in small and simple steps to a child. The procedure of task analysis is especially useful in simplifying teaching activities of daily living and motor skills for children with mental handicap. How to decide about the steps for task analysis 1. Observe a competent person doing the task and note down the steps involved in performing the task.

114 2. The teacher can perform the task herself and note down all the steps involved in completing the task. 3. The teacher can think about the steps involved in the task and note down the steps. 4. The teacher can ask other competent persons and note down the steps. Characteristics of task analysis. The following are some of the important features in the procedure of task analysis for teaching children with mental handicap :- 1) In some ways, task analysis is a process of discovering the correct amount of physical prompts, verbal prompts, or clues necessary at each stage of teaching a behavioural objective for the given child. 2) Since each child is unique, it is not possible that all children will learn a given behavioural objective with the same number or sequence of steps in the task analysis to reach a given behavioural objective. Some children, for example, may require a few steps to reach the behavioural objective, while others may require more number of steps to learn the same target behaviour. It is important to individualise the task analysis separately for each child depending upon his or her special needs, abilities, and also the selected behavioural objective. 3) Another characteristic feature of task analysis is that it involves broad steps of split up activities in order to reach a behavioural objective. Each step within a task analysis is sequentially linked to one another. The performance of one step in the link will signal the performance for the next step. It is important to note that sometimes a sequence may not be followed too depending on the difficulty level and the needs of each child with mental handicap. Steps in task analysis The following steps are to be used in developing task analysis for any behavioural objective :- Step 1 - Identify the target behaviour or behavioural objective for teaching a child. Step 2 - Break up the behavioural objective into as many small steps as you feel appropriate for the specific child. Step 3 - Try and keep the break up of each step in the task analysis, simple and small enough to attain in short time by the child. Step 4 - Arrange the identified steps in the task analysis in a sequential order that the simple steps are placed before the more difficult ones.

115 Step 5 - Observe or make the child perform the various steps on task analysis and discover the step at which he can perform the specified task. Then, begin teaching the child from that step and gradually move further to train him in the remaining steps until he reaches the target behaviour as a whole. An example of task analysis for a typical behavioural objective is given. Example :- 3.6.2 Behavioural Objective :- "On instruction, Suraj will put on a shirt correctly eight out of ten times by himself before the end of this month". This task is analysed as follows :- Step 1 - will hold the collar of the shirt with left hand. Step 2 - Suraj will insert right hand into right sleeve. Step 3 - Suraj will hold the collar from back and bring it to the left side with left hand. Step 4 - Suraj will insert left hand in left sleeve. Step 5 - Suraj will insert left hand in left sleeve. Step 6 - Suraj will fold the collar. 3.6.3 Chaining :- Many complex behaviours can be taught to mentally handicapped children, if they are broken down into small and simple steps. These steps can then be sequentially linked with each other to form a chain. Where each step is taught separately and sequentially until the whole behaviour is learned, this method is called chaining. Chaining method can be used in two ways i.e. forward chaining and backward chaining. When the last step is taught first and the first step is taught last, it is called as backward chaining. When the first step is taught first followed by later steps being taught last, this procedure is called forward chaining. The steps in the forward chaining and backward chaining are explained for the following behavioural objective "put on elastic pant".

Forward Chaining Task: Puts on a pant with elastic waist Steps Sub-tasks Steps Sub-tasks

116 1 Holds the Pant by both hands 1 +2 Holds the pant with both hands and puts one leg through 1 +2+3 Holds the pant and puts through both the legs one after the other 1+2+3+4 Holds the pant, puts through the legs, pulls pants upto knee 1 +2+3+4+5 Holds the pant puts through the legs, pulls upto knee and then to the hip 1 +2+3+4+5+6 Holds the pant, puts through the legs, pulls upto knee, then to hip and waist. Backward Chaining 6 Pulls the pant up from the hip to the waist. 6+5 Pulls the pant up from knee to hip and then to the waist. 6+5+4 Pulls the upto knee, then to hip and then to the waist. 6+5+4+3 Puts one leg through pulls pants upto knee, then to hip and then to the waist 6+5+4+3+2 Puts both the legs through, pulls the pant upto knee, then to hip then and then to waist 6+5+4+3+2+1 Holds the pant with both hands, puts the leg through pulls it upto knee then to hip and then to waist. Guidelines for using chaining :- 1) Describe each step in the chain that are to be followed so as to reach the target behaviour. 2) Suppose a behavioural objective has been sequenced into five steps, initially begin teaching by establishing a link between the first two steps alone. Then, proceed to link the first two steps with third step. Still later, develop links between the first three and the fourth step until, eventually one can reach the behavioural objective. 3) Use rewards to strengthen the behaviour at each step or link in the chain towards the behavioural objective. 4) Preferably use backward chaining procedures when teaching self help skills to mentally handicapped children. 5) It is better to teach the child to perform the steps in the order in which they are listed in the chain.

117 6) Move to the next step in the chain of behaviours only after the child has learned the proceeding step in the link of behaviours towards the behavioural objective. 3.6.4 Shaping To teach a new behaviour to mentally handicapped children which they might have never performed before, the teachers should wait for target behaviours to occur on their own, then they may have to wait for a long time. Most behaviours in mentally handicapped children may occur only after a long time. Therefore, it is important to start teaching a new behaviour to the child in small steps and keep him moving closer to the target behaviours by rewarding even minor changes towards the final behavioural objective. Use of shaping method in teaching mentally handicapped children prevents frustration in the learner as well as the teacher. Teaching becomes more pleasurable for the child in particular as he is able to earn rewards even for minor success achieved by him. For example, if a child is unable to say "Water" and the closest sound he can make is "Wa-Wa", then shaping may be used change "Wa-Wa" through a sequence of steps into "Watah" and finally "Water". Similarly, to teach a child to kick a ball in the required direction, you may begin rewarding even if the child stands near the ball. Gradually, you can shape the child's behaviour by rewarding at the end of every step, such as, when the child gets closer to the ball pushes the ball with his foot in any direction, kicks the ball in any direction and eventually, kicks the ball in the specified direction. Steps in Shaping Process 1) Select the target behaviour. 2) Select the initial behaviour that the child presenting performs and that resembles the target behaviour in some way. 3) Select powerful rewards. 4) Reward the initial behaviour till it occurs frequently. 5) Reward successive approximations of the target behaviour each time they occur. 6) Reward the target behaviour each time it occurs. 7) Reward the target behaviour now and then.

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Example of Shaping Process 1) Choose a behaviour that the child is already doing in some form or other. If the behavioural objective is to teach the child to draw circles and the child is able to hold pencil and scribble on paper then you can use shaping to teach the behaviour. 2) Begin by working with the child at the level he is able to perform and reward him. This will help child to learn that his behaviour leads to reward. For example, when the child scribbles, reward him. 3) In order to teach a small improvement over what the child can already do, you can now teach him to make circular motions. This is not a perfect circle, but it is at least closer to a circle. Do not reward the child for scribbling any more. Only reward him, when he makes circular movements. 4) When the child has consistently learned to draw circular movements, change it to the next closer step, such as, spirals. Stop rewarding him for circular movements. Reward him now when he draws spirals. 5) When the child has consistently learnt to draw spirals, then take him to the next step which is closer to the objective of drawing a circle. For example, reward him now only for drawing circles even though they are still not perfect circles. 6) Keep working at it until the child reaches the behavioural objective of drawing a circle.

Guidelines for using Shaping Techniques Effectively 1) Always use shaping techniques in combination with other techniques for teaching behaviours, such as rewards, prompting, chaining, modelling, fading. 2) The important feature about using shaping techniques is to build mini steps towards the final target behaviour. Plan the size of the steps carefully. They must be neither so large that the child will fail to reach one step after another, nor must they be so small that a lot of time is wasted by going through unnecessary steps. 3) At any time in the shaping process, be prepared to alter the size or distance between the steps depending on the actual performance of the child. 3.6.5 Modelling:- Either knowingly or unknowingly, most of us acquire many behaviours through modelling and imitation. Children learn many behaviours by observing others deliberately or by chance. They imitate behaviours of persons who are considered important in their view, such as, their favourite teacher, parents, friends, Film/TV star, etc. While teaching new behaviours to children, if teachers can use modelling in a

119 systematic manner, it can become an effective way of changing/teaching behaviours within the school/classroom settings. Begin teaching new behaviours by showing children how to perform that behaviour, and if the child imitates, you are using modelling. Modelling

can be used to teach new behaviours or to correct the performance of an already learnt behaviour to the child. Modelling does not mean comparing the performance of two or more children. Many children do not like themselves being compared with other children. It may even lead to negative feelings like jealousy, anger, etc. Teachers should never use instructions which mean to compare behaviours of children. Statements that teachers should avoid using, "Be a good boy, like your friend Rohit!" "Look at Sarita colouring the picture book. Come on, Anu! Why don't you do the same?" "Mohan! Can you copy down the numbers silently like Raju?" Modelling involves creating a situation in which the child naturally observes other children indulging in target behaviours

and getting rewards for that behaviour. This will make the child to repeat the same behaviour and earn rewards.

Guidelines for using Modelling Techniques :- 1) Make sure to get the child's attention on every detail of the model, possibly, even by using verbal prompts along with it. For example, Teachers can demonstrate the use of a pair of scissors by pointing (gestural prompt) to where the fingers go, how to grip tight or loose, etc. 2) Choose a model that is appropriate for the age, sex for the child. The children generally identify themselves better with the model's which are of their age and sex. The mode should be proficient in doing the task for which you are going to use him or her. 3) Provide opportunity for the child to observe the model's behaviour before he can imitate the same. Some children may need a long time or more number of trials to observe the model completely and clearly. 4) Get the model to show the target behaviours clearly in front of the child.

120 Demonstrate each part/step in the target behaviour slowly and clearly enough for the child to model it. 5) If the demonstration involves a series of steps, divide the model's performance into small and convenient parts. Each step or part can be modelled and taught separately until the child learns to perform all the steps. 6) Before beginning to use modelling techniques, ascertain if the child is developmentally and intellectually ready to imitate the model. There may be some behaviours which may not be easily imitated by some children. 3.6.6 Prompting Almost everyone requires guidance, instruction, assistance or help while learning an activity or skill. In case of mentally handicapped children, they need more help or assistance than normal persons of their own age. Types of Prompt Each child with mental handicap shows different levels of performance for any given behaviour. Based on the current level of performance, there are three broad categories of prompts that can be identified for use in teaching or training these children. a) Physical Prompt For completing a task some children require complete manual or physical assistance. The teacher may have to initially hold the child's hands, or other body parts to teach him specific behaviours such as buttoning, writing with pencil, skipping. Physically prompts are usually needed at the beginning of teaching a new behaviour. This procedure demands that the teacher is physically very close to the child, in order to provide physical help. Always combine physical prompts with the due of verbal prompts. b) Verbal Prompt Some children may need only verbal statements describing every step of the behaviour that is required to be performed in order to complete the task. For example, in teaching unbuttoning, the teacher may have to tell the child, "

Hold the button in your hand ... Hold the edge of the shirt with your other hand ... Pull away the button from the hole .. ", etc. In this case the teacher is using prompts before the occurrence of every step until it leads to the target behaviour. In using verbal prompts, the teacher needs to give verbal instructions. There is no direct physical contact between the child and the teacher during the teaching process. Usually

121 teachers can shift in using verbal prompts after the child has gone through the initial stages of learning the new behaviour with physical prompts. C) Clueing :- Some children require only verbal hints (example, "open", "close", "zip", "push", etc.) or gestural clues (example, pointing signals to stop, shaking fore finger to imply "no", etc.) to help them perform a behaviour. For example, a child can taught to name fruits from pictures. After showing the appropriate picture, the teacher may help the child by saying "Man..." or "pie ..." (meaning to prompt "Mango" or "Pineapple"), and leave it to the child to complete the naming of a fruit. Sometimes clues can be in the form of reminders or questions. For example, when the child is learning to name a list of five modes of transport and recites only four, the teacher can give a clue, "Remember, How did you come to school this morning?" (Meaning to help the child to say 'scooter' or 'motorcycle' .)

Towards the end of teaching a behaviour, the teacher usually reduces prompts whereby the child conducts the activity independently. Guidelines for selecting and using prompts :- 1) Make sure to secure the child's attention before giving or using prompts for teaching a behaviour. 2) Always provide prompts only before the child performs the target behaviour. 3) Use prompts only if the child is unable to perform the desired target behaviour in the manner it should be done. 4) Be brief. Always make prompts as short as possible. 5) Select as natural prompts as possible. Which ever type of prompts are used, it should be always in a language that the child can understand. This is more applicable while using verbal and gestural prompts. 6) Select prompts that will quickly lead the child towards independence in acquiring the target behaviour. 7) Wherever necessary combine use of different types of prompts to achieve maximum effectiveness in teaching. 8) Fade prompts as soon as possible.

Gradually decrease the use of physical prompts, as the child learns to perform a target behaviour, then verbal prompts and clues-in the same order, till the child becomes totally independent.

122 3.6.7 Fading :- While using prompts for teaching it is important to gradually decrease the amount of assistance or help being given to the child. The ultimate goal of teaching is to make the child independent in the performance of the specified behavioural objective/s. In the initial phase of teaching a new behaviour, the teacher may do more and more of the task as the child does less and less of it. However, as a child learns to perform the target behaviour, the teacher must do less and less and allow the child to do more and more of the task by himself. In the given example the child has to trace the alphabet 'A' on the dark line. Then slowly, the alphabet is faded and finally the child has to write by himself.

While teaching new skills, the teacher needs to use rewards continuously, i.e., every time the child completes the task such as, every time the child buttons his shirt with or without help the reward is given. Once the child has learnt the task, the rewards need to be gradually faded. In other words, the child does not receive rewards after completion of the task each time, but only now and then or occasionally.

3.6.8 Reinforcement Every action has some consequence. When our behavior results in desirable consequence, it serves as a motivating force for the behavior. The natural process of getting desirable consequence if not sufficient to maintain the desirable behavior more powerful consequences need to be provided for motivated learning. It is a very important component of attempt to teach new behavior and to increase occurrence of existing behaviour. It is also helpful in maintaining appropriate level of the behavior. There are two types of reinforcement. which are widely used in teaching person with mental retardation.

a) Positive Reinforcement In positive reinforcement the reinforce is provided after a particular desired response has occurred. Here the reinforcer increases the probability of occurrence of the behavior again in similar situation. Technically positive reinforcement refers to the process of presenting the stimulus as consequence of a response that result in an increased probability of that behavior in future. It is the contingent presentation of a stimulus, immediately following a response that increases the future probability of the response.

b) Negative Reinforcement Firstly, the stimulus is present prior to occurrences of the particular response. Secondly, the response removes or withdraws the stimulus, resulting in increase signs of the probability that the response will occur. Technically negative reinforcements refers in removing an aversive stimulus as a consequence of a response resulting in an increase in the rate of occurrence of a response. It can also be defined as contingent removal of an aversive stimulus following a response that future rate or probability of the response.

Types of Reinforcers a) Primary Reinforcers - Primary reinforcers have biological importance to the individual. They are highly motivating to the student and work very effectively with children having mental retardation. Food and drinks are very common primary reinforcers widely used for younger or low functioning student. They have high motivational value and quickly effect the behavior. b) Secondary Reinforcers - Primary reinforcers are temporary measure as we want students not to be dependent on them. There are various types of secondary reinforcers widely used in special education setting. Secondary reinforcers include social stimuli such as praise or favourite activities. Attention, words, smiles, gestures, a pat on the back are called social reinforcers which are most natural and readily available or enjoyable activities which a student may choose like playing a particular game, working on computer, painting etc.

Secondary reinforcers do not have biological importance, their value has been learnt or conditioned in due course of time. Most often secondary reinforcers are also called conditioned reinforcers. c) Tangible reinforcers are those which are of immediate use to the individual. Eg, pen, pencil, toys, objects which have achieved reinforcing properties such as stars are also tangible. d) Exchangeable Reinforcers - There are reinforcers like token, money stickers etc., which may be exchanged for other more valued secondary reinforcers. Primary and secondary reinforcers can be used in a combination and try to gradually reduce the dependency of the child on primary reinforce. This is called pairing. Through pairing we gradually condition the child to be reinforced by the secondary reinforce only. Privileges are also widely used as reinforcers. Display of good work, appointing student as monitor, appointing student as monitor, appointing team captain are widely used privileged rewards. e)

Generalized Conditioned reinforcers - When a reinforcer is associated with a variety of behaviours, it is termed as generalized conditioned reinforce. Another type of

124 generalized reinforcer includes those data exchangeable for something of the child's interest, like money which can give access to food, shelter, clothing, other materials etc. f) Token Reinforcer- Token can be used as a symbolic representation of money in various situations. Tokens are exchangeable for a variety of primary and secondary reinforcers. It can be effectively used with a single child or with a large group also. Token reinforcement system requires two components the tokens and backup reinforcers. The token is delivered immediately after the desired behaviour. Button, stars, paperclips, metallic pieces etc., can be used as tokens. Tokens should be portable, durable and easy to handle. Steps for Implementation of Token System

- Decide target behavior.
- Demonstrate target behavior clearly and ensure understanding by the student.
- Decide tokens
- Frame rules for receiving the tokens.
- Frame rules for the exchange of tokens
- Plan reward menu and display in the classroom
- Implement the token system with firmness.

Initially provide immediate tokens and allow immediate exchange. Slowly increase duration. Gradually shift to intermittent schedule of giving tokens. Re schedule and revise the reward menu after certain intervals. Selecting effective reinforcer - The selection of effective reinforce can be done by asking the child, observing the child, asking the parent. A list of reinforce, in order of preference, can be prepared. Basic principles of reinforcement delivery system :

- Reinforcement can be given only for desirable behaviour
- Provide reinforcement immediately after desirable behavior
- Reinforce target behaviour each time in the initial stages
- After achievement of the target behaviour use intermittent reinforcement
- Pair tangible reinforcer with social reinforce for other secondary reinforcers to fade tangible reinforcers gradually.

125 Schedule of Reinforcement 1. Continuous schedule of reinforcement : Schedule of reinforcement refers to the pattern of delivery of reinforcement. When a reinforcement is given on continuous basis, it is referred to as ("continuous schedule of reinforcement" where a student receives immediate reward after every target response / behavior. This is very necessary for learning a new behaviour. 2. Intermittent schedule of reinforcement : Following continuous delivery of reinforcers for prolonged periods may lead to dependency. Hence intermittent schedule has to be followed. Here reinforcement follows some appropriate response. Behaviours maintained for a longer period. Two types of intermittent schedules are used: Ratio Schedule: Here the number of times target behavior occurs decides the timing of reinforce delivery. In fixed ratio schedule, the child is reinforced for a specified number of correct responses.

In variable ratio schedule, the target behavior is reinforced on the average of a specified number of desirable responses.

Interval

Schedule: Here specific amount of time determines the delivery of reinforce. Under fixed interval schedule, the child is reinforced after some fixed interval of time. Under variable interval schedule, the duration / intervals are to different lengths. (The average length is consistent). 3.6.9 Role Play Method The popular teaching technique is Role Playing method. It is applicable in many form of education from the primary level of elementary school to the upper classes. Role play highlights elements of spontaneous or least extemporaneous reaction in education. Role Play may be defined as the way one behaves in a given position and situation. It is a teaching methodology is the conscious acting out and discussion of the in a group. In the classroom a problem situation is briefly acted out so that the individual student can identify the characters. It points up the dynamics which can accompany this teaching methodology. Small group in the class had been assigned to demonstrate various teaching method. The group in role playing set up a situation in which one member played a certain role and other have to react on the specific role or some definite role. It Can be used with students with most ages. A complexity of the role situations must be minimised in using the method with children. The responses and the dialogues create a dynamic learning situation which will not forget soon. Role-play allowing free scholar to make mistakes in a non threatening environment. It also fulfil some of the very basic principles

126 of the teaching learning process such as learning involvement and intrinsic motivation. The involvement in role playing can create both an emotional and intellectual attachment to the subject matter at hand. If a skillful teacher accurately matches the problem situation to the needs of his/her group solving of realistic life problem can be expected. It also create a sense of community in class. But some may react negatively to this situation and insecurity may occur. In-effective performance of the member or mishandling may create dissatisfactory outcome. This is also a time consuming method or process. Principles of Effective Roleplaying Role playing is based on the philosophy that a human being is best changed through direct involvement in a realistic life related problem situation rather than through learning about such situation from others. To change the said concept, a district organisational pattern is needed. 1. Preparation - a) Define the problem b) Create readiness for the role c) establish the situation d) Cast the character e) Brief and Warm up f) Consider the training 2. Playing- g) Acting h) Stopping i) Involving the audience j) Analyzing the discussion k) Evaluation The teacher must identify the situation clearly so that both the character and the audience understand the problem at hand. The audience is just as much involve in the learning situation as the actors are. In the analysis and discussion time the audience should provide possible solutions to the realistic problem situation.

127 It is important to evaluate the role playing in the light of the prescribed goals. Evaluation should proceed on both group and personal level. 3.6.10 Play way Method Play activity is an integrated part of the developmental process in young children. It occurs spontaneously in children and serve an important medium for informal learning. Dr. Lynn Barnett advocated play as a percussion to creativity and abstract learning The major aspects of play are 1. It is spontaneous and voluntary 2. Play gives enjoyment. 3. Most of the children actively involved 4. Passive involvement is also present 5. Less parental supervision is present. Stages of Play - 1. Pre symbolic play - In the first year of life transition from visual to manipulative exploration of objects and from stereo typical to functional play. At the age of 12 months the interest in object attract the child's interest. In this stage the play behaviour changes its characteristics. 2. Symbolic play - In between 18 months the use of of symbolic representation in play increases and shows the flexibility of child's thought process. 3. Elaboration of symbolic play - In between 2 years children acquire the capacity to use symbolic objects and begin to use imaginary object to symbolize absent objects. Play as a Learning Activity - There are three type of learning activities - 1. Sensory motor activity - Co ordination, Peg Boards, painting etc. 2. Socialization - Interaction between peers in early ages constitute the code of conduct 3. Self Actualization - They become fully functioning human being capable of awareness of environment and responsiveness to other human beings. Child can be able to make to feel effective in the family in the environment.

128 3.7 Development and Use of TLM FOR ID The children with mental retardation have less cognitive ability, poor motivation to learn. So for better learning experience multi sensory modalities can be used to make learning activity more interesting and purposeful. To do so, developing and use of proper TLM must be introduced by the teacher which will be helpful to achieve the objective of learning and the process to reach the goal properly 3.7.1 Teaching Material Teaching material is very much helpful for the student with mental retardation. Their learning can be meaningful and it remains in their mind for a long period of time with the help of TLM. Teaching material is a term used to indicate text books, lecture notes, lesson notes, and references and so on. It is prepared by experts in the field. Teaching aids are the materials that enhance the presentation of information using the visual and auditory input and sometimes the tactile input too. For example, charts, video clips. Audio cassettes or CDs, models, film strips, and so on. It can be prepared by the concerned class teachers any trained teacher, or can be purchased from commercial agencies. Teaching appliances are the materials like over head projector, rulers, stop watch, tape recorders, and so on. 3.7.2 Teaching learning material (TLM) TLMs are those materials other than the text books that the teacher uses to transact curriculum content so that the teaching by her and the learning by the students proceed smoothly, effectively and spontaneously. TLMs totally support the curricular transaction in all the classes right from preschool to higher education in general as well as special education, keeping the student in focus rather than the teacher in focus. 3.7.3 Types of TLM There are different types of teaching aids, which can be used by the special teachers in classroom. Some of them are as under : 1. Visual Aids a) Blackboard b) Charts, pictures

129 c) Models film strips d) Motion pictures e) Slides film strips d) Motion pictures g) Bulletin board 2. Audio-Visual Aids a) Slide projector c) Over head projector e) Film projector g) Radio i) Television recorder/ player 3. Activity Aids a) Museum c) Garden e) Workshop g) Fairs d) Motion pictures, f) Motion pictures, b) Magic lantern d) Epidiascope f) Gramophone h) Tape recorder j) Video cassette b) Aquarium d) Kitchen f) Laboratory h) Exhibitions

130 3.7.4 Need for TLM As the students with mental retardation have limitations in intellectual functioning, short attention span, concentration, and poor memory, the training which is heavily based on oral instruction does not support them in learning. They require a training which can provide input through various senses as much as possible. In addition to auditory and visual senses the other senses also should be included in the training process. It can be achieved through effective teaching learning materials because it provides multisensory learning experience to students with mental retardation. Advantages of using TLMs The major advantages of TLM are as follows

- It helps in creating interest in students with mental retardation in learning a particular skill. The attractive and appropriately coloured Teaching Learning Material catches the attention of the student with mental retardation.
- For the motivation of the students with mental retardation in learning TLM is also needed.
- With the help of teaching learning materials the learning become more meaningful and the learned concepts remained for long period of time in their memory.
- A large group of students can be handled easily by a teacher with the help of teaching learning materials.
- With the help of TLM abstract concepts can be concretized better.
- It helps in reducing the energy and time spent by a teacher in explaining the concepts verbally.
- TLM increases the participation of students with mental retardation in the classroom activity.
- It makes use of all sense organs of students. It also provides multisensory learning experience.
- The TLMs help in transfer of learning.
- It sustains the attention of the students for a relatively longer period of time.
- If well utilized, some of the TLMs can help in improving critical thinking and problem solving abilities which children with mental retardation lack.
- TLMs used for mathematics has a direct relevance and application to daily living and the transfer of training is minimized.

131 3.7.5 Effective use of TLM Effective use of TLM depends on the following factors Knowledge about hierarchy of concept development Teachers should be aware of the hierarchy of concept development, principles of teaching and the basics of all-round development of a child. For example, the steps in training any concept involves matching, identification and naming, It should be taught in the same order. Changing the order of steps will hinder the process of learning. The training should move from concrete to semi concrete, and to abstract. It can be done effectively with the help of TLM. Novel ways to use the TLM the children with mental retardation have less cognitive deficits due to which they learn at a slower pace, have poor retention ability and are unable to transfer the learnt skills easily to another situation, the TLMs must be carefully selected and used with them. In order to avoid monotonous teaching and students getting bored, teachers have to think of different ways to use the same teaching learning materials. The teacher needs to be innovative, be clear in the objective and be prepared in advance while using a TLM. It is proved that children with mental retardation learn better through games and activities. TLM should be used in the form of activities and games. For example, the colour flash cards which are used for teaching colour concept can be used to play card games and memory games. TLM for different curriculum levels We have seen that the TLM used should be age and level appropriate. Therefore, based on the curricular objective for the children in each group a range of material will have to be used to aid the curricular transaction effectively. Children who are in the age group of 3-6 years are in the preprimary level. The curriculum for pre primary level is mainly focused on the motor, self help, social and language skills. So the material prepared for training children in this level should be mainly aimed to improve the above said skills. As they are lower age group children the material should be colorful, attractive, soft in texture, and should be appropriate in size. (Children in the age group of 7-10 years are at primary level. The curriculum in this level basically focuses on personal skills, communication skills, social skills, functional academic skills, motor skills, and pre-vocational skills. It is an extension of pre-primary level; the skills are higher than pre primary level. The materials for training in functional academics are important at this stage. Many of them are learning aids as in flash cards, picture books and so on. The secondary and pre-vocational levels are the extension of primary level. As the children in these levels are of in the age group of 11-14 years and 15-18 years respectively the

132 material used in lower levels are not age appropriate for them. Also according to the changes in the curriculum content the material should vary. Learning aids and functional aids as its name indicates learning aids are used for 'learning' a particular concept and teacher uses it specifically for instruction. Once the students learn the concept, the utility of specific learning aids ceases. Example for learning aids are models, charts, pictures. A functional aid is one which enhances the 'functioning' of the child in daily living activities. A functional aid has use even after student learns the concept. Without functional aids a child with limitations in functioning will not be able to perform the particular activity. For example; grasping adaptations in utensils, dressing adaptations, and motor adaptations are functional aids. A picture album of common grocery used at home is used as one of the learning aids with students in the classroom. Once students learn to name common things, it may not be necessary to use picture album as an aid. But in case of non-verbal students, it is continued to be used as it facilitates their communication. Then the same aid becomes functional aid. Selection and development of teaching material and aids Selection and development of teaching material and aids is the primary responsibility of the teacher. It should be done by keeping the following principles. Age appropriate; Children with mental retardation need to be trained in age appropriate activities, irrespective of their mental age. For such training, material also should be age appropriately used. For example, in order to teach counting to a child in the primary class we may use beads. But with a child in the pre-vocational level we have to use the materials such as domestic items (cups, spoons, bottles, vegetables and fruits) or packaging items (number of cartons/boxes) may be more meaningful. Easily improvised by teacher: Depending on the situational demand teacher should be able to make the necessary modification and improvise the particular TLM. • Minimize transfer of learning: A child with average or above average intelligence does not require extra training for generalizing the learned concept to the life situations. But a child with mental retardation requires the extra training for this. A child with average or above average intelligence is able to use the arithmetic concept learned in the classroom to his daily life whenever he/ she is required to use it, like while shopping, or travelling. A student with mental retardation requires training in a shop or bus travel situation in order to use the same arithmetic concept learnt in the classroom. So the material selected should minimize the need for transfer of learning which prevents the wastage of time, and energy. For example, in order to

133 train a child in money skills instead of using duplicate rupee notes use the original money coins and rupee notes. Wherever possible the TLMs should be materials that are naturally used in the given situation rather than simulated ones. • Attractiveness: Attractive materials will help to get and maintain the attention of the child on the task and increase the motivation to learn a concept. In addition, depending upon the aid, where appropriate, the materials should be symmetrical; specially whenever materials are prepared to train on mathematical skills like shapes it should resemble the original one. For example, if you are making a TLM to teach shape 'square' the material should be exactly a 'square' with all angle at 90 degrees. If the aids have written script. it should all be of same size and uniform. • Suited to the level of learners: TLM should be appropriate to the ability, achievement and aptitude levels of the student. Children with mild mental retardation have higher cognitive abilities compared to children with moderate, severe and profound mental retardation. Therefore, the material prepared for all level should be appropriate to their need and the objective chosen. Materials for children with severe and profound mental retardation should represent the fact in simpler form. • Cost effectiveness: TLM should be worthy of the cost paid. For example, a TLM which can be used for training a number of skills, multiple utility, is cost effective than the one which can be used for training only one concept. Never the less, some aids are meant to be used for a learning single concept. So care must be taken to see if a concept can be taught using a material that is relatively cheaper and durable and will serve the purpose. The best way to do this is to make a market survey, be clear on what you wish to teach, look at varied material and choose the one that will help in achieving the objective and cost effective. • Novel: Every day there are new materials coming into the market. Novel material catches and maintains the interest and attention of children better than common ones, so a special educator should have novel thinking while preparing or selecting TLM. While selecting, the teacher has to think of its utility in the long run, usability by the student, maintenance related issues and affordability. Novelty should not be at the cost of quality. • Multi sensory utility: A TLM should provide opportunity to use as many senses of the student as possible to make the learning more meaningful. Audiovisual aids provide the multisensory learning experience to children. o Durability: A TLM which lasts for a long time without breaking or getting weaker is a durable one.

134 When children with mental retardation explore the material it may fall down or may twist or fold. If the material is made of breakable material like glass, and thermo cool sheets or with thin materials like papers: it may break or damage.

- Nontoxic: As children may put the material in the mouth, it is important to see to the quality of the product of which it is made. If it is a painted material, it should be nontoxic. Many materials are washable. It is good to buy them as after handling it can be washed and stored for future.
- Maintenance free: It is no use buying a material that needs frequent maintenance. Some times, some electronic items are stored in cup board as it is either to be repaired or does not have battery. It is a waste to possess such aids
- Accessible: A good TLM should allow the child to explore it freely and learn from it
- Role of Special Educator in Making Teaching Aids
- Waste and used material of the class, school, teacher's home, student's home etc., can be effectively used for making various teaching aids.
- The children of the class may themselves be motivated and involved in search of waste material and preparation of aids.
- Planning and preparing of teaching aids not only helps in learning the concept but also add to development of fine motor skills, eye hand coordination, prevocational, communication and cognitive skill.
- The person with mental retardation shall be motivated, develop confidence and have feeling of well-being by involving themselves in such activities. The teacher must be observant, keen, motivated, creative and have scientific and artistic temperament to make teaching aids and make it a habit or a regular affair of teaching learning program. Referral sources to procure teaching materials, aids and appliances Any shop selling educational material can be a good source of TLM. Nowadays there are various agencies which prepare teaching learning materials for children with disabilities. Most of them are attractive, durable, and novel ones. But it is the sole responsibility of the teacher to select the appropriate one by considering the factors which we have discussed earlier. A teacher has to make use of her creativity blended with the technical competencies in selection, preparation, and wise use of TLM for effective curricular transactions.

135 3.8 Let us Sum-up Students with Special and Exceptional needs are placed in inclusive learning environments more frequently than the past. For general education with a limited special education background, this can often be anxiety provoking and stressful. Every teacher wants to provide the best instruction and education to his students. The following five strategies may be made useful for working with students in the inclusive settings.

1. Get to know your Students' IEP: One of the most common accommodation for students with special needs is preferential seating.
2. Implement Universal Design for Learning(UDL): Universal Design is so much more than one of the hottest buzzwords circulating around education circles. It's an approach to curriculum planning and mapping that makes learning engaging and accessible to a wide range of learners with different strengths and needs.
3. Support Important Life Skills: Student must be exercised with the essential life skills in school environment and as teachers we have to extend support to the learners to acquire such skills. Practice like "Study Skills Thursday" may be very much effective when students clean out their backpacks, organize their binders and notebooks and focus on developing and self-reflecting on both short and long term goals. Even, locker checks with some students may be useful. The battle is half won if a student comes to school organized and prepared.
4. Engaged in collaborating Planning and Teaching: No class room is an island, especially in inclusive classroom. Opening up of classroom to service providers, paraprofessionals, special education teachers and parents give valuable opportunity to participants in collaborative teaching. Collaborative teaching looks differently depending on what school, level and setting one is working. So the teaching environments must be such when collaborative teaching is encouraged and celebrated.
5. Develop a strong Behaviour Management Plan: Having a successful inclusive classroom depends upon having control of the classroom. It is essential to have clearly communicated expectation and goals, that are accessible by all students. So classroom environment should be tailored to better suit diverse students' needs.

136 There are so many approaches and such approaches are in use globally and also discussed in detail in previous pages. Such practices and approaches need to be thoroughly understood and put in to use in the given situation. T.L.M. Teaching learning material is a generic term used to describe the resources teachers use to deliver instruction. Teaching materials can support student learning and increase student success. Ideally, the teaching materials will be tailored to the content in which they're being used, to the students in whose class they are being used and the teacher. Teaching materials come in many shapes and sizes but they all have in common the ability to support student learning. The need and usefulness of TLM do not require any further justification. A teacher may or not be so resourceful but can make his instruction effective by using T.L.M. So TLMs are in use across the globe and across the Subjects. In inclusive setting use of TLM becomes more effective. Previous discussion on TLMs and their uses must be helpful to the learners in classroom settings.

3.9 Check Your Progress 1. Define Learning. Write the different stages of learning. 2. Discuss different Principles of Teaching with suitable examples. 3. Write short note on (i) Montessori Method (ii) VAKT Approach of Teaching (iii) Alternative and Augmentative communication. 4. Define Task Analysis with Suitable example. 5. Discuss different teaching strategies for teaching children with Intellectual Disabilities. 6. Define Reinforcement, Discuss different types of reinforcement. 7. Write Short note on Schedule of Reinforcement. 8. Discuss Play way Method.

137 9. Define TLM. Discuss needs and importance of TLM. 10. Write different types of TLM with suitable examples. 3.10 References

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Unit - 4 □ Intervention for Maladaptive

Behaviour Structure 4.1. Introduction 4.2 Objectives 4.3 Definition and Types of Mal Adaptive Behaviour 4.3.1 Definition of Mal

Adaptive Behaviour 4.3.2 Types of Mal Adaptive Behaviour 4.4 Identification of Mal Adaptive Behaviour 4.4.1. Steps in Identification of Mal Adaptive Behaviour 4.5 Functional Analysis and Behaviour Modification Techniques 4.5.1 Functional analysis 4.5.2 Behaviour Modification Techniques 4.5.3 Cognitive Behaviour Techniques 4.6 Management of Mal Adaptive Behaviour at Home and School, Parental Counseling- Individual, Group and Community 4.6.1

Management of Mal Adaptive Behaviour at Home 4.6.2 Classroom Behavioural Strategies and Intervention 4.6.3 Parental Counseling: Individual, Group and Community 4.7 Ethical Issues in Behaviour Management and implications for Inclusion. 4.8

Let us Sum Up 4.9 Check your Progress 4.10

Reference 4.1 Introduction The

behavior of living beings has always been a subject of curiosity and interest to the behavioral scientists. A behavior is considered as an aspect of the function of an organism. This may include the explicit expression of an action, thinking, emotional expression, physiological activities etc. These functions may or may not be visible or observable for another person. Sometimes the function of an organism could be due to the result of an external activity. Very many factors like genetic constitution, neurobiology, personality factors and environmental influences are attributed to the basic structure of

behavior. Behavior modification is based on the principles of operant conditioning, which were developed by American behaviorist B. F. Skinner (1904-1990). Skinner formulated the concept of operant conditioning, through which behavior could be shaped by reinforcement or lack of it.

Skinner considered his concept applicable to a wide range of both human and animal behaviors. The simplest form of behavior has relation between a stimulus and a response. The quality of the expressed behavior has an influence of the intelligence of the person. Though the function of the behavior is very much complicated, every individual is expected to behave in a manner, which is in tune with the accepted norms of the society or environment in which he /she lives. This expectation on the behavior is extended to the routine life pattern of everyday activity. This necessitates the individual to adapt himself to the requirements of present day functioning. This is termed as Adaptive Behaviour. Adaptive behavior allows individuals to adapt in a positive manner to various situations. It is a functional adjustment to a particular behavior. Adaptive behavior creates a condition where the individual can truly develop and grow. In our day to day life, if a particular behavior is constructive and productive it can be considered as adaptive behavior.

4.2 Objective
After going through this unit you will be able to ●

Define

adaptive and maladaptive behavior. ● Demonstrate understanding of maladaptive behaviour. ● Narrate strategies for management of inappropriate behavior. ● Management of maladaptive behavior at home and school.

4.3 Definition and Types of Maladaptive Behaviour

4.3.1 Definition of Maladaptive Behaviour

Maladaptive behaviors refer to types of behaviors that inhibit a person's ability to adjust to particular situations. Maladaptive behaviors are never good because they prevent people from adapting to the demands of life.

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Many times, children with mental handicap show behaviours that are considered as maladaptive behavior

because of the harm or inconvenience they cause others, or to the child himself. The presence of maladaptive behavior interferes with learning in the school and classroom. Maladaptive behavior could be because of a number of reasons. From the behavioural point of view it may be due to lack of communication skills, cognitive skills or problem solving skills. It may also be due to

the wrong handling or the people in the environment of the child.

4.3.2 Types of Maladaptive Behaviour

Maladaptive behaviors in students can appear in countless ways. Some categories and examples are explained below. ● Stereotypical Behavior - repetitive movement, posture or utterance. Examples: hand play, rocking, echolalia (repeating words or phrases) ● Ritualistic Behavior - an attempt to regulate something concrete and controllable because the person cannot identify and control a problem - often manifests in compulsive behavioral. ● Self-Injurious Behavior - any behavior that can cause damage to the individual. Examples: head banging, self-biting, scratching. pica (consumption of inedible items) ● Tantrums - a combination of two or more maladaptive behaviors. Examples: screaming, crying, and

dropping to the ground. ● Aggression - an act of violence to another person or object. Examples: hitting, kicking, biting, slapping, pinching, grabbing, pushing. ● Transition Difficulties - Some students become easily upset when asked to transition to a new area or task. ● Running/Darting - Running out of the classroom, away from the area, or away from adults. ● Compliance/Following Directions/Opposition Lack of cooperation with

instructions/ demands. ● Verbally Inappropriate Behavior Disruptive to classroom, peers or individual learning/success. Examples: name calling, swearing, screaming, whining, cursing ● Hyperactive Behaviour

141 4.4 Identification of Maladaptive

Behaviour Before a functional behavioral assessment can be implemented, it is necessary to pinpoint the behavior causing learning or discipline problems, and to define that behavior in concrete terms that are easy to communicate and simple

to measure and record. If descriptions of behaviors are vague (e.g., poor attitude), it is difficult to determine appropriate interventions. Examples of concrete descriptions of problem behaviors are: Problem Concrete Definition Behavior Ravi hits other students Ravi is during recess when she aggressive. does not get her way. Sam makes irrelevant and Sam is inappropriate comments disruptive. during class discussion. Rita leaves her assigned Rita is area without permission. hyperactive. Rita completes only small portions of her independent work. Rita blurts out answers without raising her hand. It may be necessary to carefully and objectively observe the student's behavior in different settings and during different types of activities, and to conduct interviews with other school staff and caregivers, in order to pinpoint the specific characteristics of the behavior. 4.4.1 Steps in identification of Maladaptive Behaviour The behaviour modification technology for decreasing the undesirable behaviour

involves a detailed assessment of the child in tune with the principle of developing IEP. The following steps are involved in this process. I. Identification of Problem Behaviour: Once problem behaviour is brought to the notice of the teacher, it is his/her duty

to

identify it appropriately - by applying the guidelines given in this regard.

142 II. Behavioural Description of Problem Behaviour: In behaviour modification, symbolic terms of the behaviour has no value. Only behavioural terms are used for describing a behaviour. For example, the problem behaviour 'anger' can be viewed as, abusing somebody, shouting at others, beating others, or self-beating throwing things at others. Hence, by using the term 'anger' it is essential that the behaviour is described in an objective manner which could be observed and measured.

III. Principle for

Selection of Problem Behaviour: A child may possess more than one problematic behaviour. But only one or two problems at a time is

selected for

management since, selection of more problems would pose difficulty in controlling the environmental factors which has influence on behaviour is done by applying the following criteria. a) Choosing the problem behaviours which are easy to manage

as this will help the teacher to gain confidence in managing more difficult problem behaviour later.

b) Choosing problem behaviours which are dangerous in nature for self or to others

IV. Baseline Assessment (Observation Technique): Observation is the process in which one/more persons observe what is occurring in some real life situation and pertinent happenings are classified and recorded according to some planned scheme. There are four points for observation: a) What to observe, b) When to observe, c) How to observe, and d) Where to observe. Behaviour can be observed by direct observation or by automatic recording. Commonly used observation techniques are: a) Event or Frequency recording: In the event or frequency recording, the number of occurrences of the problem behaviour is documented after direct observation for a specified period of time in a given day, which is repeated for a minimum of three days. This will enable the teacher/person concerned to get more idea about the behaviour under observation. This will also enable to find out the average occurrence of the problem behaviours like, beating, pushing, not sitting at one place etc. (the occurrence of the behaviours which could be counted in numbers). It is not appropriate for behaviours, where it is difficult to count. b) Duration Recording: This is used to record behaviours which vary in its length of occurrence. For examples, not paying attention in the class (staring out, over active behaviour, rocking behaviour, etc. Recording of the behaviour is obtained by documenting for a specified period of time in given day, which is repeated for

143 a minimum of three days. The average duration of occurrence of the problem behaviour could be calculated for the specified period of time. This method is useful to record behaviours which vary in length. However, continuous attention is required for accurate assessment, which may not be always possible in group teaching set-up. c) Interval Recording: Occurrence of the problem behaviour is observed in short span of intervals like, observing the behaviour in everyone hour for five minutes. It can be used for recording both frequency and duration responses. However, even if the problem behaviour occurs in between, the recording will be done only during the interval chosen for the same. d) Time Sampling: The problem behaviour is recorded only at a predetermined time. For example, observing the behaviour of the child at every 30 minutes interval. This method is used when the frequency or the duration of the problem behaviour is more. It does not require continuous observation. 4.5

Functional Analysis and Behaviour Modification Techniques, Cognitive Behaviour Techniques. 4.5.1 Functional analysis

The term functional analysis was used by Skinner (1953) to denote empirical demonstrations of "cause-and-effect relations" between environment and behavior; however, the term has been extended by behavior analysts and psychologists in general to describe a wide range of procedures and operations that are different in many important ways. Functional Analysis is the process of understanding the complexity of the problem behaviour in its simpler or most elementary parts. The problem behaviours which are learnt may have various environmental influences. According to learning theories, learning occurs through association (classical and operant conditioning), and observation learning etc.

There are a number of models available for analysing behaviour problems. One of the simplest models is known as A-B-C model,

which is used commonly to analyse problem behaviours of mentally retarded children. This model helps to identify the factors, which contribute to the occurrence of the problem behaviours.

144 A stands for the ANTECEDENT factors. The analysis of antecedent will help the teacher to find the factors which contribute to the problem behaviour before its occurrence. The following factors have to be looked into to get more information in this regard: a) When does the problem behaviour generally occur, - during recess, or in the class room when the teacher is busy with another student, or during lunch break. b) Are there particular times of the day when the problem behaviour tends to occur more - for example, during morning hours or meal times. c) With whom

does

the problem behaviour occur - are there specific places or situation where the problem behaviour occurs. - in the school playground or classroom or at home or when the child is sitting alone.

d) Where does the problem behaviour occur, that is, are there specific place or situation where the problem behaviour occurs, Example-in the school playground or classroom or at home or when the child is sitting alone.

B stands for the BEHAVIOUR that is, what happens during the problem behaviour. Result from the base line assessment of the behaviour will help to analyse the 'during' factors contributing to the problem behaviour, that is, it will answer the following question: How many times does the problem behaviour occur, or for how long does the problem behaviour occur.

C stands for the CONSEQUENCES of the behaviour, that is, the factor which follow immediately after the behaviour.

Analysis of 'after' factors includes answering the following question: a) What is The Reaction of the people around the child immediately after the occurrence of the problem behaviour? b) What effect does the problem behaviour have on the given child or others? c) Does the child benefit or gain something by indulging in the problem behaviour? The analysis of consequences or after factors generally shows that most of the behaviours have a link with benefits (reward or reinforcement). As per the operant conditioning therefore,

if there were no benefits, the behaviour would cease to occur.

Thus functional analysis gives the complete details which would help in identifying the reasons for the behaviour. 4.5.2

Behaviour Modification Techniques ❖ It is based on thorough understanding of the antecedents and consequence of the behavior.

145 ❖ The same problem behavior of beating others may not have the same management technique if the antecedents and consequence are different. ❖ Technique to reduce the occurrence of problem behavior are broadly divided into two categories. ■ Direct punishment technique ■ Non-punishment technique * Punishment is the presentation of an aversive stimulus or withdrawal of reward to decrease the occurrence of the target behaviour. * Punishment should not be confused with negative reinforcement. * Non-punishment techniques are the first choice of management plan for reducing the undesirable behavior. Because - * No one has ethically right to physically hurt someone or deprive others of their rights. * Ideally it should not be used. * Punishment should be used only when the other techniques are failed.

Direct Punishment Techniques Environment restructuring * Here we are trying to search of the appropriate antecedents factors which leading to problem behavior. * We are removing the problem behavior by changing antecedents factors. Ex-Hair pulling. Poor concentration. Eating inedible things. * Usually this technique has to be used along with other technique for more effective results. Extinction / Ignoring It is required to don't pay attention to the child whenever, he is showing problem behavior. Indications This technique is mainly used in the case of attention seeking behavior which include- - Crying

146 - Making unnecessary noise. - Talking with friends during class hours - Interrupting other works - Asking the same question again and again - Repeatedly wanting to shake hand - Saying 'NAMASTE' every time when meet the teacher. - Asking to go to toilet too frequently. - Complaint about other children - Using mild abusive language. - Showing the new dress he has worn, again and again. Note: When this technique is used, initially there is increase in the problem behavior. However, in the long run they will gradually decrease. Whenever, this technique is used, then all others concerned with the child have to apply this technique. Otherwise, if attention is not given by one person the child may obtain it from others and problem behavior shall be maintained. Limitation Never use this technique when problem behavior is considered as dangerous to the child himself or others. Time Out Whenever, the child is showing problem behavior either the child is removed

from the reward or reward should be removed from the child for a particular period of time.

Example - - Standing the child in the corner of the wall immediately following problem behavior. - Sitting alone for few minute (usually 2 to 5 minutes) -

Insist the child to place his head on the desk in a head down position. *

Place the child outside the sphere of learning activities from where he can see or hear the activities of others but can't participate in it. Example - to tell the child to stand on the bench after following problem behavior

147 * It is important to note that whatever you take away from the child, it must be considered pleasant by the child. *

Application of timeout should be done immediately after a problem behavior. * Avoid to giving lectures before, during or after the use of timeout technique. * Place the child in the timeout only for short periods of time no more than 2 to 5 minutes after each occurrence of problem behavior. * Once the child is taken out from timeout room he should not be given any special treatment like. - Do you want to take water? - Avoid to telling him he should not do it again. * Bring the child out of the room, leave him and continue your own activities. * If the child indulgesun desirable behaviour after coming out from the time out, reward him, praise him. If not then again place him in timeout room. Seclusion Timeout- place the child in the isolated room from where he can neither see nor hear or participate in the activities of others.

Indications - This technique can be used in the case of aggressive and destructive behavior, which includes: - Pulling others hairs. - Kicks others/objects/utensils. - Break things. - Snatches books. - Throwing articles. - Hitting others. - Pinching others. Note Timeout only teaches the children what not to do. It does not teach the child what to do. In order to teach the child what to do we must combine the use of timeout by giving rewards for appropriate behavior. Response prevention Response prevention is a procedure where we are preventing the undesirable behavior even before its occurrence.

148 E.g. - holding the hand of the child before beating - for preventing to occur. Response prevention may elicit an immediate and forceful repetition of the undesirable behavior. Physical restraint Physical restraint is the restricting the physical activities of the child after the occurrence of an undesirable behavior. Whenever the child is showing problem behavior like pinching others, hold the child's arm as tightly as possible and maintained eye to eye contact in angry face with the child and say loudly 'no stop it'. Holds the child's arm for a sorter period of time, not more than 30 seconds.

Provide reward to the child when he is behaving properly. Over a number of trials this enable the child's to stop the problem behavior even to an emphatic 'NO'. Indication - this technique can be used 111 the case of self-injurious behavior, which includes - Head banging - Hair pulling - Biting self - Thumb sucking - Paper tearing - Hitting others

Response cost ❖ This method is generally used when tokens are being used for

increasing the desirable behavior. ❖ Following a particular problem behavior some ofthe tokens earned by the child is token back . ❖ Hence, the person has to pay the cost of doing a particular undesirable behavior. ❖ This technique is useful only when the child is able to understand the relationship between the problem behavior and his earned privileges being cost.

149 ❖ Specify and fix the rules in front of the child for which specific problem behavior what privileges are to be lost. ❖ Avoid nagging, threatening or giving warning to the child before, during and after the application of this technique. Indication - The child refuses to work on assignment. - Doing opposite whatever requires. - Not following the commands of parents/ teacher. - Always coming late. - Hits other children. - Uses 'bad' words. - Works off seat etc. Restitution/Restoration Restitution or restoration refers to a procedure that requires an individual to return the environment to its state prior to a behavior that changed the environment. That is, restoring the disturbed environment back to the normal condition. For example: if a child throwing rubbish paper on the floor is to pick up the same and put it in the waste paper basket. Over -Correction: It means restoring the disturbed environment back to more than normal conditions. For example: the person following a problem behavior, i.e., throwing food on the floor is to asked to clean not only that area but the entire room. After the occurrence of problem behavior, the child is required to restore the disturbed situation to a state that is much better than earlier (before the occurrence of problem behavior). For example: If the child passes urine in the class, he would be required to not only clean the dirty area but also mop the entire area of the floor. If the child refuse to restore the damage done by him-

150 He must be physically made to carry out to do so Withheld his preferred activities/food etc. Never reward the child after he has finished restoring the damage to a better position than it was before. This technique not only decreases the problem behavior but it increases the adaptive behavior also. Positive Practice: Positive practice refers to practicing an appropriate behavior as a consequence Cor inappropriate behavior. It means stopping all activities, whenever an error occurs and the carefully performed the correct behavior several times. No reinforcement is awarded after the positive practice is implemented. Aversive Therapy This is the last method of treatment to be used if other method fails to control a particular problem. Aversive therapy is techniques that reduce the frequency of the undesirable behavior by associating it with real aversive stimuli during a conditioning procedure. Indications • Severe head banging • Other stimuli type of self-injurious behavior • Touching genital area of the opposite sex. Non Punishment Techniques The aim of non-punishment techniques is to reduce undesirable behavior and the occurrence of a desirable behavior simultaneously. There are four types of differential reinforcement. DIFFERENTIAL REINFORCEMENT OF INCOMPATIBLE BEHAVIOR (DRI) OR DIFFERENTIAL REINFORCEMENT OF OPPOSITE BEHAVIOR (DRO) 151 Here, the teachers reinforce those appropriate behavior where is exactly opposite to the problem behavior for example: - in the case of hyperactive children who often shows 'out of the seat' behavior for this children can take every opportunity to reward its opposite i.e., 'on-seat' behavior. Do not talk to the child when he is out of his seat but praise him when he is sitting on his seat and attending to his work. In the long run, the child is more likely to attend to his work in future. DIFFERENTIAL REINFORCEMENT OF OTHER BEHAVIOR (DRO) Reinforce the child at the end or every pre-decided time-interval during which target problem behavior did not occur- for example: In the case of hyperactive child, to bring down 'out of seat behavior' decides to immediately reward the child at the end of each 5 minutes interval, if the child did not get up from his seat. A child who beat others for minor reason does not do that for a specific period of time and in engaged in some other activities which is not problematic, is reinforced. DIFFERENTIAL REINFORCEMENT OF ALTERNATIVE BEHAVIOR (DRA) It is the process involving the diversion of an undesirable behavior by presenting a desirable behavior and reinforcing it. For example: two children who fight frequently for trivial reason are given an opportunity to work together to make something. Both of them like very much, and are frequently reinforced for their joint effort. Over a period of time the frequent fighting behavior is replaced by a desirable behavior of joint completion of a task. DIFFERENTIAL REINFORCEMENT OF LOW RATE OF BEHAVIOR (DRL) This technique is used when a behavior in its low frequency is desirable but when occurs more frequently is undesirable. The technique involved reinforcing the behavior in its low frequency level and ignoring it in its high frequency level. e.g. A child who repeatedly asking the teacher whether tomorrow is holiday? Here this question once is reasonable and desirable behavior. But repeatedly asking the same question is undesirable. For solving this despite telling him every time that it is not a

152 holiday responding to his question only once and not paying attention to other time when it is repeated. Over a period of time will make the child to maintain the desirable behavior in its required frequency. (ii) If the child ask permission to go to the toilet too frequently. Solution: Reward if he goes to the toilet only once in three hours. Note: This technique only reduces the intensity of the misbehavior, not eliminate completely. 4.5.3 Cognitive Behaviour Techniques Cognitive behaviour techniques /therapy is an "active, directive, time limited, structured approach. Based on the underlying theoretical rationale that an individual's affect and behaviour are largely determined by the way in which he structures the world" (Beck et al. 1979, p.3). CBT is • Brief and time-limited, encouraging students to develop independent self-help skills. • Problem-oriented and focused on factors maintaining difficulties rather than on their origins. • Educational, presenting cognitive-behavioural techniques as skills to be acquired by practice and carried into the young person's environment through homework assignments. • Evidence-based and derived from learning theory. Cognitive Techniques involves: The identification of unhelpful, negative thoughts or beliefs using monitoring forms. The detection of distortions in thinking patterns, and The challenging of cognitive distortions and the development of a more helpful, adaptive way of thinking: 1. What is the evidence for the thought? 2. Is there an alternative, more helpful way of thinking?

153 4.6 Management of Maladaptive Behavior at Home and School

Behavior modification is based on the principles of operant conditioning, which were developed by American behaviorist B. F. Skinner (1904-1990). Skinner formulated the concept of operant conditioning, through which behavior could be shaped by reinforcement or lack of it.

Skinner considered his concept applicable to a wide range of both human and animal behaviors and introduced operant conditioning to the general public in his 1938 book, *The Behavior of Organisms*.

One behavior modification technique that is widely used is positive reinforcement, which encourages certain behaviors through a system of rewards. In behavior

therapy, it is common for the therapist to draw up a contract with the client establishing the terms of the reward system.

Another behavior modification technique is negative reinforcement. Negative reinforcement is a method of training that uses a negative reinforcer. A negative reinforcer is an event or behavior whose reinforcing properties are associated with its removal. For example, terminating an existing electric shock after a rat presses a bar is a negative reinforcer.

In addition to rewarding desirable behavior, behavior modification can also discourage unwanted behavior, through punishment. Punishment is the application of an aversive or unpleasant stimulus in reaction to a particular behavior. For children, this could be the removal of television privileges when they disobey their parents or teacher. The removal of reinforcement

altogether is called extinction.

Extinction eliminates the incentive for unwanted behavior by withholding the expected response.

A widespread

parenting technique based on extinction is the time-out, in which a child is separated from the group when he or she misbehaves. This technique removes the expected reward of parental attention. 4.6.1.

Management of Maladaptive Behaviour at Home

One of the biggest challenges parents face is managing difficult or defiant behavior on the part of children.

The first step in a good behavior management plan is to identify target behaviors. These behaviors should be specific (so everyone is clear on what is expected), observable, and measurable (so everyone can agree whether or not the behavior happened).

154

Positive Behaviour Tips for Parents 1. Will have to remember 5 positives to 1 negative 2. Will have to set the stage for success and reward the effort 3. Will have to give clear, specific directions 4. Will have stay calm and use a calm voice 5. Will have to set reasonable limits - Avoid using "always" or "never" 6. Will have to be consistent. 7. Will have to set the example - Actions speak louder than words 8. Will have to proactively anticipate situations 9. Should have patience - A little goes a long way. 4.6.2 Classroom Behavioural Strategies and Intervention

Unique and individual interventions are more important than any prescribed behaviour program. Some examples of useful interventions include building relationships, adapting the environment, managing sensory stimulation, changing communication strategies, providing prompts and cues, using a teach, review, and reteach process, and developing social skills. The classroom teacher needs to ensure acceptance for

all students in the classroom. Teachers' actions that can promote acceptance include • choosing learning materials to represent all groups of students • ensuring that all students can participate in extra activities • valuing, respecting, and talking about differences • celebrating cultural and ethnic differences • ensuring that learning activities are designed for a variety of abilities •

ensuring that all students are protected from name-calling or other forms of abusive language. • make the student aware of his or her timetable • post timetables (with pictures)

to show daily routines • prepare students for transitions or changes

155 • make special arrangements for recess and lunch time, if necessary • rephrase instructions, breaking them down into small steps • using visual cues • using pictures to illustrate steps in a process • using sign prompts (e.g., red traffic light or stop

sign) Effective feedback should be immediate and follow the demonstration of an appropriate behaviour, the use of a routine, or the successful completion of teacher instructions. Research has shown that positive reinforcement can lead to improved behaviour.

A- good

general rule is that positive feedback should occur three times as frequently as negative feedback. The positive feedback does not always have to be verbal - it can also include praise, hugs, smiles, handshakes,

nods, and eye contact. 4.6.3. Parental Counseling Parent counseling and training is one of the most effective and underutilized related services - Research demonstrates that parent counseling &/or training can have a dramatic and positive impact on student behavior; yet it's rarely delineated on IEPs. The effects of parent training in preventing and reducing conduct problems are most impressive when intervention begins early, during early childhood or the early school years. Early intervention also has more lasting effects when parent training incorporates an academic/ cognitive component. Effective parent counseling/training programs teach parents to break a coercive & punitive parenting approach by promoting the following parenting and/or teaching skills: 1. The use of social and tangible reinforcement techniques (e.g., attention, treats, praise, privileges, etc.) for pro-social behavior (s) with their children, including: a. Recognizing and reinforcing desired behaviors. b. Social and tangible reinforcement techniques (e.g., praise, differential-attention, encouragement, point systems, privileges, and treats) c. Problem-solving and negotiation strategies. d. Giving direct commands in such a way as to gain more compliance. e. Cognitive behavioral approaches such as mutual problem-solving strategies, self- management principles, and self-talk approaches to cope with depressive and self-defeating thoughts.

156 2. The use of less coercive discipline techniques and recognizing, tracking, and addressing problematic behaviors: a. Effective response to inappropriate behaviors. b. Setting limits effectively. c. Using nonviolent discipline procedures, such as time-outs, short-term privilege removal, response cost, work chores, and logical and natural consequences, and monitoring. d. The use of problem-solving and negotiation strategies. 3. Strengthening the parent and child relationship through a variety of techniques and strategies: a. Recognizing their children's positive qualities. b. Non-directive &/or child-directed play skills c. Responding to their children in a sensitive and genuine manner d. Teaching children and parents conflict management skills and self-control techniques e. Monitoring their children even when the children are away from home. 4.6.4 Individual, Group and Community Counseling Counseling's purpose is to provide help to those who need it. It embraces the adage that 'an ounce of prevention is equal to a pound of cure.' Counseling seeks to help people before the problem becomes heightened to a pathological level. Counseling comes in multiple ways depending on the nature of the problem it is concerned with. Individual counseling is counseling focused on the individual's immediate or near future concerns. Individual counseling is a one-on-one discussion between the counselor and the client, who is the person seeking treatment. The two form an alliance, relationship or bond that enables trust and personal growth. Group counseling is counseling with multiple individuals facing a similar concern. The strength in group counseling is that if you have 3, 5 or 10 people together all facing the same issue or similar issues, then they can work together. For example, group counseling is common for those in the midst of a divorce. The individuals in the group act as a

157 source of insight and support while reinforcing the idea that each individual is not the only one experiencing these problems. Community counseling services are often more specialized, allowing professionals to help their clients with a more particular set of skills. Community counseling is often located much closer to where patients actually live. This makes it easy for those with reduced mobility to attend their appointments without incident or delay. Community counseling takes the service outside of the setup and puts it directly into the community, and that's where this particular type of counseling gets its name.

4.7 Ethical Issues in Behaviour Management and Implications for Inclusion

The decision regarding what should be taught and how to teach children with mental retardation is very crucial. It is advisable to follow a team approach in the planning, programming as well as implementation of the techniques of behavior change. The team must necessarily include the concerned staff at school, specialist as well as parents of children with special needs. To the extent possible the child should be included in the team. The team approach has the greatest advantage that the child's need will be taken care of from all the aspects.

Classroom management involves encouraging students to change their behaviours. However, before and during any change process the following ethical issues must be considered.

1. Model appropriate leadership The student must see the educator's behavior as positive. To do this, the educator must develop a relationship of genuine caring, trust, and respect with the child. The child will then model her/his behavior after the educator's behavior.
2. Self-discipline Because self-discipline is the goal of behavior management, teachers should encourage it in the classroom. By building respect and trust, the child will begin to feel the need to control her/his own behavior. This respect and trust can be fostered by positive interactions.
3. Match experiences to the student Children should have positive experiences in school. An experience is usually positive if it is within the developmental stage of the child and has meaning for the child.
- 158 4. Show empathy The educator needs to consider the child's problems objectively to deal with them. Emotion inhibits objective thinking, while empathy allows us to view the problem from different perspectives.
5. High expectations Teachers must communicate to children their belief in each child's abilities and demand the highest achievement from them.
6. Freedom and independence to function Children should be allowed as much independence to function as possible. If limits need to be established to avoid undo failure or injury students should be allowed to experience the logical consequences of their actions. This must be done to develop self-reliance and independence.
7. Principle of normalization The child must be allowed to function in as normal an environment as possible.
8. Principle of fairness The intervention must be fair and allow the child to succeed in school. If consequences are applied they must be appropriate with regard to the degree of the offense.
9. Principle of respect for dignity and worth of the individual The intervention must provide the student an opportunity to learn or improve skills to master control over the student's environment without degrading the individual as a human being.
10. A continuum of behavior management interventions The educator should use the intervention which least restricts the child in the classroom, yet is still effective. Over-restricting the child imposes on the student's rights within the classroom.
11. Behavior change must be rational and well planned The behavior must be a behavior which hampers the child's performance in the classroom, the educator must have a rationale for changing the behavior, and follow a behavioral change procedure that will result in the implementation of a behavioral strategy that is prescriptive to the behavior and does not violate the ethical considerations or due process.
- 159 12. Consent. The educator should be sure to notify those involved with the child of the management procedures and obtain consent to proceed. This practice will help avoid conflict over the behavior intervention.

4.8

Let us Sum-Up 1. Behavior

modification refers to the techniques used to try and decrease or increase a particular type of behavior or reaction. This might sound very technical, but it's

used very frequently by all of us. Parents use this to teach their children right from wrong. Therapists use it to promote healthy behaviors in their patients. Animal trainers use it to develop obedience between a pet and its owner. We even use it in our relationships with friends and significant others. Our responses to them teach them what we like and what we don't.

2.

The purpose behind behavior modification is not to understand why or how a particular behavior started. Instead, it only focuses on changing the behavior, and there are various different methods used to accomplish it. This includes:

- Positive reinforcement
- Negative reinforcement
- Punishment
- Flooding
- Systematic desensitization
- Aversion therapy
- Extinction

3. Positive reinforcement is pairing a positive stimulus to a behavior. A good example of this is when teachers reward their students for getting a good grade with stickers. Positive reinforcement is also often used in training dogs.

Pairing a click with a good behavior, then rewarding with a treat, is positive reinforcement. 4. egative reinforcement is the opposite and is the pairing of a behavior to the removal of a negative stimulus. A child that throws a tantrum because he or she doesn't want to eat vegetables and has his or her vegetables taken away would be a good example.

160 5. Punishment is designed to weaken behaviors by pairing an unpleasant stimulus to a behavior. Receiving a detention for bad behavior is a good example of a punishment. 6.

In behavior modification, extinction eliminates the incentive for unwanted behavior by withholding the expected response.

A widespread

parenting technique based on extinction is the time-out, in which a child is separated from the group when he or she misbehaves. This technique removes the expected reward of parental attention. 4.9

Check Your Progress A. 1. What is maladaptive behaviour?

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..... 2. Explain the different behavior modification techniques?

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..... 3. Discuss about the A-8-C Model.

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..... B. 1.

Discuss about the classroom management for children with maladaptive behaviour. 2. Prepare a short note on Cognitive Behaviour Techniques.

161 C. Points for Discussion / Clarification

After going through the Unit you may like to have further discussions on some points and clarification on other. 1) Points for Discussion

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..... 2) Points for Clarification

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..... 4.10 Refereces and Further Readings
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Unit - 5 □□□□□ Therapeutic Intervention

Structure 5.1 Introduction 5.2 Objectives 5.3 Occupational Therapy: Definition, Objectives, Scope, Modalities and Intervention 5.3.1 Definition of Occupational Therapy 5.3.2 Aims of Occupational Therapy 5.3.3 Objectives of Occupational Therapy 5.3.4 Scope of Occupational Therapy 5.3.5 Modalities of Occupational Therapy 5.3.6 The Intervention Process 5.4 Physiotherapy: Definition, Objective, Scope, Modalities and Intervention. 5.4.1 Definition of Physiotherapy 5.4.2 Aims and Objectives of Physiotherapy 5.4.3 Scope of Physiotherapy 5.4.4 Modalities of Physiotherapy 5.4.5 Intervention of Physiotherapy 5.5 Speech Therapy: Definition, Objectives, Scope, Types of Speech, Hearing and Language Disorders and Intervention 5.5.1 Definition of Speech and Language Therapy 5.5.2 Objectives of Speech Therapy 5.5.3 Scope of Speech Therapy 5.5.4 Types of Speech, Hearing and Language Disorder. 5.5.5 Speech and Language Intervention 164 5.6 Yoga and Play Therapy: Definition, Objectives, Scope and Intervention 5.6.1 Meaning and Definition of Yoga 5.6.2 Objectives of Yoga 5.6.3 Scope of Yoga Therapy 5.6.4 Yoga Intervention 5.6.5 Definition of Play Therapy 5.6.6 Scope of Play Therapy 5.6.7 Importance of Play Therapy 5.6.8 Objectives of Play Therapy 5.6.9 Intervention of Play Therapy 5.7 Therapeutic Intervention: Visual Arts and Performing Arts (Music, Drama, Dance, Movement and Sports) 5.7.1. Visual Arts and Performing Arts 5.7.2 Music therapy 5.7.3. Drama Therapy 5.7.4 Dance and Movement Therapy 5.7.5 Sports Activities for Children with Special Needs 5.8 Let us Sum Up 5.9 Check your Progress 5.10 Reference 5.1 Introduction Treatment of developmental disabilities can come in a variety of different forms. The best treatment regimens are the result of an individualized treatment plan formed by a team of health care multidisciplinary professionals. The plan will be based on the severity of the disability and should involve patients, families, teachers, and caregivers in all phases of planning, decision making, and treatment. The individualized treatment plan will take into consideration both the immediate needs of the patient, and the long term prognosis for development. 165 Occupational therapy, or OT for short, is a treatment therapy that helps people achieves independence in all facets of their lives. If a child has physical disabilities or developmental delays, occupational therapy can improve their cognitive (thinking), physical and major skills as well as address psychological, social, and environmental factors that impact the child's functioning. Physical therapy (PT), or sometimes called physiotherapy, focuses on improving gross and fine motor skills, balance and coordination, and

strength and endurance. The child may be evaluated by a physical therapist to assess muscle and joint function, mobility, strength and endurance, oral motor skills such as feeding and talking, posture and balance, even the status of the heart and lungs. Speech therapy is a clinical program aimed at improving speech and language skills and oral motor abilities. This means talking, using sign language, or using a communication aid. Children who are able to talk may work on making their speech clearer, or on building their language skills by learning new words, learning to speak in sentences, or improving their listening skills. Dance and creative movement provide physical challenges in a structured, supportive environment for sensory integration. The intimate connection with music often makes dance feel less like exercise or physical therapy and more like leisure. Dance/Movement Therapy (DMT) has been used in the United States since World War II. Marian Chace, a dancer, choreographer, and teacher of modern dance in Washington D.C. during the 1930s and 1940s, first developed the mind-body connection as a form of therapy for her dance students. She "questioned why pupils who had no intention of being professional came to take dance classes" and started gearing her classes toward the needs and interests of recreational dancers. In 1942, she was asked to work with returning soldiers from World War II at St. Elizabeth's Hospital in Washington D.C. Dance/movement therapy was seen as promising because it could so easily be a group treatment. Chace developed her methods working with institutionalized, often schizophrenic and psychotic, individuals. Music therapy enhances one's quality of life, involving relationships between a qualified music therapist and individual; between one individual and another; between the individual and his/her family; and between the music and the participants. These relationships are structured and adapted through the elements of music to create a positive environment and set the occasion for successful growth.

166 Music Therapy is a well-established, research-based profession in which music is used to accomplish therapeutic and educational goals. Recreational therapy is based on the idea of increasing a person's independence and ability to function through participation in creative arts, dance, sports, adventure programs and puzzles or logic games. It is a holistic approach to wellness. According to the American Therapeutic Recreation Association, recreational therapy "aims to improve an individual's functioning and keep them as active, healthy and independent as possible in their chosen life pursuits." In most cases, these goals are accomplished by combining a person's speech, fine motor or gross motor goals with community involvement, while engaging in the person's preferred interests. 5.2

Objectives After going through this unit you will be able to

l
Define the different therapies like occupational, physio, speech, yoga and play, music, dance and movement.

l
Discuss the aims and objectives of the different therapies. l Narrate the scope and modalities of the therapies.

l
Describe the intervention procedures of the therapies. 5.3 Occupational Therapy: Definition, Objectives, Scope, Modalities And Intervention. 5.3.1 Definition of Occupational Therapy Occupational therapy is a method of treatment for which the primary area of concern is the patient's ability to perform functions required in day to day life. This method of treatment is also concerned with the social, psychological and cognitive development of the patient. In the early years, occupational therapy was regarded as a means to keep long term convalescent patients occupied. It derived the name "Occupational therapy" owing to this. Its contribution was limited to the field of chronic illness - mental illness, tuberculosis, leprosy etc.

Occupational therapy is a client-centred health profession concerned with

167 promoting health and well-being through occupation. The primary goal of occupational therapy is to enable people to participate in the activities of everyday life. Occupational therapists achieve this outcome by working with people and communities to enhance their ability to engage in the occupations they want to, need to, or are expected to do, or by modifying the occupation or the environment to better support their occupational engagement. (WFOT 2012) "

Occupational therapy is the art and science of directing man's participation in selected tasks to restore, reinforce and enhance the performance, facilitate learning of those skills and functions essential for adaptation and productivity, to diminish or correct pathology and to promote and maintain health." (Council of Standards, American Occupational Therapy Association, 1972) 5.3.2 Aims of Occupational Therapy A person with intellectual disability is observed to have dysfunction in almost all performance components. The specific aims of occupational therapy for persons with intellectual disability are as follows. (a) To facilitate the development of performance components of the patients. (b) To enhance independence of the patients. (c) To provide sensory stimulation. (d) To improve hand functions. (e) To enhance gross motor functions. (f) To facilitate development of perceptual motor functions. (g) To reinforce social development. (h) To enhance independence skills. (i) To provide vocational training. (j) To correct mal adaptive behaviour. (k) To provide extrinsic adaptations.

168 5.3.3 Objectives of Occupational Therapy Occupational Therapists work with children who have difficulties with the practical and social skills necessary for their everyday life. An Occupational Therapist will aim to enable the child to be as physically, psychologically and socially independent as possible. Occupational Therapists work in close partnership with the child and their family, schools and other healthcare professionals. Together they have a shared responsibility for meeting the child's needs. In schools, for example, they evaluate the child's abilities, recommend and provide therapy, modify classroom equipment, and help the child participate as fully as possible in school programs and activities. A therapist may work with the child individually, lead small groups in the classroom, consult with a teacher to improve the functioning skills of the child etc. Occupational therapy is provided when there is a disruption in function in one or more of the following the areas: Gross Motor Skills: Movement of the large muscles in the arms, and legs. Abilities like rolling, crawling, walking, running, jumping, hopping, skipping etc. Fine Motor Skills: Movement and dexterity of the small muscles in the hands and fingers. Abilities like in-hand manipulation, reaching, carrying, shifting small objects etc. Cognitive Perceptual Skills: Abilities like attention, concentration, memory, comprehending information, thinking, reasoning, problem solving, understanding concept of shape, size and colors etc. Sensory Integration: ability to take in, sort out, and respond to the input received from the world. Sensory processing abilities like vestibular, proprioceptive, tactile, visual, auditory, gustatory and olfactory skills. Visual Motor Skills: A child's movement based on the perception of visual information. Abilities like copying. Motor Planning Skills: Ability to plan, implement, and sequence motor tasks. Oral Motor Skills: Movement of muscles in the mouth, lips, tongue, and jaw, including sucking, biting, chewing, blowing and licking. Play Skills: To develop age appropriate, purposeful play skills Socio-emotional Skills: Ability to interact with peers and others.

169 Activities of daily living: Self-care skills like daily dressing, feeding, grooming and toilet tasks. Also environment manipulation like handling switches, door knobs, phones, TV remote etc. Occupational therapists in schools collaborate with teachers, special educators, other school personnel, and parents to develop and implement individual or group programs, provide counselling, and support classroom activities. Occupational therapists design and develop equipment or techniques for improving existing mode of functioning. 5.3.4 Scope of Occupational Therapy Occupational Therapists work with parents/care givers and others to assess if a child has difficulties with practical and social skills. Occupational Therapists assess the physical, psychological and social functions of the individual identify areas of dysfunction and involves the individual in a structured programme of activity to overcome disability. Following assessment, the Occupational Therapist will design and implement programs with appropriate strategies in order to enable the child to maximize his/her potential. Occupational Therapists provide services to individuals often in conjunction with physicians, social workers, psychologists, and other therapists. Occupational therapists use qualitative and quantitative assessment methods, including standardized tests, as well as devices, to analyze and diagnose the nature and extent of dysfunction. Occupational therapists develop an individualized plan of care, tailored to each patient's needs. 5.3.5 Modalities of Occupational Therapy Occupational Therapy is a form of treatment which directs the patients to practice and master human activities. Thus human activity is indeed the foremost modality of occupational therapy. The modalities of occupational therapy

are as 1. Human Activity. 2. Extrinsic adaptation: Extrinsic adaptation is a adaptation in the physical, natural or non human environment of the person. Here adaptation refers to the structural adjustment or change in factors in the environment.

170 3. Splints and pressure garments. 4. Therapist. 5. Environment 6. Teaching/ Learning Process. 5.3.6 The Intervention Process Occupational therapy intervention for people with intellectual disability is an on-going process that is both gradual and dynamic. Treatment is provided throughout the life cycle in accordance with the client's changing needs, desires and preferences in all areas of occupation. The intervention often requires repeated drills and practice to achieve internalization and learning, and performance in a variety of contexts to enable generalization. As is the case with respect to assessment, the intervention is preferably carried out in the client's various daily environments. This enables and encourages the client's participation in the many contexts of his/her life. Occupational therapy interventions for people with intellectual disabilities are specifically adapted to the client with respect to the degree and type of support needed as well as the context. Interventions may include direct treatment as well as environmental adaptations, guidance, monitoring and counseling (including of the family, the educational staff, the clinical staff, employers and others).

Examples of Occupational Therapy Intervention: Activities of daily living: including activities directed to the person's care of his/her hody needs (ADL) such as personal hygiene, eating, dressing, and instrumental activities of daily life (IADL) such as preparing a meal or managing finances. This area represents a central focus of i rtervention in occupational therapy for this population. For example, with respect to activities related to eating, the intervention can range from adapting the feeding environment, choosing preferred food or bringing the food to one's mouth, to teaching more advanced skills such as organizing shopping, and meal preparation. Learning/Studies: These are activities necessary to be a student and to participate in a learning environment, including academic and non-academic activities. Intervention in this area covers a variety of educational settings such as day care centers for very young children, kindergartens and special education schools (ages 3-21 years), regular school settings and professional training facilities. The intervention is varied and may focus on

171 gaining basic learning-skills, such as understanding cause and effect processes and object permanence, or on more complicated skills, such as preparation for learning and writing, organization in time, in space and with accessories, adaptation to different learning environments, the use of information technologies and computers and gaining learning strategies. In addition, the intervention can include adapting various learning environments. Work: These are productive activities, whether for remuneration or not, that include preparing for work, producing a product and providing services. Intervention in this area covers a variety of work settings including: special educational settings in which students receive training to enter the work force, youth rehabilitation centers, adult sheltered-work facilities, an array of protected supportive community work systems, and placement-services for gaining open market positions. Intervention varies and may include basic work skills training (behavior norms, work routines), developing and practicing basic cognitive abilities, practicing motor skills, exposure to varied work opportunities, support and advice for developing areas of interest, identifying abilities and choosing suitable occupations, analyzing occupations and adapting them as needed, as well as supporting and assisting placement in various work sights in the community. Play: These are activities that are generally internally motivated and provide pleasure, entertainment and learning. Play-intervention, as an occupational therapy goal in this population, is directed towards the most basic experiencing of playas a source of pleasure, as well as providing the client with an opportunity to participate in play activities. The intervention includes drills in basic skills such as the use of equipment, recognizing rules and agreed-upon behavior patterns, or choosing suitable play activities. In addition, play represents a treatment method for learning and practicing a variety of social, motor and functional skills. Leisure: These are non-obligatory activities that are internally motivated and are performed at times that are not devoted to work, studies, self-care or sleep. Research reveals that people within this population have a relatively large amount of time to devote to leisure, whereas their participation in leisure activities is minimal (Buttimer & Teirney, 2005). Therefore, coping with leisure within this population is a central topic. Intervention in this area may focus on exposure to varied leisure opportunities, identification and choice of areas of interest, planning leisure time and participation in activities that lead to a perception of capability, pleasure, control and satisfaction.

172 Social participation: These are activities related to agreed-upon behavior patterns expected of an individual within a given social system (e.g. community, family or with friends). The intervention within occupational therapy encourages the person to gain skills in the various areas or occupation and thus supports and strengthens social participation. For this population, an emphasis is places upon understanding acceptable social norms and as well as learning and practicing activities that lead to satisfactory social interactions. Accessibility and Environmental Modification: Occupational therapy practice relates to the person, the occupation and the

environment. The occupational therapist's broad knowledge base in the areas of function and limitation enables him/her to identify, through performance analysis in the different areas of occupation, environments and/or tasks that should be modified. The various limitations that characterize the population of people with intellectual disabilities require both general and client-specific environmental modifications to ensure accessibility. The characteristic difficulty in problem-solving, initiative and coping with unfamiliar situations, amplifies the need for accessibility modifications for this population. These accessibility modifications include changes in the environment (as in widening passageways, modifying playgrounds or adding symbol signs), in the equipment (such as adapting seating systems or adapting feeding aids), or in the task (such as changing the complexity of instructions or dividing a task into sub-stages). Assistive technology is one of the methods used to adapt the environment and includes modifications of hardware; software and various combinations thereof (such as a virtual keyboard, a touch screen, a motorized wheelchair, switch systems, computer programs and internet sites, adapted content amount, or voice output devices). Thus, for example, a switch can be modified to be activated through the person's head or hand. Other modifications of the switch may include size, colour, texture, or sensitivity (such as speed or pressure response). Assistive technology promotes a variety of functions related to the individual, the occupation and the environment. In addition, it allows for the modification of an individual's environment in the manner in which his/her requires, by relating to his personal abilities, wants, areas of interest and specific limitations and difficulties. Environmental modification is likely to significantly improve a person's ability to participate in all areas of occupation, his or her level of independence and the degree of supports required.

173 In summary, the occupational therapist, as part of a therapeutic, rehabilitative and educational profession plays a central role within the support system available to people with intellectual and developmental disabilities, throughout the life cycle. As such, occupational therapists hold key positions as leaders in this area. Working with people with intellectual and developmental disabilities requires consideration of function, independence and participation in the various areas of occupation, which enables the occupational therapist to utilize all the areas of knowledge and expertise included in the practice of occupational therapy. 5.4

Physiotherapy: Definition, Objective, Scope, Modalities and Intervention 5.4.1 Definition of Physiotherapy It is also called physical therapy. The treatment of physical dysfunction or injury by the use of therapeutic exercise and the application of physical modalities (like heat, light, cold, current, water, sound waves). Assistive devices are also used as a part of the treatment programme. They are intended to restore or facilitate normal function or development. 5.4.2 Aims and Objectives of Physiotherapy

Physiotherapy in the field of mental retardation is aimed at improving overall motor functions of the child to the maximum extent possible,

so as to make the child independent in walking and carrying out activities of daily living. If it is not possible for the person to walk, and carry out activities independently, then aids and appliances are trained given to the person to use it. (A) Objectives of physiotherapy in general 1. Reduces or relieves pain, muscle spasm, tenderness of muscles. 2. It helps to reduce or relieve swelling. 3. It helps to reduce or relieve inflammation (means the response of the body in the form of pain, swelling, muscle spasm and tenderness of the muscles etc. in the presence of any foreign body). 4. To improve ventilation of lungs, by giving, deep breathing exercises and postural drainage.

174 5. To encourage correct weight bearing and weight transference on both sides of the body. 6. Re-education of affected or paralysed muscles. 7. It is effective in healing of infected wounds. 8. It helps to check the abnormal growth of bone (bony spurs). 9. Breaking up of adhesion formation (gluing of joint structures by synovial fluid). 10. To keep the person physically fit. 11. To teach relaxation. 12. Stimulation of sensory and motor nerves if sensations are reduced or lost. 13. Post fracture and dislocation, management. (B) Objectives of physiotherapy in relation to Intellectual Disability 1. To facilitate the development of child gross motor and fine motor. 2. To prevent or correct contractures and deformities. 3. Prevent or correct wasting and atrophy of muscle. 4. To normalize muscle tone. 5. To maintain or improve the muscle power. 6. To maintain and improve the joint range of movement. 7. To emphasize the importance of handling and positioning the child. 8. To make the child independent in walking and activities of daily living. 9. Provide aids and appliances and to train the person and parents how to use assistive devices. 10. To improve posture, gait, balance coordination. 11. Inhibition of abnormal reflex activity, abnormal patterns of movement and abnormal muscle tone and facilitation of normal in place of abnormal. 12. To keep the children physically fit. 5.4.3 Scope of Physiotherapy Physiotherapy has scope in treating a wide range of conditions. It plays an important

175 role in all the branches of medical sciences, especially Orthopaedics, Paediatrics, Neurology, Cardio thoracic, Surgery, Sport Medicine etc. In set ups like leprosy, paraplegic and poliomyelitis after plastic surgery, burns clinics, spinal cord injury centres and in assistive devices manufacturing units etc. Physiotherapy has three major functions in the management of children with intellectual disability. 1. To facilitate motor development 2. To prevent and correct contractures and deformities. 4. To make the child as independent as possible and functional (locomotor function and activities of daily living).

5.4.4 Modalities of Physiotherapy

1. Hydrotherapy: Hydrotherapy, or water therapy, is the use of water (hot, cold, steam, or ice) to relieve discomfort and promote physical well-being.
2. Electrotherapy: Electrotherapy is the use of electrical energy as a medical treatment.
3. Exercise Therapy: Exercise Therapy is a regimen or plan of physical activities designed and prescribed for specific therapeutic goals.
4. Massage or Manipulation
5. Gait: Gait training is a type of physical therapy. It can help improve your ability to stand and walk.

5.4.5. Intervention of Physiotherapy

Role of Physiotherapist in the field of Intellectual Disability

- l Diagnostician: Here the physiotherapists assess the client and order for the necessary investigation, on the basis of this therapist arises at diagnosis. According to the diagnosis therapy will be planned.
- l Interventionist: Therapist plays a role as interventionist in setting intervention goals, planning and implementation of therapy programme, giving follow-up and 176 regular evaluation of the client, modifying programme as per the clients need.
- l Team member: Therapist treated as a team member as the team member in multidisciplinary approach, this is the most commonly seen approach in field of mental retardation. In Trans disciplinary approach therapist plays a role as a team member by gathering information and helps in planning intervention along with other experts of the team. In certain condition therapist become a case manager and given input.
- l Providing Information and guidance: As the parents need information guidance regarding the condition of the child and therapy, the therapist gives proper information to parents and also to other professional whenever needed.
- l Counsellor: Physiotherapist plays a counsellor role in the field of mental retardation. Parent counselling is an important aspect, which should be included in intervention programme. The parents of the clients may not be aware of the condition of child and the facilities available for their child. They will come to you in a state of confusion and anxiety to know what happening with their child. Before as part of planning and intervention programme therapist should give proper information to the parents regarding the following things:
 - l Condition of the child.
 - l Child's needs and abilities.
 - l How the therapy is going to help the child in improving his functional abilities.
 - l Proper instructions given to the parents.
 - l Training is given to the parents how to give therapy at home.
 - l What are the facilities and services available for the persons with intellectual disability.
- l Trainer: Therapist plays a role of trainer, as the therapist will train the parents how to give therapy at home and conducts classes and workshops for parents and other professional, to make them aware of disability and affects of intervention on the clients.
- l Researcher: Research is an important aspect in the field of intellectual disability. Therapist also plays a role as a researcher by doing research on different aspects 177 and population study. To innovate new techniques and equipment for making the intervention better and to get better outcome results.
- l Leader: Therapist plays a role of leader of the team voicing on behalf of the client and by giving guidelines to the former self-help groups by the parents.
- l

As an administrative officer: Therapist plays a role of administrative officer by heading and organization and establishing a institution or center to serve the people better. | Provider of referral: Therapist will give referrals to the concern professionals to obtain information of the clients and to related services outside the institute for investigations or for expert opinion.

5.5 Speech Therapy: Definition, Objectives, Scope, Types of Speech, Hearing and Language Disorders and Intervention

5.5.1 Definition of Speech and Language Therapy: Speech and language therapy provides treatment, support and care for children and adults who have difficulties with communication, or with eating, drinking and swallowing. Speech and language therapists (SL Ts) are allied health professionals. They work with parents, carers and other professionals, such as teachers, occupational therapists and doctors.

5.5.2 Objectives of Speech Therapy A speech pathologist's narrow, well-defined objectives work toward achieving broad therapeutic goals. This professional develops an individualized treatment plan for each patient, which often includes time-based objectives. For example, his objectives may include helping a patient correctly say several new sounds by the end of a quarter, marking period or year. Other objectives can include helping a patient to understand and to explain a speaker's gestures, demonstrate newly learned conversation strategies, explain the perception of body language, speak for a period of time without stuttering and improve reading comprehension to a specific level. A speech language pathologist sets broad but specific goals for each of his patients. Specific goals can include helping patients develop clearer speech, learn to use alternate 178 methods of communication, develop better reading and writing skills, and strengthen throat and neck muscles. Goals also may include coordinating treatment programs with other professionals or referring patients for other treatments. For example, a patient with a swallowing disorder may benefit from the collaborative care of a speech language pathologist and a medical doctor.

5.5.3 Scope of Speech therapy Speech Therapy is an Allied Health Science subject. Medical advancement in this field, awareness of the need for early intervention etc has increased the scope of Speech Therapy. A number of Speech Therapy courses are available now in India and abroad. Speech Therapy has its necessity in teaching and training children with intellectual disability.

5.5.4 Types of Speech, Language and Hearing Disorders The most intensive period of speech and language development is during the three of life a period when the brain is developing and maturing. There skills appear to develop best in a world that is rich with sounds, sights, and consistent exposure to the speech and language of others. At the root of this development is the desire to communicate or interact with the world. The beginning sign of communication occur in the first few days of life where in infant learns that a cry will bring food, comfort, and companionship. Research has shown that by 6 months of age, most children recognize the basic sounds of their native language.

5.5.4 (a) Speech and Language Disorders A speech disorder refers to a problem with the actual production of sounds. A language disorder refers to a problem understanding or putting words together to communicate ideas. Speech disorders include:

1. Articulation disorders: difficulties producing sounds in syllables or saying words incorrectly to the point that listeners can't understand what's being said.
3. Fluency disorders: problems such as stuttering, in which the flow of speech is 179 interrupted by abnormal stoppages, partial-word repetitions ("b-b-boy"), or prolonging sounds and syllables (sssssnake).
4. Resonance or voice disorders: problems with the pitch, volume, or quality of the voice that distract listeners from what's being said. These types of disorders may also cause pain or discomfort for a child when speaking.

Language disorders can be either receptive or expressive:

1. Receptive disorders: difficulties understanding or processing language.
2. Expressive disorders: difficulty putting words together, limited vocabulary, or inability to use language in a socially appropriate way.
3. Cognitive-communication disorders: difficulty with communication skills that involve memory, attention, perception, organization, regulation, and problem solving.

5.5.4 (b) Hearing disorders There are four types of hearing loss:

- | Auditory Processing Disorders
- | Conductive |
- | Sensorineural |
- | Mixed.

IIII Auditory Processing Disorders Auditory Processing Disorders occur when the brain has problems processing the information contained in sound, such as understanding speech and working out where sounds are coming from.

IIII Conductive Hearing Loss Conductive Hearing Loss occurs when there is a problem with the Outer or Middle Ear which interferes with the passing sound to the Inner Ear. It can be caused by such things as too much earwax, Ear Infections, a punctured eardrum, a fluid build-up, or abnormal bone growth in the Middle Ear such as Otosclerosis. It is more common in children and indigenous populations. Surgery and some types of hearing technologies can be used to treat Conductive Hearing 180 Loss such as Bone Conduction Hearing Aids, Bone Anchored Hearing Devices and Middle Ear Implants.

IIII Sensorineural

Hearing Loss Sensorineural Hearing Loss occurs when the hearing organ, the Cochlea, and/or the auditory nerve is damaged or malfunctions so it is unable to accurately send the electrical information to the brain. Sensorineural Hearing Loss is almost always permanent. It can be genetic or caused by the natural aging process, diseases, accidents or exposure to loud noises such as Noise-induced Hearing Loss and certain kinds of chemicals and medications. Auditory Neuropathy is another form where the nerves that carry sound information to the brain are damaged or malfunction. Technologies such as Hearing Aids, Cochlear Implants and Hybrid Cochlear Implants can help reduce the effects of having Sensorineural Hearing Loss. **5.5.5 Mixed Hearing Loss** A Mixed Hearing Loss occurs when both Conductive Hearing Loss and Sensorineural Hearing Loss are present. The sensorineural component is permanent, while the conductive component can either be permanent or temporary. For example, a Mixed Hearing Loss can occur when a person with Presbycusis also has an Ear Infection.

5.5.5 Speech and Language Intervention In speech-language therapy, a speech language pathologist will work with a child one- to-one, in a small group, or directly in a classroom to overcome difficulties involved with a specific disorder. Therapists use a variety of strategies, including:

Language intervention activities: The SLP will interact with a child by playing and talking, using pictures, books, objects, or ongoing events to stimulate language development. The therapist may also model correct vocabulary and grammar and use repetition exercises to build language skills.

Articulation therapy:

Articulation, or sound production, exercises involve having the therapist model correct sounds and syllables in words and sentences for a child, often during play activities. The level of play is age-appropriate and related to the child's specific needs. The SLP will physically show the child how to make certain

181 sounds, such as the "r" sound, and may demonstrate how to move the tongue to produce specific sounds.

Oral-motor/feeding and swallowing therapy: The SLP may use a variety of oral exercises -including facial massage and various tongue, lip, and jaw exercises - to strengthen the muscles of the mouth for eating, drinking, and swallowing. The SLP may also introduce different food textures and temperatures to increase a child's oral awareness during eating and swallowing.

General guidelines for interventions

- Selection of Specific goals
- Organizing all the gathered information
- Structure the environment

Selection of relevant materials

- Transformation and adaptation of the material
- Use of object from the environment
- Maintenance of schedule
- Principles for therapy
- Highlighting new or relevant information
- Pre-organized information
- Trained rehearsal strategies

- Using over learning & repetition
- Training in natural environment
- Early Intervention

5.6 Yoga and Play Therapy: Definition, Objectives, Scope and Intervention

5.6.1 Meaning and Definition of Yoga The word yoga comes from the Sanskrit root 'Yug' meaning to join on yoke, implying the integration (on joining) of every aspect of human being from the inner most to the external. Yoga is practical philosophy that aims at uniting the body, mind, and spirit for

182 health and fulfilment. The father of modern yogashashtra Patanjali Maharshi defines yoga as 'Yogaschitta Vrutti Nirodhaha' that is yoga is controlling the nature of the mind. The ultimate aim of this philosophy is to strike a balance between mind and body and attain self- enlightenment. To achieve this, yoga uses movement, breath, posture, relaxation and meditation in order to establish a healthy, lively and balanced approach to life. Though the exact origins of Yoga are unknown but Yoga is considered to be the oldest physical discipline in existence. Yoga, thus symbolizes balance in every area of life. Yoga is one of the six schools of ancient Indian Philosophy. It is the practice that enables one to achieve higher levels of performance, bringing out the hidden potentials from within. Systematic Yoga practice will increase the physiological and psychological well being.

5.6.2 Objectives of Yoga

Yoga practice reduces tension, stress, anxiety, weakness, helplessness, fear, negative thoughts etc. Which are increasing day by day in this mechanical human life.

It treats the prolonged diseases or deficiencies like diabetes, asthma, heart problems, pains, sprains, indigestion etc. and makes the body active and good looking.

Yoga practice equips the practitioners with devotion, attention, and concentration and alertness in every activity that he does. He also discharges his responsibilities with dedication thereby get respect and honor at his work.

Man

Man

can prove his life worth living by developing his self physically and psychologically that contribute for the development of spiritual instinct in him.

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As soon as one is habituated for yoga practice, there would be number of changes in his routine activities, habits, thoughts, food habits, behaviors etc.

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Improvement in balance is one of the major benefits of Yoga. Improved balance is referred not only to the sharp physical coordination but also to the balance between the left and right, front and back and high and low aspects of one's body. lllll Along with a host of benefits, Yoga also helps in developing and attaining personal values. Yoga erases a variety of ills in human beings. These may range from feelings of frustration, persecution and insecurity. Yoga greatly helps in the development of personal values. Personal values are those values which an individual develops and lives by all through his life.

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Yoga and social values are closely related to each other. Social values are a set of philosophy that an individual carries for all his life. Yoga possesses great power to inculcate those values that go a long way in making a man complete. lllll Yoga helps an individual not only to realize his own self but also understand other issues around him/her. Yogic theory and practice lead to increased self-knowledge. Yogic practices like breathing and posture exercises help in attaining and maintaining health, physical and mental, and relaxation. The knowledge gained through Yoga is not simply that of the practical kind relating to techniques, but of a spiritual sort pertaining to grasping something about the nature self and other matters. 5.6.3 Scope of Yoga Therapy Yoga is certainly more than mastering its postures and asanas and increasing the strength and flexibility of body. It indicates towards healing of mind and body and attaining the state of self-enlightenment. It is said that in early periods when Yoga was just introduced, the main purpose was to heal community members and the practitioners act as religious mediators. Needless to say, practicing of Yoga includes the traditional aspects too such as practicing different poses, chanting of mantra, observing breathing habit and controlling thoughts coming to mind with the help of meditation. Today, it has been practiced for fitness, healthy body and mind, strength, flexibility, emotional well-being and much more. The main purpose of practicing Yoga is to taking control over the body, mind and emotional aspects. The cessation of bad thoughts creates a positive vibe around the person and makes him healthy overall. 5.6.4 Yoga Intervention Yoga is an ancient Indian practice which involves moving the body and training the mind to achieve balance and well-being. The purpose of traditional yoga is for each individual to be healthy, both physically and mentally, and able to reach his or her highest potential as a person. Yoga aim is to prepare the body for meditation through breathing and physical exercises. Yoga emphasizes body-mind wellness through postures or asanas which tone and strengthen our muscles and increase our flexibility. The different asanas, particularly the twists and inversions, stimulate internal organs, as well as the nervous system, and promote circulation in all the body's major organs and glands. Importance of yoga for children with intellectual disability 1. Helps to co-ordinate the activities of the mind and body.

184 2. Tends to reduce the distracted state of mind and helping the mind to deal on the present activity. 4. Helps to improve his adaptive behavior to a degree unobtainable before. 5. Actively increase the ability to concentrate on the present activity. 6. Aims at improving general health, concentration, self-reliance and social relationship of the persons with mental retardation. 6. Yoga has been tried as an adjunct in education of children with mental retardation and attention deficit hyperactivity disorder. 5.6.5 Definition of Play Therapy Play Therapy uses a variety of play and creative arts techniques (the 'Play Therapy Tool-Kit (TM)' to alleviate chronic, mild and moderate psychological and emotional conditions in children that are causing behavioural problems and/or are preventing children from realising their potential. The Play Therapist works integratively using a wide range of play and creative arts techniques, mostly responding to the child's wishes. This distinguishes the Play Therapist from more specialised therapists (Art, Music, Drama etc). The greater depth of skills and experience distinguishes a play therapist from those using therapeutic play skills. Play therapy utilizes play, children's natural medium of expression, to help them express their feelings more easily through toys instead of words. Association for Play Therapy (APT) defines play therapy as "the systematic use of a theoretical model to establish an interpersonal process wherein trained play therapists use the therapeutic powers of play to help clients prevent or resolve psychosocial difficulties and achieve optimal growth and development." In the textbook Play Therapy: The Art of the Relationship (2nd ed.), Landreth (2002) defined child-centered play therapy: A dynamic interpersonal relationship between a child (or person of any age) and a therapist trained in play therapy procedures who provides selected play materials and facilitates the development of a safe relationship for the child (or person of any age) to fully express and explore self (feelings, thoughts, experiences, and behaviors) through play, the child's natural medium of communication, for optimal growth and development.

185 5.6.6 Scope of Play Therapy Children are referred for play therapy to resolve their problems (Carmichael; 2006; Schaefer. 1993). Often, children have used up their own problem solving tools, and they misbehave. may act out at home, with friends, and at school (Landreth, 2002). Play therapy allows trained mental health practitioners who specialize in play therapy. to assess and understand children's pia). Further. play therapy is utilized to help children cope with difficult emotions and find solutions to problems (Moustakas, 1997; Reddy, Files-Hall, & Schaefer, 2005). l3y confronting problems in the clinical Play Therapy setting, children find healthier solutions. Play therapy allows children to change the way they think about, feel toward, and resolve their concerns (Kaugars & Russ, 200 l). Even the most troubling problems can be confronted in play therapy and lasting resolutions can be discovered, rehearsed, mastered and adapted into lifelong strategies (Russ, 2004). 5.6.7 Importance of Play therapy

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is difficult for most children below age ten to eleven to sit still for sustained periods of time. Play therapy provides for children's need to be physically active. lllll In play, children discharge energy, prepare for life's duties, achieve difficult goals and relieve frustrations. lllll As children play, they are expressing the individuality of their personalities and drawing upon inner resources which can become incorporated into their personality. Virginia M. Axline (1974) who developed the child-centered play therapy asserted that: "A play experience is therapeutic because it provides a secure relationship between the child and the adult, so that the child has the freedom and room to state himself in his own terms, exactly as he is at the moment in his own way and in his own time. " lllll Play therapy helps to actualize the ultimate objectives of elementary schools facilitating the intellectual, emotional, physical and social development of children from the learning opportunities and experiences offered in school.

186 5.6.8 Objectives of play therapy lllll

Develop

a more positive self-concept lllll Assume greater self-responsibility lllll Become more self-accepting lllll Become more self-directing lllll Become more self-reliant lllll Become more trusting of self • Experience a feeling of control • Become sensitive to the process of coping • Develop an internal source of evaluation • Engage in self-determined decision making 5.6.9 Intervention of Playas a therapy results in • Developing a more positive self-concept • Assume greater self-responsibility • Become more self-accepting • Become more self-directing • Become more self-reliant • Become more trusting of self • Experience a feeling of control • Become sensitive to the process of coping • Develop an internal source of evaluation • Engage in self-determined decision making 5.7 Therapeutic Intervention: Visual Arts and Performing Arts (Music, Drama, Dance, Movement and Sports) 5.7.1 Visual Arts and Performing Arts : Art reflects human emotions and human beings spontaneously express their frame of

187 mind through various art forms. Thus the intellectual mind merges with the artistic streak, giving birth to art. The visual arts are those creations we can look at, such as a drawing or a painting. For example Drawing, painting, sculpture, architecture, photography, film, printmaking. It also includes the decorative arts of: ceramics, furniture and interior design, jewellery making, metal crafting and wood working. The literature available for utilizing art education for exceptional students is generally addressed to art education teachers to use in their classroom. However, expanding the use of art in the education of children with special needs into general and special education is advantageous to these individuals. The art educator can evolve to be a resource and perhaps a liaison between the special and general educator. Thus, to improve the education afforded to students with special needs, art can act as a bridge between general, and art educators to enhance the communication and cooperation between these specialists. Creating a cohesive network between art educators, special and general educators, draws upon the unique perspective that each educator has that can help the others in bolstering special education programs. The visual arts are a powerful teaching tool that can enhance the cognitive, emotional and social development of children. Children in special education programs are particularly in need of the assistance that the arts can provide. The performing arts range from vocal and instrumental music, dance and theatre to pantomime, sung verse and beyond. They include numerous cultural expressions that reflect human creativity and that are also found, to some extent, in many other intangible cultural heritage domains. Music is perhaps the most universal of the performing arts and is found in every society, most often as an integral part of other performing art forms and other domains of intangible cultural heritage including rituals, festive events or oral traditions.

5.7.2 Music Therapy

Music therapy is a well-established allied health profession similar to occupational and physical therapy. It consists of using music therapeutically to address behavioral, social, psychological, communicative, physical, sensory-motor, and/or cognitive functioning. Because music therapy is a powerful and non-threatening medium, unique outcomes

188 are possible. For individuals with diagnoses on the autism spectrum, music therapy provides a unique variety of music experiences in an intentional and developmentally appropriate manner to effect changes in behavior and facilitate development of skills. Music therapy may include the use of behavioral, biomedical, developmental, educational, humanistic, adaptive music instruction, and/or other models. Music therapy enhances one's quality of life, involving relationships between a qualified music therapist and individual; between one individual and another; between the individual and his / her family; and between the music and the participants. These relationships are structured and adapted through the elements of music to create a positive environment and set the occasion for successful growth. The interventions used in Music Therapy aid in fostering skills across the entire developmental spectrum for children with special needs. Music Therapists encourage a child's sense of exploration and wonder as they focus on the goals targeted in your child's Individualized Education Program (IEP). How Does Music Therapy Make a Difference with Young Children?

- Music stimulates all of the senses and involves the child at many levels. This "multi-modal approach" facilitates many developmental skills.
- Quality learning and maximum participation occur when children are permitted to experience the joy of play. The medium of music therapy allows this play to occur naturally and frequently.
- Music is highly motivating, yet it can also have a calming and relaxing effect. Enjoyable music activities are designed to be success-oriented and make children feel better about themselves.
- Music therapy can help a child manage pain and stressful situations.
- Music can encourage socialization, self-expression, communication, and motor development. Because the brain processes music in both hemispheres, music can stimulate cognitive functioning and may be used for remediation of some speech/ language skills.

189 5.7.3 Drama Therapy Drama therapy is the intentional use of drama and/or theater processes to achieve therapeutic goals. Drama therapy is active and experiential. This approach can provide the context for participants to tell their stories, set goals and solve problems, express feelings, or achieve catharsis. Through drama, the depth and breadth of inner experience can be actively explored and interpersonal relationship skills can be enhanced. Participants can expand their repertoire of dramatic roles to find that their own life roles have been strengthened. 5.7.4 Dance / Movement Therapy Dance/movement therapy, a creative arts therapy, is rooted in the expressive nature of dance itself. Dance is the most fundamental of the arts, involving a direct expression and experience of oneself through the body. It is a basic form of authentic communication, and as such it is an especially effective medium for therapy. Based in the belief that the body, the mind and the spirit are interconnected, dance/movement therapy is defined by the American Dance Therapy Association as "the psychotherapeutic use of movement as a process that furthers the emotional, cognitive, social and physical integration of the individual." Benefits of Dance and Movement Therapy: Dance Movement therapy can help children with special needs in varied ways and in all the areas of impairment. The benefits experienced are as follows: ● It helps in improving attention and concentration and thus helps in furthering education ● Dance as a way of expression of emotion enables children to express through movements ● It helps in forming better relation ● Due to liking towards repetitive movements, a therapist can repeat a movement pattern which the patient needs to learn and when they start imitating the movement vocabulary develops. ● This helps them in learning different patterns of movements required for daily life activities

190 ● Group sessions in dance movement therapy enables in developing social skills and communications of autistic person ● Doing a choreographed dance movement sequence in a series of sessions in a row helps in improving memory and recapitulation skills. ● Touch therapy helps in developing trust on others as well as helps in reducing sensitivity to physical contact and touch. ● Dance movement therapy helps in improving body image of an autistic person.

Dance/movement therapists work with individuals of all ages, groups and families in a wide variety of settings. They focus on helping their clients improve self-esteem and body image, develop effective communication skills and relationships, expand their movement vocabulary, gain insight into patterns of behavior, as well as create new options for coping with problems. Movement is the primary medium dance/movement therapists use for observation, assessment, research, therapeutic interaction, and interventions. Dance/movement therapists work in settings that include psychiatric and rehabilitation facilities, schools, nursing homes, drug treatment centers, counseling centers, medical facilities, crisis centers, and wellness and alternative health care centers. Dance/movement therapy can be a powerful tool for stress management and the prevention of physical and mental health problems. Dance/movement therapists integrate the dancer's special knowledge of the body, movement, and expression with the skills of psychotherapy, counseling, and rehabilitation to help individuals with a wide array of treatment needs. Social, emotional, cognitive, and/or physical problems can be addressed through DMT via group and individual sessions in many different types of settings from hospitals and clinics to schools. The fact that dance/movement therapists are immersed in the language of the body, rather than focusing solely on the verbal, lends characteristics to their work that set it apart from other types of therapy.

5.7.5 Sports Activities for Children with Special Needs All individuals benefit from regular physical activity and children with special needs especially. Children with special needs are benefitted in the following ways from physical or sports activities. ● We can see improvements in muscle strength, coordination, and flexibility. ● Improve exercise endurance, cardiovascular efficiency, and possibly increased life expectancy .

191 ● Experience better balance, motor skills and body awareness. ● Will show improvement in behavior, academics, self-confidence and building friendships. ● Will have positive changes in their health, quality of life and boost to their self- esteem. ● Gets to experiences a sense of accomplishment and possibly the taste of winning or personal satisfaction. ● Experience increases in attention span, on-task behavior, and level of correct responding. ● Will increase appetite and improve quality or sleep. ● Will see a decrease in secondary health complications like obesity, high blood pressure, low HOL ("good") cholesterol and diabetes. ● Will find an outlet for their physical energy, will help them cope with stress, anxiety and depression. Sports and activities especially good for special needs children: ● Swimming ● Bicycling ● Soccer ● Football ● Handball ● Gymnastics ● Bocce (is a ball sport) ● Weightlifting Sports, especially fundamental and movement education based sports like gymnastics, provide tremendous benefits for children with special needs. Physical education programs can considerably improve the lifestyle of a disabled child and are highly recommended. These programs may help control obesity, promote activeness, increase a child's self- image and social skills, and increase motivation. The physical activity along with support,

192 rewards, and interaction can, among other benefits, be very helpful to these children and their families. Physical Improvements - Children suffering from cognitive disabilities are most likely going to suffer from physical impairments as well. These children have substantial problems with motor skills in areas such as hopping, skipping, and jumping. Involvement in gymnastics can help these individuals develop fundamental motor and physical fitness skills. Self-Esteem - Developing a sense of self-esteem and confidence is an extremely important part of special education. These children need to be involved in environments where they feel that they are contributing successfully to a group. Their abilities in all other skill areas will improve as a result of a positive self-image and confidence. Cognitive Benefits - The hands-on aspect of sports leads to cognitive skill improvement in children with disabilities and allows them to discover and access strengths that cannot be challenged in the traditional classroom setting. The inherent structure of sport, with its organization and rules, can be used as a learning tool for introducing and practicing self regulation and decision making skills. Additionally, children can learn verbal communication and interaction with peers through involvement in sport. Special Olympics The mission of Special Olympics is to provide year-round sports training and athletic competition in a variety of Olympic-type sports for children and adults with intellectual disabilities. This gives them continuing opportunities to develop physical fitness, demonstrate courage, experience joy and participate in a sharing of gifts, skills and friendship with their families, other Special Olympics athletes and the community. • The Special Olympics is the only organization authorized by the International Olympic Committee to use the word "Olympics" worldwide. • Athletes compete in 32 sports, including snowboarding, judo, cricket, soccer. • The Special Olympics program Healthy Athletes offers 1.4 million free health examinations in more than 120 countries to athletes at Special Olympics competitions. Health professionals perform a full exam in the categories of podiatry, physical therapy, audiology, vision, dentistry, physical therapy and more and more. • More than 3.1 million athletes from over 175 countries take part in the Special Olympics.

193 • Special Olympics athletes are divided to compete in categories based on gender, age, and ability. • The Special Olympics athlete oath is "Let me win. But if I cannot win, let me be brave in the attempt." • Special Olympics World Games are held every two years, alternating with Summer and Winter Games. 5.8 Let us Sum Up 1. "Occupational therapy is the art and science of directing man's participation in selected tasks to restore, reinforce and enhance the performance, facilitate learning of those skills and functions essential for adaptation and productivity, to diminish or correct pathology and to promote and maintain health." (Council of Standards, American Occupational Therapy Association, 1972). 2. An Occupational Therapist will aim to enable the child to be as physically, psychologically and socially independent as possible. Occupational Therapists work in close partnership with the child and their family, schools and other healthcare professionals. Together they have a shared responsibility for meeting the child's needs. In schools, for example, they evaluate the child's abilities, recommend and provide therapy, modify classroom equipment, and help the child participate as fully as possible in school programs and activities. 3. Occupational therapy interventions for people with intellectual disabilities are specifically adapted to the client with respect to the degree and type of support needed as well as the context. Interventions may include direct treatment as well as environmental adaptations, guidance, monitoring and counseling (including of the family, the educational staff, the clinical staff, employers and others). 4. Physiotherapy has scope in treating a wide range of conditions. It play an important role in all the branches of medical sciences, especially Orthopaedics, Paediatrics, Neurology, Cardio thoracic, Surgery, Sport Medicine etc. In set ups like leprosy, paraplegic and poliomyelitis after plastic surgery, burns clinics, spinal cord injury centres and in assistive devices manufacturing units etc. 5. A speech language pathologist sets broad but specific goals for each of his patients. Specific goals can include helping patients develop clearer speech, learn to use

194 alternate methods of communication, develop better reading and writing skills, and strengthen throat and neck muscles. Goals also may include coordinating treatment programs with other professionals or referring patients for other treatments. For example, a patient with a swallowing disorder may benefit from the collaborative care of a speech language pathologist and a medical doctor. 6. Yoga is one of the six schools of ancient Indian Philosophy. It is the practice that enables one to achieve higher levels of performance, bringing out the hidden potentials from within. Systematic Yoga practice will increase the physiological and psychological well being. 7. Music therapists involve children in singing, listening, moving, playing, and in creative activities that may help them become better learners. Music therapists work on developing a child's self-awareness, confidence, readiness skills, coping skills, and social behavior and may also provide pain management techniques. They explore which styles of music, techniques and instruments are most effective or motivating for each individual child and expand upon the child's natural, spontaneous play in order to address areas of need. 5.9 Check Your Progress A.1. What is the difference between Occupational Therapy and Physiotherapy? 2. Explain the objectives of the different therapies applicable for children with special needs? 3. Discuss about Dance and Movement Therapy. B.1. Discuss about the importance of yoga for children with special needs. 2. Prepare a short note on Therapeutic Application of Drama. C. After going through the Unit you may like to have further discussions on some points and clarification on other.

195 1) Points for Discussion

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..... 2) Points for Clarification

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Processing General and Format Editing Mrs. Antara Choudhury & Ms. Swapna Deb In-house Processing In-charge Ms. Swapna Deb The Self Instructional Material (SIM) is prepared keeping conformity with the B.Ed.Spl. Edn.(MR/HI/VI) Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session. AREA - C DISABILITY SPECIALIZATION COURSE CODE - C-14 (V.I) INTERVENTION AND TEACHING STRATEGIES All rights reserved. No part of this work can be reproduced in any form without the written permission from the NSOU authorities. Mohan Kumar Chattopadhyay Registrar

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

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9 Unit-1 Theoretical Perspectives Structure 1.1 Introduction 1.2 Objectives 1.3 Difference among methods, approaches,
and strategies. 1.3.1

Teaching Methods 1.3.2 The approaches to learning 1.3.3 Strategies for teaching students with visual impairment 1.4
Interventions 1.4.1 Early Intervention 1.4.2 Early Identification 1.4.3 Classification

of Intervention Programmes 1.5 Intervention for lately blinded students - Role of special educators or special teacher for
lately blinded students. 1.6

Mediated Teaching-learning 1.7 Enriched teaching for concept development 1.8 Let us Sum Up 1.9 Check your progress
1.10 References 1.1 Introduction Blindness is a disability caused by absence of sight. It is well known that more than 80%

of knowledge about the world is gained through the sense of sight. And 95% knowledg is received through vision and
hearing. This means that those who can't

10 see are deprived of the opportunity of gaining this knowledge. It is considered to be a myth as many people in the absence of sight have acquired a great degree of success in all spheres of human learning. But to test this success, an additional effort is required. Information can be gained several ways and many a time we can learn one thing in more than one ways. What is needed is that a teacher teaching children with visual impairment should acquire an understanding of providing visual concept into accessible experiences, strengths and limitation of various senses and principle of teaching the visually impaired children. An attempt in this lesson also has been made to discuss implication of blindness and theoretical perspectives of visual impairment. 1.2

Objectives After studying this unit students will be able to : State the meaning of methods, approaches and strategies. Explain the methods, approaches and strategies. State the concept and meaning of intervention. Explain the importance of interventions. Narrate the role of special teacher or special educators for lately blinded students in their intervention programmes. Explain the concept, need and procedure of mediated teaching learning. Describe the concept of development for visually impaired students. Explain the process of converting visual concepts into accessible experiences. 1.3 Difference among methods, approaches, and strategies. Meaning of Method: The mode or role of accomplishing an end, in other words the orderly procedure of achieving the desired objectives. Teaching

method is a procedure which a teacher follows to make learning interesting, easy and effective. It is

the process of planning, guiding, sharing and evaluating learning with a group of students. It is an orderly way of doing something. It is the logical and systematized organized way of doing a thing for effective control. It is an effective procedure of using experience. Ex: lecture method, source method, project method, discussion method 11 etc. Teaching Approach: The accesses or the means of access to the objectives. An approach is a theory about language learning or even a philosophy of how people learn in general. They can be psychologically focused such as behaviorism or cognitivism. Approaches are fuzzy and hard to define because they are broad in nature. An example of an approach that leads to a method would be the philosophies of scholasticism, faculty of psychology. Ex: correlation approach, coordination approach, integrated approach etc. Teaching Strategies: The plans for achieving the objectives. In achieving our objectives (i.c., the teaching of visually impaired children), we should first determine the appropriate and suitable procedure of teaching. But there are many ways of awareness to arrive at the proper teaching procedures. It involves elaborate planning. Stone and Morris have defined teaching strategy in the following words: "

Teaching strategy is a generalized plan for a lesson which includes structure, instructional objectives and an outline of planned tactics, necessary to implement the strategy",

Ex: story telling teaching strategy, narration teaching strategy etc. 1.3.1 Teaching Method A good method of teaching is based on multi-sensory approach, whether teaching disabled children or non-disabled children. While teaching, the teacher should bear in mind that children with disabilities have reduction in the range and variety of some learning experiences due to their disabilities. However, they should also have the conviction that such reduced experiences can be compensated through effective methods of teaching. In order to facilitate effective teaching-learning process, curricular adaptations are imperative. These are important for developing proper conceptual learning too by children with disabilities. As inclusive education is one of the most viable options to increase educational opportunities for persons with disabilities, a thorough curricular adaptation is needed for creating better learning environment. As far as possible, the curriculum need not be changed for disabled children since it would work as a criterion for segregation. Adaptations in terms of methods of presentation, display, content, etc., may be necessary to enhance the learning experiences of these children. This approach not only helps children with disabilities, but also helps the teacher to assist children who have learning problems. The National Institute of Open Schooling (NIOS) has

12 completed a major exercise of adapting secondary education curriculum for the benefit of blind children and such an exercise can be undertaken for other categories of disabilities wherever necessary. This would improve secondary educational opportunities for all disabled children. Curricular adaptations are mostly suggested for visually impaired children who need non-visual experiences. In adaptation of learning materials for the use of children with disabilities, it is vital to see to what extent the information provided is creating a near normal experience to them. Therefore, adaptation work should be done carefully taking into account the learning style as well as the capacity of the disabled child. In a text material, it is vital to break them into different sub-units and analyze each sub-unit and classify the items, which are visual oriented, and which are non-visual oriented. Further to this analysis, it is essential to indicate as to under what cognitive level the learning tasks fall so that the teacher can design appropriate strategies for the learning of the child. The cognitive tasks may be categorized as knowledge, understanding, application, analytic, synthetic, and evaluation tasks. Children with disabilities do not require a separate method of teaching. A good classroom teacher is expected to use approaches which would enable all children to study effectively irrespective of their disability. Therefore, the inclusive education setting emphasizes curricular adaptations rather than prescribing a new curriculum. Some methods of teaching useful for children with disabilities are: Play-way method of teaching: In this method the child is not kept in the classroom as a learner. The child is introduced the lesson through a number of play activities and in the process of such play, the teacher introduces specific concepts. Children who are learning through play-way method experience a sense of discovery. Providing concrete experiences: Children learn in three developmental stages. Firstly, they need concrete experiences involving three dimensional objects etc. Secondly they can learn through pictorial ideas, and thirdly they develop abstraction. As far as children with disabilities are concerned, providing concrete learning experiences becomes pertinent. A strong foundation developed through concrete experiences will help them to understand the higher order experiences, including that of, abstraction without much difficulties. Teaching in a step by-step way: Due to the loss of a specific faculty, children with disabilities are bound to loose the
13 sequence of learning experiences. They often experience mediated learning and as a result, they need well-defined learning strategies. Teaching in a step by step sequence becomes vital for children with disabilities. Though this type of incremental approach is helping all children, children with disabilities are very much benefited by this. They are able to overcome the loss of learning experiences which are forced by the absence of the senses, when teaching is done in a step-by-step way. Modifying method of teaching to suit the individual learning styles of disabled children: The teacher should ascertain whether the child is a visual learner or an auditory learner or a tactile learner for designing proper instructional strategies. Though classification of this kind is imperative in the general classroom too, its application with children with disabilities is of paramount importance because these children exhibit different skills at different levels. Facilitating learning by involving children with disabilities in groups: Cooperative learning approach is considered to be an effective teaching-learning process in the classroom especially when the class has children of different abilities. In a class consisting of children with disabilities, group learning can be planned by involving a child with disability in a group consisting of non-disabled children. This kind of activity not only develops the academic skills but also influences social integration of the child. Teacher assisted peer-group learning: Peer group learning is considered to contribute to effective learning in the case of non-disabled children and it is not less so in the case of disabled children. For adopting peer-group learning, a lot of preparation on the part of the teacher is needed. Activities for peer group learning, strategies for intervention, etc., are to be thoroughly planned by the teacher. A teacher in this process can become the facilitator of information sharing and see that the children (including disabled children) study in a harmonious way. Learning through field-trips and first hand experience: Since children with disability experience reduction in the range and variety of experiences in many aspects, they have to be compensated by alternative modes of information. Field trips are such alternative source of experiences which mostly contribute to the proper concept development of these children.

14 Use of supplementary teaching aids and appliances for developing appropriate concepts: As already indicated, concept development is vital for the disabled child to understand academic as well as non-academic areas. Sometimes a concept taught by the teacher using the normal mode of information may not be appropriate for the child with disability to understand. Therefore, it is essential to use additional teaching aids which may provide the needed concept development in the child. The supplementary teaching aids should not be considered as additional burden. In fact these are to be treated as essential for providing the substituted learning experiences to children with disabilities. Criterion based teaching as well as evaluation techniques: Usually evaluation in a regular classroom is norm based. The teacher makes an evaluation of the child on the basis of quantitative scores. However, this type of evaluation may not be proper for all activities in the case of children with disabilities. Since disabled children have to learn curricular as well as expanded co-curricular activities, mastery of the child over certain skills are more important than comparing the child with another child. Therefore, criterion based evaluation is appropriate, which will help to see the position of the child at various points of time. In criterion based evaluation, there is no pressure of comparative performance and therefore, the child can learn in a natural way. When the above aspects are addressed by the regular classroom teacher, teaching of any subject would become easier for the disabled child to understand. The methods described in this chapter are applicable to children with visual impairment. Therefore, practice oriented teaching approach would enhance the learning efficiencies of disabled children.

1.3.2 What are the approaches to learning

Approaches means the awareness or the means of assessing the objectives. An approach is a way of looking at teaching and learning. Approaches to learning are deliberate strategies, skills and attitudes that permeate the teaching and learning environment. It supports the learner's belief that a large influence on a student's education is not only what you learn but also how you learn. Teaching students how to learn has always been a part of teaching, but now the

15 special education is providing more explicit support for teaching these skills, aligning the Bachelor of special education and the career-related programme for visually impaired students. Focus on approaches to learning will improve the quality of teaching and learning across the programmes and may result in more engaged teachers and students. Clarity of instruction Instructional clarity has two components: cognitive clarity and oral clarity A link between teacher clarity and student achievement and satisfaction was identified by Hines, Cruickshank and Kennedy (1985). They identified 12 behaviours that contribute to instructional clarity: 1. using relevant examples during explanation 2. reviewing material 3. asking questions to find out if students understood 4. answering student questions appropriately 5. repeating things when students did not understand 6. teaching in a step-by-step manner 7. providing students with sufficient examples of how to do the work 8. providing time for practice 9. teaching the lesson at a pace appropriate to students 10. explaining things and then stopping so that students could think about it 11. informing students of lesson objectives or what they were expected to be able to do on completion of instruction 12. presenting the lesson in a logical manner. Clarity involves: knowing the subject matter being able to see the information from a learner's perspective, and the ability to explain things in simple terms.

16 1.3.3. Strategies for teaching students with visual impairment

There are two main functional categories of visual impairments: Low Vision and Blind.

Low vision students usually are print users, but may require special equipment and materials.

The definition of legal blindness covers a broad spectrum of

visual impairments. The extent of visual disability depends upon the physical sensory impairment of the student's eyes, the age of the student at the onset of vision impairment, and the way in which that impairment occurred. Vision also may fluctuate or may be influenced by factors such as inappropriate lighting, light glare, or fatigue. Hence, there is no "typical" vision impaired student. The major challenge facing visually impaired students in the science educational environment is the overwhelming mass of visual material to which they are continually exposed viz., textbooks, class outlines, class schedules, chalkboards writing, etc. In addition, the increase in the use of films, videotapes, computers, laser disks, and television adds to the volume of visual material to which they have only limited access.

To assist in overcoming a student's visual limitation requires unique and individual strategies based on that student's particular visual impairment and his/her skill of communication (

e.g., Braille, speed listening, etc.). General information for teaching strategies: Speak to the class upon entering and leaving the room or site. Call the student with visual impairment by name if you want his/her attention. Seat the student away from glaring lights (e.g. by the window) and preferably in front of the class. Use descriptive words such as straight, forward, left, etc. in relation to the student's body orientation. Be specific in directions and avoid the use of vague terms with unusable information, such as "overthere", "here", "this", etc. Describe, in detail, pertinent visual occurrences of the learning activities. Describe and tactually familiarize the student to the classroom, laboratory, equipment, supplies, materials, field sites, etc. Give verbal notice of room changes, special meetings, or assignments. Offer to read written information for a person with visual impairment, when appropriate. Order the appropriate text books for the students in their preferred medium.

17 Identify yourself by name; don't assume that the student who is visually impaired will recognize you by your voice even though you have met before. If you are asked to guide a student with visual impairment, identify yourself, offer your services and, if accepted, offer your arm to the student's hand. Tell them if they have to step up or step down, let them know if the door is to their left or right, and warn them of possible hazards. Orally, let the student know if you need to move or leave or need to end a conversation. If a student with visual impairment is in class, routinely check the instructional environment to be sure it is adequate and ready for use. When communicating with a student who has visual impairment, always identify yourself and others who are present. Be understanding of the little noise made by a portable translator. Also use an auditory or tactile signal where a visual signal is normally used. It is not necessary to speak loudly to people with visual impairment. Always notify changes of class schedule in advance. Teacher Presentation By verbally spelling out a new or technical word, you will be helping the student with visual impairment, as well as for other students.

An enlarged activity script, directions, or readings of a detailed lesson can be used for a low vision person and for use in describing tactile 3D models. Use an overhead projector to show step-by-step instructions.

Mask all the instructions except the one(s) that you want to present.

Use an opaque projector whenever possible to enlarge a text or manual. All coloured objects used for identification related to a lesson, experiment, or other directions should be labeled with a Braille label maker or otherwise tactically coded for most students with vision impairment. Describe, in detail, visual occurrences, visual media, and directions including all pertinent aspects that involve sight. Use a sighted narrator or descriptive video (preferably the latter) to describe aspects of videos or laser disks.

18

Describe, in detail, all pertinent visual occurrences or chalkboard writing. Where needed, have lesson or direction materials. Brailled, use an enlarged activity script, or recorded

ahead of time, for class handouts. Have tactile 3D models, raised line drawings, or thermoforms available to supplement drawings or graphics in a tactile format when needed. Whenever possible, use actual objects for three dimensional representations. Modify instructions for auditory/tactile presentation. Use

raised line drawings

for temporary tactile presentations. Use an overhead projector, chalkboard, graphs, or slides as you would normally, but provide more detailed oral descriptions, possibly supplemented with thermoforms where appropriate. Allow student to use a tape recorder for recording classroom presentations or the text.

Make all handouts and assignments available in an appropriate form: e.g., regular print, large print, Braille, or on a cassette, depending on the student's optimal mode of communication. Use a monocular or a private eye (electronic miniature television) or similar devices for long range observations of chalk board or demonstration table presentations. Text Reading Systems Paid or volunteer readers or writers can assist a student with visual impairment with texts, materials, and library readings. Offer to read, or arrange to have read, written information for a person with visual impairment, when appropriate. Arrange, ahead of time, for audio book acquisition of the text or other reading materials through the Talking Book Service, Recordings for the Blind, text reading systems, or audio output devices. Various Braille devices can be used to assist vision impaired students when reading.

19 Assessments: Make arrangements for tactile examinations. Place the student being tested close to the activity if tactile examination is necessary. Present examinations in a form that will be unbiased to visually impaired students. Ask the student for the approach he/she finds to be most accessible. One possible accessible method is to record test questions on tape and have the students record their answers on tape in an area which has minimal disturbance for other students. Use an enlarged activity script, directions, or readings to go along with the testing material. Allow more time. Allow calculators to be used during the test. Make use of larger print (e.g. 14 pt; 20 pt sized or as needed). Make use of visual magnification (magnifier or magnifying machine), audiocassette, Braille / Braille graphs / Braille device for written responses, large block answer sheet. Difference between method and approach: Method Approach 1. Method is—how to teach. 1. Approach is—what to teach. 2. Method is—where teachers' 2. Approach is—where stresses are on activities are emphasized. pupil's activities. 3. Method is—where many 3. Approach is—only one item is items may be taught at a time. taught a time. 4. Method is suited for seminar 4. Approach is—not suited for senior classes. classes rather it is fit for primary classes. 5. Method is—not situational. 5. Approach is—situational.

20 Difference between teaching method and teaching strategy: Teaching method is a macro approach, where as teaching strategy is a micro approach. Teaching method considers teaching as an art, where teaching strategy considers teaching as science. The purpose of teaching method is effective presentation of the subject matter, where teaching strategy is to create conducive learning environment in the class. Teaching method is based in the classical theory of human organization, where teaching strategy is based on modern theory of human organization. Work is important in methods, where strategies of teaching behaviour of teachers and students and their mutual relationship are important.

1.4 Interventions Intervention: A visually impaired child faces developmental and psychosocial difficulties in life. The parents, teachers/educators (or the society at large) have to understand the problems and help him/her to cope with those deficits, the help should be extended as soon as the problems/difficulties are noticed. This is called early intervention. Here intervention means understanding of the nature of the problems of visual disabilities, its social and psychological implications and training. It is to be remembered that intervention may be medical, educational, social and psychological. 1.4.1 Early Intervention Definition: The term early intervention refers to services given to very young children with special needs, generally from birth until the child turns six. Early Intervention Services are special services for infants and toddlers at risk for developmental delays. These services are designed to identify and meet children's needs in five developmental areas. These are physical, cognitive, communication, social, or emotional development. Early intervention includes provision of services

21 to such children and their families for the purpose of lessening the effects of the condition. Early intervention programme may be centre based, home based, hospital based or a combination of all. Importance of Early Intervention: There are three primary importances for intervening early with an exceptional child: 1. To enhance the child's development, 2. To provide support and assistance to the family and 3. To maximize the child's and family's benefit to society. Aims of Early Intervention Programmes : 1. Early identification of infants at risk 2. Early identification of developmental delays 3. Enhancement of normal development 4. Acceleration of rate of development 5. Acquisition of new behaviour or skills 6. Increase in independent functioning 7. Early detection and prevention of secondary handicaps 8. Minimizing the effects of the handicapping condition 9. Cost effectiveness 10. Psychological support to families Steps involved in this process: ? Identification ? Intervention ? Rehabilitation 1.4.2 Early Identification: Early identification of the child with visual impairment helPta a great deal in facilitating effective rehabilitation of the child. Some of the techniques for early identification of children with visual impairment are as follows.

22 Eye Hospital Eye camps Population centers Through anganwadi workers Voluntary organization 1.4.3 Classification of Intervention Programmes: Current practice of early intervention is viewed as a deficit model. The time to intervene is before the delay occurs; the goal is to prevent the delay, if possible. Early intervention programmes are classified as vision screening, medical intervention and educational intervention. All these programmes go simultaneously for prevention of eye deficit, restoration of vision, development of vision efficiency. Vision Screening: All children should be screened for possible vision problems, especially those under the age of three with a suspected or identified risk factor, regardless of severity. The initial screening should be conducted by trained personnel on vision screening procedures. The trained personnel may be low vision specialist, special teacher, rehabilitation workers and village nurses. Identified cases of visual problems are referred to the medical personnel who would attend to thorough eye examination. Medical Intervention: There are many possible defects or diseases of the visual system, but, fortunately, many of them appear after the first few years of life. There are still many malformations, defects, diseases, infections and disorders that can affect the visual system in infants and toddlers. As it is presumed that medical follow up to screening will identify and prescribe treatment. The medical professionals will take care of the treatment aspects for the diseases and defects of the eyes. After the medical treatment still the child may have visual defect, further intervention programme should be planned for the restoration of remaining sight and development of visual efficiency. Through medical intervention, diagnosis, eye treatment, eye surgeries and provision of glasses and low vision aids are done for the curable visually impaired. For incurable visually impaired persons, identification, eye check up certification of visual impairment and counseling are done by the medical experts. These incurable visually impaired persons are referred to the rehabilitation centers for further services Educational Intervention: Educational intervention includes the preschool training 23 such as development of daily living skills, mobility skills, visual skills, etc. and placement of the child into the formal school system. The trained teacher or rehabilitation worker who qualified on visual impairment takes the child with visual impairment for training on various skills required by the child. He develops the pre educational skills such as tactile discrimination, other sensory development, communication skills mobility, social interaction etc. All these training will be helpful for making appropriate placement of the child in the educational programme Vocational Intervention Vocational training is an important component of the vocational intervention. There are some disabled individuals who, after they are provided with physical restoration services, are capable of going back to their old jobs. But, there are unfortunately many, who are unable to do so, and, therefore, require training in new skills. Vocational training may not be so essential to an able bodied person, who can benefit by general education. Vocational training assists persons who are blind in preparing for, obtaining, and retaining employment. Applicants are made eligible based on their visual disability, their need for vocational training, and their intent to work. The vocational training counselor and the eligible individual work in partnership to jointly identify a realistic employment objective consistent with the individuals skills, abilities, capabilities, aptitude, particular interests, concerns and resources through informed choice, as well as the services needed to achieve that objective. Factors to be considered in determining a disabled person's suitability for vocational training: ? He must have the necessary level of intelligence, educational background, work experience or potential aptitude to be able to derive benefit from the particular course. ? He must have the capacity to match up to the physical requirements of the actual trade. ? He must have the interest, determination and necessary adaptability to absorb training and make good in a new occupation ? He must have reasonable prospects of placement in the trade on completion of training Steps involved in Vocational Training ? Help disabled persons gain or recover working habits ? Give help and guidance on social problems which may be impeding resettlement. 24 ? Providing physical reconditioning where necessary. ? Provide medical, psychological, and vocational assessment of capacity to work in particular types of jobs. ? Build up or restore morale and self-confidence ? Arrange for vocational training of the rehabilitee ? Find suitable employment for the individual Rehabilitation Rehabilitation centers for the visually impaired are run by government and non government organizations in several places of the state. The persons with visual impairment are referred to those centers which are nearer to the clients for getting service. The rehabilitation centers are taking care of visually impaired persons in the following ways: 1. Identification and diagnosis of visual defectiveness 2. Arranging treatment and follow up for restoring vision 3. Obtaining certificate of visual impairment 4. Individual assessment - visual and functional 5. Individual counselling and family counselling 6. Provision of training in : ? Orientation and mobility ? Activities of daily living etc. ? Social integration ? Education ? Economic rehabilitation ? Support services and obtaining concessions ? Bringing community awareness and involvement 25 1.5 Intervention for lately blinded students - Role of special educators or special teacher for lately blinded students.

The teacher of students with visual impairment is the central figure on the educational team for lately blinded student. He is the professional who has expertise in how visual impairment affects the

child development and learning, as well as the strategies and tools that can help the

child learn about the world, perform everyday activities and participate in the general curriculum and other activities in school. Therefore,

the

child is likely to be working with the teacher of lately blinded students on day to day basis. He or she will probably serve as the coordinator of the educational team and as a resource for the other team members.

Teachers of students with visual impairments provide guidance and counselling to youth with visual impairments and their families to:

- ? Interpret implications of visual impairment for overall development.
- ? Facilitate understanding of society's attitudes concerning visual impairment and to assist students and families to formulate their responses to misconceptions, lowered expectations, and prejudice.
- ? Explore similarities and differences in relation to all children.
- ? Develop social awareness of self, others, and the community at large.
- ? Encourage social interactions with peer groups.
- ? Identify functional, academic, and vocational potential.
- ? Encourage home involvement in programme objectives.
- ? Promote independence in infants, children, and youth with visual impairment.
- ? Plan for adult life by exploring options for college, technical or trade school, job coaching programmes, industrial enclaves, and other post-secondary placements, as well as identifying independent living arrangements in the community.
- ? Refer to other sources for additional guidance and counselling services.

The specific responsibilities of the teachers of student with visual impairments with the child may vary, depending on the child age and needs, the goals his educational team sets for him, the type of educational programme the child participates in, and the policies of the particular school.

26 The role of the teacher and special educators of the students with lately blinded may include some or all the followings. Conducting various assessments of the lately blinded children to determine his abilities and needs.

Meeting with family members, regular class teacher and other member of the educational team to discuss his progress and make suggestions for strategies to make his school work accessible and to include late blind student

to the greatest extent possible in all school classroom, and extracurricular activities.

Making referrals for additional service to the child may be needed, such as for orientation and mobility instruction.

Preparing or obtaining of learning materials, text books,

and examinations in the appropriate assessable format for lately blind student such as Braille, large print, audio materials, electronics materials. Analyzing the classroom and the other environments for access and safety related to students lately blinded students and advising other members of the team about how best to organize the classroom and materials.

Providing consultation and training for teachers Para educators and other school personnel on effective strategies for teaching students with lately blind students.

Consult with the classroom teacher on ways of making the general curriculum accessible to the impaired child. Creating a classroom climate that is compatible for all students.

Be responsible for preparing classroom materials in formats that are accessible to the child.

The teacher of students with visual impairments,

depending on the model(s) of service being utilized (residential school, special class, resource room, itinerant, or teacher consultant) has a variety of administrative roles. In a large programme, this may include supervision of other teachers of students with visual impairment, in addition to working with Directors of Special Education, principals, regular classroom teachers, and other educational and related services personnel.

Some of the most common activities in this area may include: Communication with Administrators: Teachers of students with visual impairment keep administrators informed concerning:

27 Student information (e.g., visual status, grade level, prototype). Programme goals and activities. Programme evaluation. Screening and referral procedures. Relationships between the programme for students with visual impairment and regular and special education programmes and support services. Funding requirements for consultation, instruction, salaries, travel time, travel expenses, instructional materials, preparation time, conferences, and benefits. In-service needs for teachers and consultants of students with visual impairments, as well as for other regular and special education personnel. Staff scheduling requirements, including adequate time for planning, preparation, report writing, travel, direct instruction, team meetings, and staff conferences. Physical facilities, including design and selection of classroom environments and office space, as well as adequate storage space for instructional materials and equipment. Student scheduling, including preparation of a master schedule to be given to the supervisor and principal(s) of the building(s) in which students are served. Equipment needs, particularly in the area of technology, but also including materials and technological devices.

Record Keeping Maintain records of student assessments, IEPs, IFSPs (and other planning documents), periodic reviews, progress reports, and signed parental release forms. Maintain material and equipment requests. Exchange information about students with visual impairments with appropriate personnel following school district or agency policies regarding confidentiality.

Case Finding and Student Referral Procedures Act as a vision consultant for system-wide screening, materials, follow-up and recommendations. Participate in school district's annual Child Find programme. Maintain a referral/communication system with nurses and other school staff.

28

when a person becomes blind (be he/she is a child or an adult), he comes face to face with the tremendous task of acceptance of visual loss (i.e. blindness) and adjustment to the new situation. Apart from the parents, the teacher plays the role of a counsellor more than that of an educator. He has to consider the age of on-set of blindness, the degree of loss of vision. The person's social positions (i.e. his relation with parents, siblings, neighbours, etc.) his educational status, his rehabilitation needs. The teacher is actually a mediator between the newly blinded person and the tasks to be learned/ to get adjusted to a non-visual world.

1.6 Mediated Teaching-learning Concept of Mediated teaching learning: Mediated learning is the subtle social interaction between teacher and learner in the enrichment of the student's learning experience.

Needs of Mediated teaching learning: i. Reflecting knowledge. ii. Concept formation. iii. Problem solving. iv. Removal error concept. v. Lack of text book and braille book, large print book etc. vi. Development of social skills, creativity, self-confidence, co-operation, collaboration etc. Procedure of Mediated teaching learning: Three stages of mediated learning. 1. Before mediated teaching learning: Lesson planning: Identify lesson objectives and accommodate IEP goals, link to prior knowledge, plan for additional assistance with students with needs, determine groups earlier, and consider how students can have more independent practice. Routines/ Expectation: establish rules, routines and arrangements with the students. Environment: classroom layout is important and students may need to be directed prior to the lesson to know what to do before they begin the lesson.

29 2 During mediated teaching learning: Discuss what the lesson will be about and what they are going to learn. Also want to link the information being learned to prior knowledge. Modeling, engagement, and guided practice done by the teachers and the students to grasp the key skills. Idea behind this is not to move on the independent practice until the students understand the skills. Set the students up for success. Give feedback through-out the lesson and give time for questions and active time to respond to teacher's question. Give praise and positive reinforcement for efforts and positive behaviour movement. 3. After mediated teaching learning: Lesson summaries reflect back on what was learned. Checklists or "exit slips" with actions to organize work and materials remind students what to do accomplish the task. Signal of time frame left or when class is over remind students to start wrapping up their task. Mediator learning: Mediator learning is method of instruction develop by Dr. Reuven Feuerstein. During mediated learning a mediator- a parent teacher, sibling or someone with a vested interest in the learners life provide a suitable stimulus (homework, test, assignment etc.) and then observe s the learners response to the stimulus. Mediator learning experience refers to the way in which stimuli experience in the environment are transformed a mediating agent, usually parent, teacher, sibling or other interested person in the life of the learner. The following process outlines the tasks involved in the teaching and learning process. It assumes a highly collaborative working relationship between the teacher and learner. In the sense that it is used here, the word 'learning' refers to a) the process of learning as used by the learner b) and the learning (outcomes) achieved by the learner In each step of the process both aspects of learning are considered. It is important that the learner is aware of his/her learning achievements and the

30 processes that he/she used in order to make these achievements. In the process of (mediated) learning the learner is the active agent. In less collaborative, more controlling teaching processes there is greater separation of functions, i.e., some of the tasks will be exclusively the responsibility of one party or the other. This tends to assume that the teacher is the active agent (contrary to most educational psychologists, including Piaget) and that the student is simply being processed in order to generate learning outcomes. For example, in a course based teacher directed programme, the selection of focus and content will have occurred elsewhere and by others before the teaching and learning begin the checking on prior learning may be ignored or left entirely to the learner observation, recording & reflection may be exclusively done by the teacher independent of the learner and so on ... Sight helps whole learning (Gestalt), while no visual persons learn part by part. It creates deficits in age-adequate experiences. To fill the gaps in his experience, he is to be helped in experiencing the visual ideas in his non-visual way. In childhood stage, concretization of experiences, as far as practicable is required. But in adolescence or in adulthood, he comes across move and more with abstract ideas, to understand which basic and proper concept formation is the master key.

The whole curriculum for children in school and community is centered around two significant aspects. "The opportunity" and "the experience". Often children are provided with opportunities but the mere provision of opportunities does not mean the acquisition of experience. The understanding of the self and the world is not a 'whole' when experience is denied.

The sighted children have an edge over visually impaired children in the acquisition of knowledge through experience. The vision, which brings an enormous amount of information in just a glimpse, enables sighted children to have rich experiences in a "NATURAL WAY". they learn the experiences as a "WHOLE". But the learning of visually impaired children is not "WHOLE" but in "PIECES" of information. Thus there is significant difference between the two groups, the sighted children having "NATURAL LEARNING" and visually impaired children having "MEDIATED LEARNING ". There is, therefore, a need for adaptation in curriculum for visually impaired children.

31 1. 7

Enriched teaching for concept development Concept development is fundamental in the education of children with disabilities, particularly for those who are visually impaired children. Loss of one sense of the child adversely affects the concept development of these children. Though specific concept development areas are applicable for specific types of children with disabilities, some concept development areas are general. They include body awareness, object and situation characteristics, time and distance awareness, spatial awareness, measurements, orientation of environment, etc. These have to be consciously developed in the child. As most of these concepts grow naturally in a non-disabled child, a disabled child living in the mainstreaming environment will be able to acquire these concepts in a natural way. Therefore, inclusive education setting is more conducive for the concept development of children with disabilities. Even in the special schools the children can be provided ample opportunities to develop their concept development skills. What is concept ? A concept is a mental image of some object, person or an idea. Concepts are formed by generalisations from particulars. Concepts are also formed due to the experience of the past, i.e. formation of new concepts are affected by the past experiences. Concept formation depends upon the ability of individuals to distinguish between objects so that they are classified as belonging or not belonging to a particular group of objects. Thus, a concept represents a class of stimuli, may be objects, animals or events. Thus, we have the concepts of 'table', 'chair', 'teacher', etc. According to Smith, "The process by which we organise and classify stimuli, by which we come to perceive sets of stimuli as unified wholes and by which we come to put a number of instance into one category such as 'Chair' is called concept formation or concept learning". An individual goes on learning new concepts and using old concepts in new situations throughout his life. These concepts act as the basic units of learning. But, the individuals differ in their concept formation according to their age, intelligence, and experience. For example, a layman's concept about a thing would be radically different from that of an educated and experienced person. A concept in fact means what we understand by a thing. A child's or a layman's understanding of a thing will certainly be different from an intelligent person's understanding about that thing. 32 Initially, concepts about concrete objects are formed, and gradually concepts like 'truth', 'beauty', and 'justice' etc. are formed alongwith the intellectual development of the individual. A concept is derived from the identification of common characteristics in an object, person or thought. As Munn describes, "A concept is a process which represents the similarities in diverse, objective, situations or events". Concepts are the basic units of learning and reasoning, and once developed, help further thinking: Formation of Concepts Concept formation undergoes two processes: Generalisation. Abstraction. Generalisation means to strike similarities among objects, events, individuals, situations, etc. belonging to the same class. Take for example, a child's first experience with a cat. By and by he begins to differentiate between a cat and other domestic animals, and notes the common characteristics of a cat. Thus, he forms a concept about a cat. Similarly, other concepts develop through generalisations. Abstraction is observing the similarities of otherwise different things, situations and ideas. Both abstraction and generalisation go side by side though abstraction requires higher mental processes. Generalisation is a process generally applicable to the formation of concepts about concrete objects, like table, chair, etc. Abstraction is applicable to the formation of concepts about abstract ideas like truth, beauty Justice, etc. and therefore, requires higher mental processes for their formation. Both abstraction and generalisation come from observation of similarities, in different situations having common characteristics. Attributes of Concepts Concepts have attributes and characteristics which each member of the concept class has in common. The main attributes are: Perceptibility. Learnability. Usability. Validity.

33 **Generality.** Perceptibility: This means that perceptions lead to the formation of concepts. Firstly the things are observed and perceived. This perception gets mixed with the previous perceptions leading to the formation of new concepts. Learnability: Concept formation is the result of learning. They are the products of observation, experience and thinking. The teacher can help the students in the formation of correct and positive concepts. Concept formation is essential because concepts are the units and basis of learning and thinking. Correct and positive concepts help in the development of the personality of an individual. Usability: Concept formation depends upon usability or the frequency of their use. That is why drill and practice are emphasized. Drill and practice help in fixing the concept in mind. Formulas and definitions should be over learnt to get them fixed in the mind. Validity: Validity means correctness. A concept is valid if it has a clear cut and definite meaning. Generally, a man's experience and maturity help him to form valid and correct concept. **Generality:** Concepts are the result of generalisation. Observation and perception of common characteristics lead to generalisations, and consequently to the formation of concepts. These are some of the main attributes or characteristics of concepts. **Teaching and Learning of Concepts depends on:** **Providing individual Instruction:** On account of the psychological fact that there are marked individual differences, it is suggested that individualised instruction should be provided to the children. Individuals differ in their capacity of concept-formation. Individual with low intellectual level can form concepts about concrete objects only; on the other hand, children with high intellectual level can also form concepts about abstract terms and ideas. The teacher, therefore, has to provide individualised instruction accordingly. **Providing Variety of Experiences:** Concept formation is the result of observation and experience. Concepts are formed and made clear through experience and maturity. Therefore, it is essential that the 34 children be provided with large experiences. **Presentation of Examples:** Examples provide experiences which can be better and are easily understood. Concepts must be developed on the basis of perception, which are provided by concrete objects and examples. **Using Inductive and Deductive Methods:** Inductive method implies firstly, the presentation of examples and then the formulation of generalisation on the basis of examples. Deductive method, on the other hand, implies the testing and application of the generalisation. Both the methods may be used in combination for the effective and successful formation of concepts. **Making use of Maxims of Teaching :** For clear and correct formation of concepts, the teacher, should make use of the maxims like 'Proceed from simple to the complex' and 'Proceed from concrete to the abstract'. The use of maxims of teaching will make the learning of concepts easy. **Active involvement of Students:** The students should be made active participants in the learning of the concepts. This, independent learning should be encouraged on the part of the students. The students should be provided with learning situations, and they should be made to observe and generalise themselves. This is a surer and lasting way of learning. **Adopting Integrated Approach to Learning:** Experiences and units of learning should be presented to the children in an integrated form. The 'whole' is more easily understood by the children because analyse of the whole, into "parts demands greater maturity and intellect on the part of the children. A combination of the whole method and the part method will give excellent results, as far as the learning and formation of concepts is concerned. **Making use of Audio- Visual Aids:** Personal and direct observation and experience is the best way of learning anything. But, if these are not possible, then the teacher should make use of audio-visual aids for the clear and correct formation of concepts. These are some of the effective ways of developing concepts. **Uses of concepts** Concepts reduce the complexity of the environment-

35 As we know, concepts always represent a class of stimuli, but not any particular stimulus. If we respond to each individual stimulus, it will unnecessarily take more time and energy. Instead of responding to thousands of particular but similar stimuli, we respond to a concept which embraces all these stimuli and thereby it reduces the complexity of the environment. The learning of concepts enables the children to grasp, in an array of stimuli, similarities and difference which he would otherwise have great difficulty copying with. Education in this sense, gives the student environmental mastery which he would otherwise lack. Concepts help us to identify the objects around - Identification involves placing an object in a class and therefore, reducing the complexity of the world of stimuli. For example, sound is a general concept. But we are able to identify and discriminate various sounds like sound of bell, sound of different animals and birds, sound of different musical instruments. Concepts reduce the necessity of constant learning - Concepts always represent a class. Therefore, when we learn a particular concept, we are not required to learn the individual objects constantly. For example, once we learn what is a mammal and the characteristics of mammals, we are not required to continue the learning of the characteristics of each member of this class. We always prefer to develop a general characteristic which will be all inclusive. Concepts provide direction for instruction - By using concepts and principles we know in advance the action we can take. The steps described for the teaching of concepts and principles are largely embodied in a set of verbal instructions. These instructions would not be possible without the learning of concepts. Concepts and principles can stand as barriers to instruction and to the teacher when the student has an inadequate grasp of them and does not know their relationship to the concrete environment. Abstract and more difficult concepts make the process of instruction more complex and strenuous. Concepts grow out of the perceptual process and become enriched as the child develops language. The breadth of concept development is dependent in large measure on the breadth of the perceptual experiences. Because the blind child lacks one source of sensory input, his perceptual processes are deficient. He may never grasp some concepts and may need more experience than the sighted child to grasp others. Abstractions such as a concept of color may never be formed, since the child has no possibility of acquiring a background of sensory input for this concept. The concepts of distance and time illustrate another group which eventually may or may not be grasped, depending on the variety and number of experiences designed to give them meaning. For example, the sighted child may acquire some meaningful concept of distance by visual input, that is, how far he can see, and later through an understanding of relative distances as shown on a map drawn to scale. While the blind child may reach some understanding of distance through his kinesthetic sense, he encounters difficulty in doing so. Walking a specific distance would be the most meaningful procedure, but a walk of sufficient length to give an idea of great distance would not be feasible. Further, his deficiency in grasping what distance is prevents his making maximum use of maps through his tactile sense in order to acquire a concept of relative distance. He needs many concrete experiences through his kinesthetic sense in order to use maps effectively. Lack of vision limits their perception and cognition. This causes knowledge gap between sighted and the children with visual impairment.

The visually impaired child

becomes aware of this world through senses other than sight - this is, through the senses of hearing, touch and smell. In understanding the world around him he cannot perceive objects as much as the sighted by dint of remaining senses either because of physical inaccessibility or of social restraints, for example. Hills and Mountains, Space and relationship to one another are abstract things to the visually impaired children. Most of those are to be explained to the child orally or by the experiences to what they can hear, feel and manipulate. So if he is to understand the reality around him, it is necessary that he be presented with concrete object which can be touched and manipulated, heard and discriminated, factual perception is highly helpful for him to understand the haptic world. Here we should understand that this may not be a complete substitution for the experience gained through visual perception. He should not be left incidental. When the presentation is a distortion to the child, the teacher should explain it to child. A model of a house, for example, can be easily understood by the child if its dimensions are explained to the child related to doors, windows and other parts of a house which he can touch and feel in reality.

37 As far as the materials are concerned, the special teacher should take special care in providing the materials which suit to the need of the visually impaired children, provide appropriate materials for the children the selection of the materials is imperative. The

process of concept formation is best on classification means noting similarities and disregarding insignificant differences. Classification depends on sensory experiences. And lack of this sensory experiences can't fail to produce a lack in concept formation. The visually handicapped child receives information through other senses like touch, smell, hearing etc. this is observed that concept received by remaining senses are defective. The information received by sight and touch are different. A sighted child can see anything to make his or her concept formation at a glance. But a visually handicapped child can't do the same for making his/her concept formation. Visually handicapped child makes his or her concept through part to whole. So visually handicapped children have some difficulty in formation of concepts. 1.8 Let us Sum Up A good method of teaching is based on multi-sensory approach, whether teaching disabled children or non-disabled children. Loss of one sense of the child adversely affects the concept of development of children with visual impairment. As far as the children with disabilities are concerned, providing concrete learning experience becomes pertinent. Teaching methods should be modified to suit the individual learning styles of disabled children. Since disabled children have to learn curricular as well as expanded core-curricular activities, mastery of the child over certain skills are more important comparing the child with another child. A number of strategies can be successfully employed for teaching the visually impaired children. For example giving as far as possible concrete and real experiences, giving opportunity to a child to explore an object bit by bit and then forming a meaningful whole by establishing relationship. Early intervention refers to planned and organized efforts to enhance the

38 development of children, who have a difficulty or are at risk of developing. The goals of early intervention programme are accomplished by providing developmental and therapeutic service for the children with disabilities and support and instruction for their families. Concept development involves sensation, perception, classification and image formation. Concepts are set to have been developed or formed when an individual can name describe an event or place in its absent. For example the description of a table even though the table is not there is the concept of a table. Sighted children learn the experience in a "natural way" as a "whole" but visually impaired children in a mediated way in a pieces of information.

There is no need for special curriculum for visually impaired children who are in the general classroom but special approaches based on multi-sensory experience are needed. The guidelines for teaching method should develop based on the learning behaviours of the visually impaired children. Sighted children can easily learn many things just by seeing what is happening around him. But for the visually impaired children it is very difficult. A mere sight will bring lot of information in a fraction of second. So their way of learning is NATURAL, whereas learning of the visual impaired is MEDIATED learning. 1.9 Check your progress A. Write 'true' or 'false': a) Concept helps in forming mental maps. b) Reinforcements help one to learn. c) A child with visual impairment learns about an object as a part to whole. Fill in the blanks: 1. Learning of the visually impaired children is treated as.....learning. 2. Reduction in the range and variety of experience is an.....effect of blindness. 3. Mental pictures of the environments combining verbal description and sensory impressions is called..... Choose the correct answer:

39 Visually impaired children learn– a) in pieces b) the content as a whole c) like sighted children. d) the content with more omissions. B. Assignments: What is concept development? Taking a suitable example, describe various steps in concept development. Define concept development and learning. Mention the effects of blindness on concept development of visually impaired children. Enumerate the need and early identification and intervention in relation to children with visual impairment. 1.10 References Barnett, M.R.(1982). Concept Development for Visually Handicapped Children. (Eds) Lyndon & McGraw. New York: American Foundation for the Blind Barraga, N.C., Visual handicaps and learning. Belmont, CA: Wadsworth Publishing Co., Inc.,1976. Chapman, E. K. (1978). Visually Handicapped Children and Young People. Routledge, London. Fernandez, G., Koenig, C., Mani, M.N.G., & Tensi, S. (1999). See With the Blind. Books for Change, Bangalore. Hand book for the teachers of the visually handicapped. NIVH, Dehradun, 1992. Lowenfeld, Berthold: Berthold Lowenfeld on Blindness and Blind People: Selected paper, AFB. New York 1981. Laydon, W. T., McGraw, L. (1973). Concept Development for Visually Handicapped Children. AFB, New York.

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41 Unit - 2 Mathematics Structure 2.1 Introduction 2.2 Objectives 2.3 Coping with Mathematics phobias 2.3.1 Factors contributing to learning Mathematics 2.3.2 Problems of Learning Mathematics for Visually Impaired Children 2.3.3 What is Math Phobia? A Anxiety : B How to overcome Mathematical Phobia? 2.4 Conceptualization of Mathematical Ideas 2.5 Preparation and Use of tactile materials 2.5.1 Improvisation of mathematical teaching aids for Visually Impaired students 2.6 Mental arithmetic abilities 2.6.1 What is mental arithmetic? 2.6.2 Importance and application of mental arithmetic 2.7 Evaluation procedures with special reference to the needs of children with visual impairment 2.8

Let us Sum Up 2.9 Check your progress 2.10 References

42 2.1 Introduction

Mathematics cultivates child's thinking and reasoning skills. Child learns to seek and discover ideas himself. Mathematics lays the foundation for systematic thinking through the numerical and spatial aspects of the objects. Learning of mathematics is considered vital because of the complexity involved and its application value in day to day life. One of the major objectives of teaching mathematics is to develop computation skills, to emphasize logical thinking and to enable the child to participate in day to day activities of the family and community. The utility value of learning of mathematics is something phenomenal, considering the amount of application of mathematical concepts in one's life. The importance of learning mathematics has been emphasized

not only for the sighted but also for children with visual impairment in many forums across the world. For sighted and visually impaired children, modes of learning are different. Teaching to sighted children is through writing on the blackboard supplemented by oral instructions. While for a visually impaired child mathematical Braille code, appropriate material and devices are important, along with appropriate teaching techniques and strategies. Mathematics is often questioned by highlighting some of the areas in Mathematics that demand vision. The visual ideas could be converted to nonvisual experiences so as to enable children with visual impairment to get the required learning experiences. Research reveals that children with visual impairment can also learn mathematics when they are taught in an appropriate manner by making necessary adaptations in the curriculum without altering the learning outcomes. Therefore, special efforts, especially commitment of the teacher teaching mathematics and an effective application, would bring out useful adaptation techniques to enable children with visual impairment to achieve the same learning outcomes.

Evidently, learning of mathematics is considered to be a complex process even for the non-impaired children too. The skill of mental calculation is a valuable trait to possess and it is useful in mathematics as well as other educational areas. Mental calculation provides the foundation for the development of higher level thinking skills. It provides children with a new way to think about the number system and number relationships. Successfully performing efficient and effective mental calculations requires a thorough understanding of

43 mathematical principles. It is not a mechanical, rote method of solving problems. Instead, students learn the principles behind mathematics. Children will achieve an understanding that addition, subtraction, multiplication and division are simply methods to combine or separate numbers. The successful application of mental operations requires a person to be skilled at solving problems and not simply adept at memorization of mathematical formulae. There is a practical need for mental calculation strategies in everyday life. Evaluation is an ongoing process and its importance holds good for the education of visually impaired child too. Like any other child a visually impaired 1st child's education at development of mathematical concepts. Some very interesting factors need to be taken care during evaluation of mathematical concepts among visually impaired children.

2.2 Objectives After going through this lesson, students will be able to :

- Explain the various techniques to overcome the math phobia
- Explain the conceptualisation of mathematical concepts
- Describe the various factors that promote better learning of mathematics
- Appreciate the role of mental arithmetic and geometry in every day life
- Describe the need and importance of mental arithmetic
- To prepare tactile diagrams and vision oriented concept in tactile form with necessary modification
- Describe implication of visual impairment in learning mathematics
- Appreciate the needs of evaluation of learning mathematics by visually impaired students
- Understand the implication of visual impairment on evaluation in achievement in mathematical concept
- Prepare and use evaluation tools for mathematical concepts

44 2.3 Coping with Mathematics Phobias 2.3.1 Factors contributing to learning of mathematics

Learning mathematics is considered to be a complex process even for the non-impaired children too. Worldwide, mathematics has the highest failure rates, and lowest average grade achievements. Almost all students regardless of the school type or grade cannot perform in mathematics as per their intellectual abilities. While mathematics for the sighted children itself is in a mercurial state, the same for children with visual impairment is further compounded due to loss of vision. However, teaching mathematics to children with visual impairment has undergone transition over a period of time, resulting in optimistic views toward learning of mathematics by children with visual impairment.

What was considered as impossible for children with visual impairment is proved to be feasible and is gaining an optimistic momentum world over. Truly,

it is not the difficulty of the child with visual impairment to understand mathematical concepts, but it is the difficulty of the teacher teaching mathematics to make suitable adaptations in teaching the concepts. Days are gone when stereotypic attitudes existed in the society, that learning of mathematics is difficult for children with visual impairment. At the school level, especially for children with visual impairment, a number of factors contribute to effective learning of mathematics.

A good mathematics curriculum must possess carefully chosen objectives that stress a balance among cognitive, affective and psychomotor domains as parts of the instructional strategies. Following are the key factors considered important for effective learning of mathematics by children with visual impairment, among others (Mani, 1992).

1. Selection and teaching of suitable mathematical Braille Codes. The mathematical Braille Code must be introduced to children as and when they occur in the text. By doing so, children should develop knowledge of the Braille mathematical Code and their practical usage. Right from the first standard, the children should be exposed to the text material wherein Braille Mathematical Codes are incorporated. This will give them an idea regarding the format of presentation.
2. Adaptation of text material to children with visual impairment. Adaptation of the text material for visually impaired child without changing the learning outcomes. Darling (1985) states that the learning activities of visually impaired children can be created without changing the learning outcomes set forth for sighted children. She also states the mathematical aids are of paramount importance in developing the right type of concept in the child.
3. Teaching of mathematical devices such as Abacus, Taylor frame etc. Teaching of mathematical devices e.g. the Abacus, Taylor frame, geo-board etc. to the visually impaired child for making the necessary calculations and understanding diagrams. Abacus takes little time in calculation while linear equations are possible to be shown in Taylor Frame. For teaching mathematical diagrams, geo-board and relief sheets are useful.
4. Provision of appropriate mathematics text material. Provisions of suitable mathematics text-material after necessary editing of the content and format, Mathematics learning is not very difficult but it is a long process and makes the child and teacher feel that it is difficult. This cannot be achieved overnight, it needs continuous effort.
5. Preparation and use of appropriate teaching aids. Preparation and use of appropriate teaching aids for supplementing instruction in teaching Mathematics, Like any other child there is need to devise innovative material to give concrete ideas to visually impaired child too.
6. Provision of simulating experiences, creation of situational approaches etc.
7. Mental ability of the student. Hence a good and effective classroom, conducive for teaching of

mathematics to children with visual impairment must adopt a multisensory approach using a plethora of teaching learning materials with necessary adaptations in the curriculum and must include children with visual impairment as active participants. Children learn primarily by manipulation till the formal operational stage. If children are not taught mathematics with hands on methods up to the age of 12, their ability to acquire mathematics knowledge is disturbed at the point when hands on explorations were abandoned in favour of abstractions. Hence learning by doing, wherever feasible, is the right approach in teaching mathematics to children with visual impairment.

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Problems of learning Mathematics for visual impairment children Due to lack of vision, the visually impaired child - finds it difficult to gain concrete ideas of form, size, colour, spatial relationships, and spatial qualities of objects; is unable to observe the objects in to; thus gains a partial knowledge of the objects; is unable to acquire incidental learning; faces problems in setting out long multiplication and long division; finds it difficult to construct desired geometrical figures; takes more time in learning and comprehending mathematical concepts; takes longer to feel along a line than to scan it visually; faces problem to make the graphs themselves. 2.3.3 What is math phobia? It may be defined as a feeling of anxiety that stops one from efficiently tackling mathematical problems. Many people think of math as an extremely tough subject that they cannot master. This negative attitude stops them from focusing on the subject/ problem which they are tackling. Just before tests or exams they start to get nervous as they are not prepared. Some even learn and understand math but during the time of the test fear clouds their minds and they are not able to perform well. This increases the speculation in their minds that math is too tough for them. In simple term phobia means fear. A Anxiety One definition of math anxiety is "the panic, helplessness, paralysis, and mental disorganization that arises among some people when they are required to solve a mathematical problem. Math anxiety is a serious and pervasive problem, especially for the visually impaired students who may experience math anxiety in many forms and degrees, from "freezing up" during a math exam, to attempting to avoid anything having to do with numbers. Symptoms may be physical or psychological and may include (but not be limited to) any of the following:

47 Physical: Nausea, shortness-of-breath, sweating, heart palpitations, increased blood pressure. Psychological: Memory loss, paralysis of thought, loss of self-confidence, negative self-talk, math avoidance, isolation (thinking you are the only one who feels this way). What are the causes of math phobia? Math phobia is due to : Poor math performance Poor preparation Negative math experience Math avoidance due to lack of vision Lack of confidence Passive behaviour of the students Inherited trait Community influence Low self esteem Lack of analogies Learning disorder Insufficient study materials for visually impaired children B. How to overcome mathematical phobia? The first step is to build confidence Recognize the symptoms of math phobia Start preparing early Start with small mathematical problem Combat negative thinking Do easiest problems first

48 Find a support group Reward for hard work Learn stress management and relaxation techniques Sign-up for the proper level of math course. Ask questions when you don't understand. Give enough time to study for a test. Make a test plan to reduce anxiety. Revise study habits. Reinforce the child's sense of intelligence and skill. Create a supportive environment for learning math. Schedule study breaks. Encourage the child to tackle math one problem at a time. Show your child the positive uses of math. Familiarize the teacher with improvised math teaching aids. Support the positive aspects of math with games, puzzles, and humour. Encourage the child to not compare abilities with their classmates. Play with math games to find the fun in mathematics Keep a positive attitudes Encourage creative approach Variation in approach Parents, guidance Strengthen students basic skill Use step by step approach Use multisensory approach Active role of the teacher

49 2.4 Conceptualization of mathematical ideas

The role of vision is so vital during the early years of life to learn concepts. Devoid of the sense of vision, it is an accepted fact that the children with visual impairment are in a disadvantageous position. However, teaching methodologies including multisensory approaches where in the remaining senses are utilized optimally to compensate the loss of vision comes in handy.

Learning of mathematical concept in parts logical thinking and numerical skills are besides reasoning. Evaluation of learning in mathematical concept aims at- Assessing. Understanding of the concept. Development of skills to do mathematical operations Ability to find solutions of mathematical problems Understanding the concept of time, distance, money measurement etc.

Mathematics is a deductive concept and proposition'. The basic concepts of any branches of mathematics have to be general and minimum possible.

For example the concept of natural number does not refer only pebbles or apples or coins or houses part to any and all entities which satisfy set of axioms. The axioms are propositions whose validity is considered to be self-evident. The visually impaired may lack in the incidental experiences which his sighted counter parts can make use of. Therefore, they need successive interactions with basic experiences and suggestion to arrive at the desire in intuitive grasp of the concept. For example, while teaching the concept of line to an eight year old sighted child it may suffice to draw a line on a black-board and say that this represents line. The line which you observe as edges of walls of rooms, rail tracks etc, it can be extended on either sight it has no thickness etc. but for a visually impaired child of same age we will have to put the learning activities in such an order that the desired learning of the concepts are effected. We may present to him concrete objects for manipulation to explore the edges, with his finger he may explore the extension of thread wire etc. subsequently embossed diagrams on cards can be used to fix the idea. The children should arrive at an intuitive grasp of the mathematical concepts through

50 experience with concrete and semi- concrete material adapted for their use. The order of complexity of arrangement of material should be conducive to a sequential learning of the concepts. The principle of mathematical variability should be followed in eliciting the grasp of the concept. For example, in teaching the concept of place value one should use counters, using a bigger or tactually different counter for every tenth object to be counted. Thereafter, a Spike Board with counters may be used. This can be followed by use of a ten base abacus and only after this the 'crammer abacus' should be used. The same idea of place value can be given by using apparatus . The flow of activities is from concrete exploratory activities leading to abstracting and intuitively grasping the concept to its application to other situations aided by language to generalising and use of notation and symbols. The four Arithmetical operations can be taught using concrete and structured material like number board, unifix cubes, marble, match stick etc. The structural properties and inter-relations among the four operations can also be conveyed by the use of these materials. The algorithms should be of few steps only and the reason behind their formulation should be clarified before they are used for drill work. There are situations when the algorithms which the sighted children use can't be applied by the Visually Impaired children. A case in point is the addition of fractions. As the notations of fractions in braille is such that the step of multiplying the denominators in the addition algorithm can't be done easily by the Visually Impaired children, an appropriate substitution will be using the notion of fraction as a denoted ratio and reformulating the algorithm. The idea of space, time, and derived concepts like speed etc. appear to be one of the major problem areas for the Visually Impaired children. This should be linked with the mobility training so crucial for their daily living. For example, the concept of graphical location can be given by pegging two ropes with knot at one pace interval placed perpendicular to each other on a ground. The children can locate an object like chair, another child etc., by starting from the origin. The teacher can give directions of movement along the axes. Subsequently, the same exercise can be done on paper and later on embossed graph paper can be made available to the children. The use of the magnetic board can also be made in giving the geometrical concepts particularly, those involving flexibility of movement and locus. A visually impaired person gains knowledge of the spatial qualities of objects only by tactual observations in which kinesthetic

51 experiences play an important role. Since touch requires direct contact with the object to be observed, visually impaired children often gain a partial knowledge of objects that they cannot observe in toto. Also, the sense of touch generally functions only if it is actively employed for the purpose of cognition. Whereas vision is active as long as the eyes are open. A visually impaired student needs to learn systematically what a sighted child can pick up incidentally from the environment. Thus, a visually impaired child is limited in the range and variety of his experiences and educational measures are necessary to overcome this limitation. Development of mathematical concepts among children starts with number concept. The curriculum for mathematical concepts is set up very carefully. Efforts are made that it has direct utility in day to day life. In secondary school mathematical concepts form an important part of academic skills.

Evaluation is essential to ensure that the objectives are being achieved and identify the areas of improvement.

The following factors have direct bearing on evaluation of mathematical concept among visually impaired children

The visually impaired child should be encouraged to master the skills of using abacus, Taylor frame and geometry kit effectively. At the time of evaluation they should be provided with the necessary equipment. Visually impaired children should be introduced with Braille

mathematical code as and when it appears in the textbook

Visually impaired children should be provided with Braille books in mathematics well in time. The question papers in Braille should use only those mathematical codes that have been taught to the child. The visually impaired children should be

exposed to all the mathematical concepts including geometry and trigonometry. Innovative methods should be used to make mathematics interesting for visually impaired child 2.5

Preparation and use of tactile materials: Mathematics text materials: The use of braille text materials in mathematics can't be overlooked for visually impaired students. The content in mathematics text books which

52 contain more of facts and procedures should be presented in tangible form to the visually impaired child to, enhance his learning. Mathematical text materials requires a lot of editing since it contains geometrical diagrams, mensuration diagrams, trigonometric figures. Under each lesson so on, presentation of text materials should not confined the visual impaired child when using the materials along sight his fellow sight counter parts. In case of modifications of the diagrams, instruction above the kind of modifications could be specified. Similarly in case of omissions of the diagrams or an exercise, it is very vital to explain the concept of text and the reasons for omitted portion. The adopted mathematics instructional materials should be presented and supplied in to regional language. Supplementary teaching aids should be given along in the instructional materials. In order to facilitate the visually impaired teacher should prepare the materials in braille. In adapted instructional materials one has to bear in mind following aspects.

Duplication as per possible Modification of the lesson without changing the concept Substitution of a model for giving the same approximate experience Omission under unavoidable circumstances

Truly speaking "The hand is the eye of the visually impaired". Tactile materials or diagram should be prepared in such a way that visually impaired children are able to explore, identify, discriminate and recognize it without much confusion.

Tactile materials should make the teaching effective,

quicken the pace of learning, help to overcome the burden in learning, provide first hand concrete experience and bring variety to the learning of visually impaired students. The sense of touch becomes more important media in learning process and also it provides enrich experience such as shape, size, texture, hardness, softness, weight, dry or moistness, hot and cold etc. hence the preparation and presentation of tactile materials should follow the following aspects: Tactile materials or diagrams should stimulate and motivate the visually impaired students. The size of the tactile diagram for the visually impaired students should be within two hands of the users, It should convey only central idea of the lesson supported by its components.

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It should provide an appropriate tactile experience. It should be simple and clear in shape and size. It should make the teaching effective and the learning interesting. It should , quickness of pace of learning and overcome the hurdles in learning.

It should be strong and sturdy enough to have longer durability. Title of a diagram

should be placed at the top of the diagrams. Principle of leveling of the diagram should be maintained from left to right and top to bottom. Principles of tactile diagram may be "

make it cheap, use it well and change it often"

It should be

provide three dimensional and concrete experiences and bring variety to learning of the visually impaired students. It should follow principles of tactile tolerance. Must avoid tactile jumbling. Ratio of enlarged size should be maximized upon the visual competence. It should not overload be with information. 2.5.1

Improvisation of mathematical teaching aids for visually impaired Students: The

material for visually impaired children is prepared bearing in mind the suitable principles-the maximizing of the duplicated material, the modification of format and content for necessary adaptation, the substitution of ideas/ lessons for optimum learning experience of the child and rare omissions under unavoidable circumstances. Mathematics being an abstract subject, which involves the appearance of concrete, pictorial and abstract concepts, all the four principles should be used in preparing text material.

To supplement the use of mathematical text material, a small guidebook in Braille consisting of the model problems, certain diagrammatic illustrations, etc. can be provided to the child.

Davidson's (1988) study also highlights this need. This helps the child, especially during the examination time, to revise.

Even though it experienced that

54 Mathematics lessons could not be recorded into cassettes as whole,

certain steps such as formulae, methods of constructing a diagram in the case of geometry, etc. can be recorded in

a cassette. All possible alternatives have to be explored for making the teaching- learning in Mathematics more purposeful.

Mani (1993)

highlights the importance of three- dimensional aids and the need and nature of improvisation of aids in the teaching of Mathematics to visually impaired children.

Since vision plays a predominant role in the assimilation of ideas by observation, certain aids, which are commonly available for sighted children have to be adapted to suit the needs of the

visually impaired children. The concept of tactile attraction is to be emphasized in preparing teaching aids, so

that the child does not encounter any difficulty in understanding the concept.

In Mathematics, most of the teaching aids can be presented tactually because they are aiming at the development of certain concepts. Area, volume, height, weight, elevation, scale value, etc., are some concepts which can be effectively explained through three dimensional teaching aids.

Geometrical

devices can also be adapted to the needs of visually impaired children.

For example,

in the normal Protractor made out of plastic, big wholes can be made for every ten degrees and small whole's for every five degrees without breaking it.

Visually impaired children can have difficulties with Mathematics, as Clamp (1981) points out, this is likely to be due to underdeveloped mathematical concepts and not due to an inability to achieve. They can be good achievers in Mathematics if an emphasis on concrete experiences is given. According to Brown (1983), in his concept on systematic approach to instructional technology, the central focus is on the students, their needs, capabilities and achievements as they work towards desirable levels of competence and performance. There are four fundamental questions. First, what goals are to be achieved? Second, how and under what conditions students aim to achieve these goals. Third, what resources are required for necessary learning experience And fourth, how far the goals were achieved. This process also provides guidance for necessary improvements in instructions regarding what needs to his changed.

55 2.6 Mental Arithmetic Abilities 2.6.1 What is mental arithmetic? Mental Arithmetic Skills - Hall (1954) defines mental arithmetic as ... 1) Arithmetic problems which arise a) in an oral manner b) in written form, or c) "in the head" of the person who needs to solve the problem; 2) Problems in which pencil and paper and other mechanical devices, such as calculators, are not used to record the intermediate steps between the statement of the problem and its answer; 3) Problems in which pencil and paper are used, and problems in which they are not used, to record the answer; 4) Problems in which quick estimations are made which either mayor may not be verified by a written response.

Mental arithmetic is an ability to calculate and get a correct answer without using paper

and pencil or any other electronic devices. Mental arithmetic is an form of training which enhances a child's ability to calculate without the aid of any instrument, such as paper, pen, pencil, calculator or abacus. The child will be able to calculate with speed and accuracy using his/her own mental power and can surpass the speed of even a calculator. It starts with the use of an abacus and soon the child learns to calculate mentally without a physical abacus. Mental arithmetic is fun filled learning. When the mind gets constant exercise, mental power of the child gets a boost. Just like equipment at the gym is a medium of body building. So also for brain development, mental arithmetic is proven medium. In short, Mental Arithmetic + Practice = Brain Development. Mental arithmetic training will have several positive benefits.

These are: Greater concentration Keen Listening skills

56 Better reflexes Better application skills Improved analytical skills Better creative and imaginative skills Better Memory Sharper observation Self-confidence Better comprehension and calculation skills 2.6.2 Importance

and applications of mental arithmetic The important point that emerges about the nature of mathematical concepts is that the elementary and most general characteristics are most significant and so also the process of their generalization which may be abstract. The perception of these concepts can be achieved only intuitively. The visually impaired are no less competent in this

intuition, and

mental computation is not likely to cause any particular difficulties. Visually impaired children become adept at this since they are used to relying on their memories rather than referring to books for prompting. In order to develop the

mental ability of doing mathematical calculation, concentration and a mastery of

basic mathematical operations are required. As in the case of other activities, this too needs systematic instruction, practice and application. In visually impaired children, this exercise could start with the learning of the abacus. Calculations in the abacus require a mastery over the multiplication tables and ability in the abacus contributes to mental abilities in calculation.

Once the child is proficient in operations with the abacus, ranging from addition, subtraction, multiplication, and

division (especially long division involving many digits) up to the process of calculating square root, percentage etc., he/she can be trained to use short-cut techniques in computing

the values. For example, 642×123 can be divided into various steps such as 600×123 , 40×123 , 2×123 and even further depending upon the ability of the child to store the calculated values in his/her brain before making the sum total of the entire calculation. Training in remembering a set of numbers over a period of time, games for calculations, etc. can be performed by the student and teacher

in order to gain

sufficient practice. Prolonged training and practice in performing mental calculation & help the child to acquire a mathematical mind,

57 which is very essential for problem solving, analysis of information, a scientific approach in performing day-to-day activities, etc. After each exercise in improving mental calculations, it is necessary for the child to verify his/her answer with the help of

mathematical devices such as the abacus or Taylor Frame. The process of calculation in mathematical device helps him/her to discover where the mistakes were made during the mental calculations. Kalaiselvi (1985) studied the effect of the abacus and the Taylor Frame in teaching mathematics to visually impaired children. Thompson (1999), in an effort to support/advise teachers to meet the changing curricular demands of increased emphasis on the development of a child's mathematical mental calculation abilities, provided a comprehensive list of the most commonly used mental calculation strategies used for one digit number operations for primary school aged children. Thompson (2000) also produced a list of the most commonly used strategies for two digit number operations. Thompson (1997) used these strategies in his research study in which he attempted to determine if written methods could actually reflect mental calculation strategies. The focus of Thompson's work involved addition and subtraction operations only. The research of Hope and Sherrill (1987) revealed a number of calculation strategies. As previously noted, the study participants included 15 students skilled in mental computation and 15 who were considered unskilled. Analysis of the student reports indicated that 3 methods and 4 strategies per method were used to solve the calculation tasks. l) Mental pencil and paper - doing the same mental processes in one's head as he or she would conventionally do on paper. a) No partial product retrieved - i.e. 25×25 - "five times 5 is 25, carry 2, $5 \times 2 = 10$ plus 2 = 12 etc." b) One partial product retrieved - i.e. - " 5×48 is $5 \times 8 = 40$, carry 4, 24, 240. And 2×48 is 96, etc. NOTE: 240 was calculated digit by digit but 96 was retrieved as numerical equivalent. c) Two partial products retrieved as numerical equivalents. 12×250 . $2 \times 250 = 500$, 1×250 is 250, move over one, 3000!

58 $12 \times 250 = (2 \times 250) \times 6 = 500 \times 6 = 3000$ d) Stacking - each partial product was completed digit-by-digit and visualized as a stacked arrangement. i.e. 8×999 is 72,72 and 72 right across. $72 \times 72 = 7(2+7)(2+7)2 = 7992$ 2) Distribution-transforming one or more factors into a series of sums or differences. a) Additive distribution - each partial product is added successively to produce a running sum. i.e. $8 \times 4211 = 8 \times 4000 = 32000, 8 \times 200 = 1600$ and $8 \times 11 = 88$. Answer: 33688. b) Fractional distribution: applied when factor contained a "5" as a unit digit. i.e. 15×48 was calculated as $10 \times 48 = 480$ and half of that is 240 so the answer is 720. c) Subtractive distribution - used when students thought expressing the numbers as a difference made the calculation more tractable. i.e. 8×999 is the same as $8 \times (1000 - 1) = 8000 - 8 = 7992$. d) Quadratic distribution- The algebraic identity for the difference of squares $(x - y)(x + y) = x^2 - y^2$. So, students solved by the problem 49×51 by changing it to $50^2 - 1^2 = 2499$. 3) Factoring - one or more factors in the task were transformed into a series of products or quotients rather than a series of sums/differences. a) General- factoring one or more of the factors before applying the multiplication law. i.e. $25 \times 48 = (5 \times 5) \times 48$. 5 times 48 = $(5 \times 40) + (5 \times 8)$ and 5×240 is 1200. $25 \times 48 = 5 \times 5 \times 48 = 5 \times \{(5 \times 40) + (5 \times 8)\} = 5 \times \{200 + 40\} = 5 \times 240 = 1200$ b) Half and double - This strategy is used when one factor is a multiple of 2. i.e. 12×15 equals 6 times $(1/2) \times 30$ (double) = 180. c) Aliquot parts - transforming one factor into a quotient. d) Exponential factoring - used to calculate products of power through the exponential rule. i.e. 32×32 . 32 is 2 to the 5th power, squaring this is two to the tenth power, "which I just know is 1024." For this person 210 is a numerical equivalent of 1024 .

59 Some of these strategies have been described in the work of Hazekamp (1986) and Atweh (1982). However, these authors identified several strategies unique to their respective reports. Hazekamp discussed the rules of multiplying by 5, 50 and 100: By 5 - Divide by 2, multiply by 10. 5 is 10 $\div 2$ By 50 - Divide by 2, multiply by 100. 50 is 100 $\div 2$ By 100 - Divide by 2, multiply by 1000. 100 is 1000 $\div 10$ For example, the problem 364×50 is solved by dividing 364 by 2, yielding 182. Next, multiply by 100 to give 18,200. Atweh provided an interesting strategy for a multiplication calculation that can be performed assuming two criteria are met. First, the units digits must add to ten. Second, the tens digits must be the same. If both of these criteria hold true for a problem, the problem can be solved by multiplying the units digits to yield the last two digits of the product. Then, increase one of the tens digits by one, keep the other the same and multiply. The result is the first two digits of the product. i.e. $64 \times 66 \dots 6 \times 4 = 24$, the last two digits in the product. \dots and $7 \times 6 = 42 \dots$ is the first two digits in the product. Therefore, the answer is 4224. These studies reveal that most teachers working in residential schools are unaware of the use of the abacus. The study recommends that systematic instructions should be given to handle the abacus, and mental calculations can be developed in primary & elementary level children by the play way method. For

this reason, it becomes important to teach mental math to children in primary level. This in turn improves their ability to use four arithmetic rules in high speed to obtain solutions without the use of any tools.

One of the most important factors to consider in this process is the manipulation of numbers in the head. Creating number sense is one of the most important steps towards realizing this goal. This is for the simple reason it incorporates estimation, measurement and place value. This concept in turn makes it easy for students to memorize math facts easily. The best manner in which to teach mental maths is to string random numbers together and ask students to find the solution. In order to effect this with ease, it is therefore important to teach children how to conceptualize the mathematical process. As they learn how to carry out these calculations in the mind, speed to find solutions is also established.

60 As students become more accustomed to working with numbers, then it becomes easier to provide times tests. However, if they have not learnt the concepts, it is advisable to stay away from this strategy as it only serves to aggravate the students without delivering any results. At this point, it is important to state that teachers should not use any manipulative techniques to teach students. Rather, they ought to focus on teaching them how to think and reason in a mathematical manner. The most important way of ensuring that mental maths concept is accepted and ingrained in students is by incorporating it into the daily programme. 2.7

Evaluation procedures with special reference to the needs of children with visual impairment.

The goal of education is all round development of the child. Evaluation is a mirror, which, reflects the extent to which teaching objectives are achieved.

Evaluation is essential to ensure that the objectives are being achieved and identify the areas of improvement.

Through evaluation suitable modifications are incorporated from time to time to develop desirable skill among children. The remedial steps are possible only through effective evaluation procedures. Evaluation, therefore, has to be continuous and comprehensive. It implies that evaluation should encompass all aspects of teaching objectives. Evaluation is required to assess the pace of pupil's progress, identify learning problems, taking teaching related decisions. In this way evaluation can be a day to day, lesson to lesson, and unit to unit process. Evaluation data are collected through different sources, informal evaluation and formal evaluation. Informal evaluation is usually in progress when the teacher asks questions during the lessons or observes child behavior in some situations incidentally. For formal evaluation several systematic procedures are followed. The most important is achievement test. Several types of questions are used as tools in achievement tests. For example, very short answer type, short answer type, essay type, multiple choice type, matching type, true/false type, fill in the blank type, problem solving types, draw the diagrams types etc. Preparation of tools for evaluation of mathematical concepts among visually impaired children must be in accordance with the following guidelines:

- The tool should ensure equal opportunities to visually impaired children; therefore, they must be compensated with extra time to attempt their questions.
- The visually impaired children should be subjected to evaluation at regular intervals

61 rather than once or twice a year. The assessment report should reflect their regular performance in the class.

- There should be complete evaluation report consisting of information about their non-academic activities so that the same could be used for guidance and counselling.

Visual impairment among children needs to be understood very well during evaluation so that the basic objective is achieved. During evaluation following implications of visual impairment must be considered:

- Visually impaired child expresses through writing in Braille script or through use of typewriter or amanuensis. Suitable arrangements should be made during evaluation process.
- The said methods of expression consume more time. Therefore, visually impaired children should be allotted with extra time at the rate of 20 minutes per hour to ensure equal opportunity and compensate for time consuming procedures through which visually impaired child has to go through.

- For Mathematics, visually impaired child needs abacus or Taylor frame, Geo-board, The necessary arrangement should be made.
- The missing visual experiences in terms of diagrams and other exposure should be compensated through tactile experiences to a visually impaired child. Alternative questions should be provided in the question paper for graphs, geometrical construction and similar other visual based questions.
- Opportunities to build verbal description memories for visually impaired child. Suitable flexibility should be provided to give description of diagrams instead of drawing, to visually impaired child.

- Making educational material available in large print for low vision children. Evaluation system should ensure providing question papers in large print for low vision children. The adjustment and adaptation of evaluation and examination procedures should be viewed from the point of view of presenting the test questions and the modes of answering by visually impaired children. The guiding principle is that the procedures should be as close as possible to the practice with sighted children. The purpose of adaptation is that visually impaired children should not be at disadvantage in evaluation and examination

62 due to their impairment. Substitution and omission should be the last resort. Few ways in which questions can be communicated to visually impaired children and their answers can be elicited are given below:

Modes of questions

- Written in Braille basically elementary level.
- Written in print but read by a reader for the visually impaired child.
- Listening by the visually impaired children from audio cassette player.
- Oral questioning

is more stressful in primary level by the examiner. Combination of the above. Modes of answers Writes himself in Braille. The scribe writes for him basically secondary and above. Records on audio cassette. Give answer orally to the examiner. Combination of the above. Generally, Mathematical calculations are taught step by step so that a student has a sure way of arriving at a proper conclusion. The visually impaired child should know and understand these steps. However, for speed and simplicity, visually impaired students are taught mathematical calculations with an abacus, and present their answers in Braille on a separate answer sheet. This does not mean less work or less study for the visually impaired child it actually means more. Yet, in practical life situations, the abacus and Taylor frame is most functional as a substitute for pencil and paper for the visually impaired students. Abacus work must be done very carefully. For example $6542 + 2364 = 8906$. At times the student may write the answer 7906. In this case while the answer is indeed wrong, the error is most likely in the mere movement of one bead. The teacher should congratulate the student for the portion completed successfully, and bear in mind that the students need more time to learn to handle the abacus effectively. Teacher's flexibility in this aspect is highly appreciated.

63 The problems of teaching to visually impaired students of mathematics can't be treated in isolation from the problems of mathematics education prevailing in general. The paper has attempted to look at the situation in a holistic manner and identified problems- most of which are general in nature, and others specific for the visually impaired learners. Basically, the suggestions that have emerged are: ? Build a faith in the mathematical capabilities of children in general, and visually impaired children in particular; ? Provide concrete experiences to build mathematical concepts; ? Modify concrete materials for visually impaired children; it may be an enriching experience for others; ? Provide active and encouraging teacher-guidance for accommodation and assimilation of new mathematical meanings into the existing structures; ? Provide specific instruction and practice in neat precise, formatted presentations, and ? Provide better alternative materials for use by visually impaired children. Given an improved system of mathematics education in general and non-visual materials and experiences in particular, a child may not find learning mathematics a distant possibility simply because one has already suffered loss of vision. 2.8 Let us Sum Up ? Visually impaired students can also learn Mathematics if taught in an appropriate manner despite being questioned by highlighting some of the areas in Mathematics that demand vision. ? Various factors contribute to better learning of Mathematics, such as selection and teaching of suitable mathematical Braille Codes, adaptation of the text material; teaching of mathematical devices and preparation & use of appropriate teaching aids. ? Visually impaired students face certain problems in learning Mathematics due to lack of vision such as difficulty in gaining concrete ideas of objects, setting out long multiplication and long division Visually impaired students take longer to feel along a line and face problem to make the graphs themselves.

64 ?

Mental arithmetic is an ability to calculate and get a correct answer without using paper and pencil or any other electronic devices. ? For low vision children question paper in large print should be provided. Low vision children may write answers by themselves or with the help of scribe. ? There are important implications of visual impairment on evaluation in the achievement in mathematical concept. ? Evaluation is a continuous and comprehensive process and important component of teaching learning process. ? Learning mathematical concepts involves logical thinking and numerical skills besides reasoning. ? Evaluation of learning mathematical concepts aims at assessing, the concepts understanding, skills to do mathematical operations, ability to find solutions to mathematical problems, and understanding the concepts of time, distance, money, measurement, etc. 2.9 Check your progress A. Write the appropriate answer 1. Instructional objectives are based on a) Content to the cover b) Expected change in the behavior of the student c) Teaching methods d) Instructional environment. 2. Braille mathematical code for India was adopted in a) 1952 b) 1979 c) 1989 d) 1996 3. Remedial teaching is based on a) Mental mathematics 65 b) Teaching method c) Evaluation d) Diagnosis 4. Reading a mathematics braille book may be difficult for a visual by impaired student Because a) Lack of interest in mathematics b) Unawareness of Mathematical braille codes c) Bulkiness of the book d) None of the above 5. Learning of mathematical concepts means a) Development of logical thinking b) Numerical skills and reasoning c) Ability to find solutions of mathematical problems d) all of the above. 6. Algebra can be taught through a) Taylor frame b) Abacus c) Braille d) All the above 7. Geo-board is used to teach a) Geography b) Clock Concept c) Geometric figures d) All the above 8. Evaluation includes

66 a) Qualitative descriptions of student performance b) Students value judgment concerning the desirability of that performance c) None of the above d) Both (a) & (b) 9. In evaluating the braille answer sheets the child should be downgraded for a) More conceptual error b) More braille error c) Neatness d) None of these 10. The devices for mathematical calculations are b) Slate and stylus c) Abacus and Taylor frame d) Braille writer e) None of these B Activity i. Describe the major factors that affect the learning of mathematics among visually impaired students. ii. Enlist the factors that can cause difficulty in learning mathematics by visually impaired students iii. Explain the characteristics of tactile diagram while preparing for the visually impaired students. iv. How can braille mathematical symbols help in learning mathematics by visually impaired students? v. How can learning of mental arithmetic by visually impaired students help them in day to day life situations? vi. Write briefly about the implications of visual impairment on evaluation in the achievement of mathematical concept.

67 vii. Draw various types of angles, triangles, quadrilateral on relief sheets by using Geo-board

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69 Unit - 3

Science Sturcture : 3.1 Introduction 3.2 Objectives 3.3 Providing first-hand experience in the class and the school environment 3.4 Inclusive/collaborative learning for laboratory work 3.5 Science Teaching ' Learning' Materials and Equipment : i) Preparation and use of TLM ii) Locating and procuring Science equipment 3.6 Problem solving and Learning by doing approach for visually impaired students 3.7 Evaluation procedure with particular reference to Practicals and Adaptations in Examination Questions i) Evaluation

Procedure with reference to Practical ii) Evaluation Procedure for adaptations in examination questions 3.8 Let us Sum Up 3.9 Check Your Progress 3.10 References 3.1 Introduction: Teaching and learning of science implies a number of things. For some a science course implies definitions, formulae and classification. Some view it as development of scientific thinking methodological careful observation, accurate recording of data to assist in formation of judgements and conclusions. A science course covers a wide range of experiences- observation of scientific phenomenon in day-to-day life to laboratory experiments of simple to very complex phenomena. Method and media employed also vary from textbooks, to real life observation to stimulated experiments. Topics covered range from personal hygiene, weather conditions, astronomy to laboratory sciences like physics, chemistry and biology. But general opinion is that science is a tough subject, depends a lot on sense of vision, hence not convenient

70 for visually impaired children. But this is not the truth. As suggested in the first capsule of this module, adaptation of methods and materials can make it a subject of interest and mastery for younger visually impaired children to grownups. Science books can be brailled in the same manner as are brailled other textbooks and main reference books. Verbal explanation is always employed to clarify the concepts and phenomenon. They can be recorded or brailled and need very little editing except for diagrams and notations. The diagrams need to be translated into tactually perceivable form or description can be substituted. 3.2 Objectives : After completing the activities specified in this capsule, the reader is expected to realise the following objectives with reference to visually impaired children. i) Describe the importance of teaching science. ii) Identify the ways of teaching science. iii) State the role of experiment in learning scientific concepts. iv) Explain the usefulness of laboratory v) Understand the different methods of teaching vi) Understand the importance of uses of TLM and Equipments in teaching science. vii) Demonstrate the methods of evaluation and examination procedures with reference to visually impaired children. 3.3

Providing first-hand experience in the class and the school environment 3.3.1:

Ways of learning Science

One of the foremost methods by which children learn science is through first-hand experiences. Even in the primary standards, whenever a teacher is trying to demonstrate or explain a concept, it is useful for her to have materials trying demonstrate or explain a concept, it is useful for her to have materials which show or display that action or system or method. The visually impaired child sometimes needs special opportunities for tactfully

exploring or having careful, prior explanations of, or follow up information about.

But first- hand experiences should be correlated with helping

71 children to

recall what they have experienced, and making deductions from them. The second way is that very young children enjoy first- hand experience by undertaking field trips. A field trip to an industry, visits to the neighbourhood and community are useful in stimulating awareness of the environment. Visually impaired children can make collections of rock specimens, leaf collections etc. There are many things that primary level children can do in which they can be active during group excursions and field trips. During field trips, the children need to know what they are looking for; they need to be oriented to what to expect, during the field trip. On their return, they should be asked to correlate their experiences with the lessons. This will help visually impaired children to develop concepts through first hand experiences. The third way of instructing visually impaired children is through group study.

Often, children acquire more knowledge through study among a peer group than when by themselves. In project learning, the visually impaired child can be linked with a group of sighted

students. In these activities visually impaired children understand experiences. 3.3.2 Principles of Science Teaching An important prerequisite in science learning is motivation. Without interest and incentive learning does not become meaningful. Motivation may therefore be said to be the heart of the learning process. The teacher should introduce the topic of science in an interesting way and make the content presented meaningful so that the learners find their work interesting and do all activities willingly. It is the responsibility of the science teacher to evolve new patterns in his teaching to motivate the pupils to learn with zeal and eagerness. He should make use of incentives such as : providing scope to display pupils' work; providing opportunity to do independent work; giving responsibility and leadership in scientific activities; keeping the pupils informed of their progress in science; providing opportunity for pupils' demonstration; arranging for pupils' cooperative enterprise in science; organising field trips or visits and also science clubs and science fairs; creating a sense of healthy competition among the pupils. The learners should be actively involved in the learning experience. But in science, many concepts such as atoms, molecules, energy, etc. Are beyond the direct experience of pupils. Models and other audiovisual aids should be used to explain these concepts or principles. The teachers should be familiar with psychological principles of learning the law of readiness, the law of exercise. The effect of motivation and incentive have been discussed earlier, these are connected with these laws. Another important consideration

72 which the science teacher should know is that different pupils learn through different ways. Some pupils learn through actual handling and manipulation; others learn better through audio-visual aids and still others learn well through demonstrations. The science teacher is fortunate in this respect, because he can use a variety of resources or arrange a variety of activities for science teaching. Plenty of charts, diagrams, graphs, maps, or films are available for science teaching. It is also possible to find suitable places for field trips or visits. The availability of reference books, journals, pamphlets or illustrated booklets in regional languages varies from state to state. But such material is easily available in the English language. Demonstration may be given with the help of simple or improvised apparatus. The science teacher should resort to these avenues for teaching science, according to the circumstances. 3.3.3 Science learning at the Primary Stage The pupils at this stage are inquisitive and curious to know the things around them. They ask questions about the hows and why's of things and events that occur in their environment. They are fond of playing and always keen to do something. This is a period of rapid growth; they possess energy and are always restless. They like to spend more time with friends and take special interest in nature. They take pleasure in constructing things with simple tools and ordinary materials. They fascinate stories, fairy-tales or interesting life-stories; they are very imaginative. Brightness, sound, colour, animals or other natural phenomena immediately attract their attention. The science teacher should take advantage of these natural abilities of the pupils and provide them suitable experiences through doing something. This is the best stage to whet their interest in science. Care must be taken while providing experiences to teach them simple concepts of science. Because once a concept is wrongly conceived, it is very difficult to correct it at a later stage. It, however, cannot be expected that pupils of this stage will be able to understand the abstract ideas of science, or the various applications of science. But they can be trained to observe and develop physical skills. Pupils should be taken out for first-hand experience with nature. They may be taken to woods, river-side or lake-side, botanical garden, zoo, or public parks. They may be taken to a poultry-farm, fish-farm or an agricultural farm for first-hand experience there. In case of urban areas, the pupils should get the opportunity to experience the varied life of a modern community such as visiting a post office, a railway station, a sea-port or an air-port and see the working there. Each school should possess an aquarium, a vivarium and a garden. Gardening can be very useful in giving the pupils

73 knowledge of various facts and phenomena of nature. By working in the school garden, the pupils become familiar with the names of various vegetable and flowering plants, the process of manuring and of plant growth. Through gardening, they may be taught simple arithmetic and made familiar with simple plane geometrical figures; the different plots growing different types of plants may be made triangular, square, rectangular or polygonal in shape. Moreover, working in the school garden satisfies their desire for doing something and develops a sense of dignity of labour and a sense of co-operation. Manual labour is good for their health. The school should also have a science museum where the pupils can preserve their collections. The teacher should encourage them to collect interesting specimens to be preserved or displayed in the classroom. This satisfies their instinct of acquisitiveness. If the school possesses a small zoo, the pupils feel the school as the most interesting place. The science teacher can utilise the zoo for imparting to the pupils the knowledge of animal habits their behaviour and their relation to man. Interesting activities suitable for the primary level pupils are constructing bird-houses, keeping weather records, scrap-books or diaries, collecting various types of stones, seeds. Fruits, leaves, insects, butterflies, wild flowers, photographs or sketches of scientists, exploring fields and woods, rearing toads, frogs, insects, birds, rabbits, pigeons in the school, making models of care aeroplanes with cheap materials, experimenting with magnets, torch-cells, electric bells. The teacher should also collect interesting illustrated elementary books of science experiments, or biographies of scientists written in their mother-tongue, for the pupils and suggest them to read. He should also try to develop healthy personal and social habits. It is the time for moulding the pupils and to inculcate the good habits and attitudes. They should be provided with situations to apply and practise these good habits.

3.3.4 Science Learning at the middle school stage Growth is a continuous process with out sharply defined stages. One stage merges with the other through slow and continuous change. Therefore, the teaching at this stage should be linked with the primary stage, but, because of change in interest and expansion of experiences at this stage, the teaching of science should, however, take some definite form. It is essential that at this stage, marked for increase in physical strength and extreme gregariousness, appropriate activities be provided. Group activity is most suitable at this stage to satisfy their muscular ability and group loyalty. They also began to take interest in the people of the community and other affairs of the society the science teacher should plan activities through which

74 the pupils may feel the importance of science for the society. At this stage the pupils seem to be impatient to do things that interest them, but are careless in some of their habits and actions. the science teacher should therefore plan activities of interest to the pupils and also arrange suitable activities which demand exactness, care and precaution. The pupils may be asked to classify their collections and keep them in the appropriate place. They also show keen interest in reading. The science teacher should select appropriate books on elementary science for them to read. This stage is most suitable for training them in necessary mental and physical skills.

3.3.5: Science Learning at the secondary stage The Science teacher should try to exploit the adolescent characteristics for the purpose of teaching science. He should throw challenging problems from the field of science and ask them to solve them. This stage is most appropriate for training them in scientific method careful observation and unbiased judgement. Training in method is an important objective of teaching science in schools. The pupils should be given work in the special fields of their interest. The teacher should also arrange activities to acquaint pupils with the methods and procedures which the scientists follow to explore and exploit nature for our use. The pupils should be so engaged in scientific activities, that they may realise the impact of science on the modern society. They should be encouraged to investigate scientific problems individually or in groups. They should be placed in situations where they can generalise and deduce. Their thirst for undertaking responsibility can be met by engaging them in work of projects, science club, science fair, etc. They should be encouraged to take active part in arranging science exhibitions, discussions, or debates on science exhibitions, discussions, or debates on scientific topics, field trips or visits to places of scientific interest. Such experiences in the field of science enable them to learn science through activities appropriate to their age and ability. Due to maturity in skills, many pupils of this stage are keen to repair science apparatus and equipment or to improve apparatus. They should be given an opportunity to do so. The teacher's attitude towards them is an important factor which determines his ability to control these senior pupils. The teacher should work with them in the laboratory or in outdoor activities or engage some of the pupils to perform simple demonstrations before the class. Special talents in science should be given and guidance to flourish in the field of their interest.

75 Here the science teacher is in an advantageous position for the fact that the adolescents develop the characteristics of volunteering for individual responsibility. But at the same time they like to work with their friends. They begin to develop a liking for publicity of their success. The teacher should remember that the adolescents like freedom in their actions and resent interference. They like manipulative work and want to do something new by themselves. They eagerly accept project-work and their participation can be profitably used for repair work and improvisation of apparatus and other simple scientific appliances.

3.4 Inclusive/collaborative learning for laboratory work

Science teaching is different from the teaching of other subjects for the fact that here the theoretical lessons are accompanied or followed by practical work with apparatus and materials. The word 'laboratory' generally means a spacious room in which a group of students carry out practicals. Other rooms are usually essential if the science teaching of a school is to be efficiently organised. On laboratory side there is a large wall black-board provided. Six laboratory tables are arranged as shown. There is a sufficient space between the black-board and the opposite practical table. The tables measure 6'x3' -6'. Four students work at each table. The practical table opposite the black-board is a bit smaller in size and its top is covered with lead. It can be used for placing the common articles to be used by all the students during a particular experiment. As in the case of the double tables, the laboratory tables should be free from any dust lodging or ornamentations. The only addition to the ordinary type of table is a shelf along the working side just below the top for placing books and papers. No drawers or cupboard of the type used in college laboratory should be provided with the tables.

3.4.1 Advantages

The combined lecture room-cum-laboratory has the following advantages :-

1. It is more economical
2. It is compact and in spite of restricted space provides sufficient seating and storage accommodation.
3. It is furnished cheaply and easily
4. The seating accommodation provided is perfectly comfortable and of the type students find in their homes.
5. There is an atmosphere of science, and working in the same laboratory gives an idea of the unity of science.
6. It affords an opportunity for better control.

3.4.2 Role of Laboratory in learning Science Concepts

Laboratories are for the child's learning by doing. As a matter of fact, learning will never be complete if the child is just stuffed with the mere theoretical aspects of topics. Visually impaired children have the ability to perceive water boiling, evaporation of water and the like. The child has to start with this.

In a laboratory, once the child attains the ability to pour water into a test tube, he can be given the confidence to use diluted acids in experiments. By the time the experiments with such diluted acids are performed by the visually impaired child for himself, the student will be ready to start the examination of diluted acids. In all circumstances the earnest attempt should be made to explore the possibilities for the visually impaired children in laboratories, rather than to avoid such experiences. At the high school level, it is usual to group children for experiments in the laboratory. While one child performs the experiment, another child is engaged in recording the results; yet another is engaged in observing the experiment. Therefore, this is group learning. The children put all the facts together and present the experiment report. A visually impaired child can be made a member of such team and share the responsibility suitable to him.

3.5 Science Teaching Learning Materials and Equipment:

3.5.1 Introduction

Psychologists have found that 'learning by doing' the most effective method for learning science - has many advantages over other methods, such as reading about principles and concepts of science and their application, and observing others doing experiments. Experiments by pupils inside or outside the laboratory are first hand experiences. It is obvious that to live in this modern scientific world efficiently, first hand contact with the apparatus and materials of science is essential. Demonstrations also provide some direct experiences but not as effective as individual experimentation; because in a demonstration the teacher takes the leading part, whereas in an individual

77 experimentation, each pupil gets an opportunity to handle and use apparatus and materials of science. A modern school science programme cannot be conceived without practical experimentation by the pupils whose practical work in connection with the theoretical discussions of a topic should be considered an integral part of the science programme. We know that science is essentially a practical subject and that the young pupils always like doing something rather than listening or observing. Hence, practical experimentation of the principles or of the applications of science by the pupils can enable them to understand science properly. There are many facts and principles of science which are difficult for the pupils to believe or appreciate unless they themselves do the experiments and find the truth. To cite a simple example, formation of an inverted image of an object on the other side of a convex lens cannot be appreciated easily. The pupils remain wondering until they see that the image really appears on the other side of the lens. The pupils should be given the opportunity to find the truth themselves. It may not however, be possible to arrange experiments to find the truth of all the principles they ought to learn.

3.5.2 Nature of Science Teaching Aids

Teaching aids are vital tools to enhance the learning of basic concepts. The teaching aids play a significant role in the science

teaching learning of Visually Impaired children. The difficulties encountered by child in understanding a concept can be overcome by the correct use of science teaching aids.

The Teacher should fix his specific objectives for the task i) Teaching aids make teaching effective and simultaneously make the learning interesting and profitable.

ii) Teaching

aids quicken the pace of learning, foster its development and help to overcome hurdles in science learning. iii) Teaching

aids provide firsthand concrete experience to the child. One aid is equivalent to

a

thousand words when a child has difficulties in forming a concept.

iv) Teaching

aids brings

variety to the learning of the Visually Impaired child which is necessary for his/ her education.

78

v) A

good Collection of aids motivates the teacher to teach well.

The ideas involved in the aids evoke the

teacher's creativity. 3.5.3 Characteristics of Low- Cost Science Materials 1. These are easily available either free or at low cost in local environment. 2. These do not involve specialized skills and can be made by pupils, teachers or members of the community. 3. These can easily and effectively used by the teachers and pupils in clarifying the set objectives. 4. The process involved in their production is simple and inexpensive. 5. The material is simple, accurate and appropriate to age level of the users. 6. They stimulate thinking, reacting. Discussing, experimenting or further study. 7. They are free from distractions, conflicts or bias. 8. Their production is not time-consuming. 3.3.4 Steps in Developing Low -Cost Science Materials 1. Definition of objectives: The objectives of the materials are defined in the light of the needs of users in terms of knowledge, skills and attitudes to be developed. 2. Preparation of a design: A design for the development of different materials is decided in terms of the type of the materials to be developed, its cost, relevance, and the resources available in the local environment. 3. Development of materials: The materials are developed by students, teachers, specialists or community in cooperation with each other. 4. Pilot testing: This is done by the teachers or researchers with selected sample users. 5. Improvements: On the basis of the results of pilot testing necessary improvements are made in the materials. This also provides a feedback for modifying objectives and design of the materials if necessary. 6. Finalization: If the material is considered satisfactory after pilot-testing, it is finalized for production.

79 7. Production: Adequate number of copies of the final materials are produced. 8. Distribution: These are distributed to different schools if considered valuable to users. Classification of Science Materials 1. Free (no cost) and Easily Available Materials: These include things in the natural environment such as plants, animals and minerals as well as scraps/ waste from commercial and domestic use. 2. Easily Accessible Materials: These are available with very little cost such as masks, battery, bulbs, wire, cardboard, etc. 3. Large Scale Distribution Materials: Materials available for large scale distribution such as charts, models, etc. 4. Mechanical Materials: Materials which need use of machines such as projectors, tape recorders, cameras, record players, etc. 5. Mass Media Materials: Materials for mass media or distant learning systems such as radio, TV, etc. 3.5.5 Importance of Improvisation 1. Economic Value: The Economic value of home - made apparatus is in line with scientific traditions to use the minimum and the cheapest of the materials to the maximum advantage. 2. Self- Sufficiency: Improvisation of the apparatus also contributes a great deal in making the school self sufficient. 3. Head - hands Co- ordination: In the case of young children the understanding travels from hands to the head. The Co - ordination of hands and head is important for better understanding. This forms the basis of home -made apparatus. 4. Knowledge of Principles: The pupils handle the apparatus prepare models etc. and get a deeper and wider knowledge of the whole principle or working underlying a particular apparatus which would otherwise have been impossible to attain. 5. Creative Hobbies: The co - ordination of hands and head and the overall confidence that pupils acquire by constructing some model or apparatus may lead to develop some creative hobbies.

80 6. Creative satisfaction: The constructive and creative instincts of pupils are satisfied. The thrill and joy of having created something give them a sense of achievement. This may enthuse children to utilise their energies in the exploration of some new things. Their energies find fruitful channels of sublimation at the adolescent stage. 7. Exercise and development of Ingenuity and Resourcefulness: The pupils find a new media for the application of their knowledge. They learn to think critically and improve their work criticism and auto-suggestion. They form the habit of thinking scientifically. They are instilled with the spirit of emulation to find something new. 8. Use of Leisure: The problems of leisure and indiscipline are solved to a great extent. 9. Creating confidence: while improving the apparatus the pupils feel the difficulties that the scientists had faced in inventing some apparatus. This encourages the students to face the problems boldly and with confidence and develop independence of thought and self-reliance. It also provides for individual differences and the students work with their own pace. 10. Dignity of labour: When the pupils work with their own hands, they develop dignity of labour. They love to work with their own hands. This removes the barriers between the mental and manual labour and thus contributes much in placing the pupils on socialistic pattern of society. As a result of improvisation the habits and attitudes formed are applicable in the daily life of the child outside the school. ii) Locating and procuring Science equipment Apparatus and Materials The terms, principles, their applications and the materials of science become more meaningful by actual use. Hence the need for practical work in science. Many important principles, laws and generalisations of science will remain abstract to the pupils without practical demonstration or individual experimentation. They will simply learn to memorise them without understanding. Practical work thus makes science meaningful. A long talk, however interesting it may be becomes boring for the young pupils. They do not have the patience to listen or pay attention to a particular activity for 81 a long time. They need diversion. Practical work in science provides for this. The use of apparatus and materials for performing a demonstration experiment or doing individual and group practical work breaks the monotony of classroom teaching, introduces variety and provides motivation for learning science. A dramatic situation may be created in the classroom or in the laboratory by performing an interesting demonstration using scientific apparatus and materials. Many lessons can be made effective by starting lesson with an interesting demonstration. A well-planned use of the apparatus and materials of science can never make the science class dull. It is psychologically sound to provide for individual differences. One of the important advantages of using apparatus and materials is that there are possibilities for providing for individual needs and interests. All pupils are not equally benefited from reading books or attending class teaching. Some pupils have inborn abilities for handling scientific gadgets and doing experiments. The availability of apparatus and equipment provides them scope to exhibit their merit. It is a common experience that many pupils like to make radios, cameras, and simple machines. This attitude is strengthened when they see apparatus and equipment in the science room or the teacher demonstrating with apparatus or while the pupils themselves do experiment. Thus apparatus equipment contribute to the development of talent. Apparatus and equipment are necessary to train the pupils in scientific method. It is through the use of apparatus and materials that we can train the pupils in accurate observation, collecting data or evidence, analysing the data, making hypothesis and testing it, selecting useful and consistent evidences and drawing a conclusion. Setting up an experiment for a problem at hand or even sensing a problem, taking necessary precautions and care, and developing manipulative skill in handling apparatus and materials are possible only through actual use of apparatus and materials. To develop critical thinking or scientific thinking, experimentation with apparatus and materials is necessary. Performing experiments with the help of apparatus and materials at the school stage will help the future scientists to investigate difficult problems in their later career and enable them to undertake original work independently. Another purpose for which the use of apparatus and materials is advised is to provide an environment to pupils for exhibiting initiative, resourcefulness and co-operation. These qualities enrich their personality. Field trips, pupils' projects also given an opportunity to develop these qualities. But doing experiments using apparatus and materials is an essential means of developing these worthy qualities, students initiative and resource

82 fullness are necessary for handling apparatus and materials for setting up an experiment, arranging for a demonstration or a project. Sometimes pupils have to improve, adjust and repair parts of an experimental arrangement. Group work helps developed co-operations, friendship, mutual understanding and sociability among them. Advantages or value of Improvised Apparatus For demonstration and experimentation, a large quantity of materials and equipments are needed in a science Laboratory. The cost of this material and equipment is high and it becomes difficult to arrange for it from the nominal amounts available at the disposal of science teacher. However, a teacher with strong determination and necessary skills can go ahead with the task of improvising apparatus and equipments. Home - made or improvised apparatus are made from very low cost raw materials, with the help of students under the guidance of the teacher. The improvised apparatuses made by the students prove quite beneficial from so many angles summarized as below: 1 Economical Value. Improvised apparatuses are in fact low or no cost apparatuses as these are made by the students themselves with the help of costless waste material, household articles and low cost material. The finances of the institution to be spent on the purchase of the costly scientific apparatus and equipment thus can be saved or reduced with the help of improvisation task undertaken by the students. The day to day expenditure incurred in term of the repair and maintenance of the apparatus and equipments may also be saved as the improvised apparatus and equipments can be easily repaired and safely maintained by the students themselves involving almost no expenditure. 2. Psychological Value From psychological point of view also the task of improvisation prove quite beneficial to the students as it : * Satisfies their basic instincts and urges like instinct of curiosity, constructiveness, and inventiveness etc. * provides opportunity for self- expression and self- development meeting out their natural interests and aptitudes. * proves an appropriate means for the healthy canalization of their pent-up emotions and creative energy. 3. Educational value. Improvisation is also quite advantageous from the educational point of view on account of the following reasons:

83 * It provides opportunity for making best use of the principle 'learning by doing' and integration of the three H's. i.e. hand, heart and head. * It provides proper opportunity to make a practical and applied use of the theoretical knowledge of the scientific facts and principles. * The improvised apparatus besides proving convenient and simple in use has a strong psychological appeal in terms of emotional attachment and thus is able to create genuine interest in making use of it for the learning and exploring the scientific facts. 4. Inculcation of scientific attitude and abilities. - In case the students have devised and are using the apparatus made by them it is sure to lead them in the development of the following attitudes and abilities linked with the study of sciences: i) Development of scientific attitude and acquisition of scientific method of problem solving ii) Proper development of the mental faculties like reasoning, thinking imagination, analysis, synthesis and evaluation, etc. iii) Development of the faculty of self-criticism, self- appraisal and self improvement. iv) Development of independence of thought, self- reliance and self- confidence in one's abilities. v) Development of ingenuity, inventiveness, creativity, resourcefulness and constructive or designing faculty. 5. Entertainment value: The students derive great joy and happiness when they succeed in making, designing or inventing something by their own efforts. Moreover devising an apparatus may be taken as a hobby and thus may provide a lot of refreshing as well as recreational value especially in terms of utilising one's leisure hours. 6. Social Value. : By undertaking the improvisation activities students learn the habit of working with their own hands. It gradually helps them in realising the dignity of labour and developing a positive as well as healthy attitude towards manual work and also towards those who earn their breads by doing manual

84 work. These habits and attitudes so developed are very much useful to them in leading an industrious life and narrowing the cleavage between the intellectual and manual labour. 7. Proper upkeep of apparatus. : Everybody has a deep attachment for the things of his own creation. Therefore, when the students improvise their own apparatus for being utilised in the teaching and learning of science, they naturally develop an attachment and feelings for the safe use and proper maintenance. Gradually it is developed into a general habit of proper caring and maintenance of all the equipments and apparatuses whether improvised by them or otherwise kept in the laboratory. 8. Search for scientific talent. : When students start thinking about devising their own apparatus for conducting experiments, their creative faculties begin to function to such an extent that they do not only copy the original plan and technology for making some suitable and cheap apparatus but also invent and innovate many things quite new and original. In this way, the opportunity provided to the students for improvising science apparatus may be utilised for the search of scientific talent among them. 3.6

Problem solving and learning by doing approach for visually impaired students

If science is poorly taught and badly learnt, it is little more than burdening the mind with dead information, and it could degenerate even into a new superstition.--- Kothari Commission. The method of teaching science as prevalent today in our schools. Different methods of teaching have been proposed or profounded by different educational thinkers or schedule of thought in education. It is but desirable for the student to know about all of them. So that he can make a rational choice for himself. The knowledge of procedures, merits and demerits of all the methods will broaden the outlook of a would be teacher. The choice for him is not to be made narrow. It should be then left for him decide from his wide information.

85 Problem Solving Method: Problem solving method as a method of teaching represents a method which provides opportunity to the pupils for analysing and solving a problem faced by him on the basis of the previous stock of his knowledge enriched with the present means available to him. Definitions of Problem Solving 1) According to Woodworth and Marquis: Problem solving behaviour occurs in novel or difficulty situations in which a solution is not obtainable by the habitual methods of applying concepts and principles, derived from past experience in very similar situations. 2) According to Ausubel : * Problem solving involves concept formation and discovery learning." Steps (procedures) in Problem Solving The commonly used steps or procedure for finding a solution to the problem are as under: 1. Statement of the problem 2. Collection of relevent information or data 3. Analysis of the collected data or information 4.

Formulation of hypothesis or tentative solutions. 5. Selection and testing of a proper solution 6. Drawing Conclusions. 1. Statement of the Problem: The first step in problem solving should be selection or identification of a problem. The choice of a right type of problem which is related to the level and the needs of the students is most important. Students often come across numerous difficulties, questions, doubts and problems, the answer to which they do not know or cannot find out from the books. The problem should be stated in clear, simple, exact and unambiguous works.

86 2. Collection of relevant information or data: After statement of the problems the students are encourages to collect information relevant to the problem from available records or through consultation of books and literature from the library or through any other means available to them. Here the needs of the proper guidance and help from the teacher arises and it should be available to them in proper degree at the proper time. 3. Analysis of the collected data or information: The information or data collecetd is analysed in the light of finding out possible solution of the problem in hand. The data or information which is superfluous or irrelevant or not helpful in the solution of the problem is abandoned and the relevent or useful ones is taken for being used in the solution of the problem. 4. Formulation of hypothesis or tentative solutions: A hypothesis is the probable solution for the problem in hand. There can be a number of predictive or tentative solutions for a problem. After statement of the problem and collecting the relevent data, the important stage is to formulate some tentative hypotheses. 5. Selection and testing of a proper solution: Out of the possible tentative solutions or hypotheses, the attempts are made to search out the best. For this purpose all the hypotheses are taken by one by one discussed and weighed in terms of their validity and practicability. The selection of the most relevent hypothesis out of the so many hypotheses is made quite cautiously. 6. Drawing Conclusions: It is the last step of problem solving in which the given hypotheses are accepted, rejected or modified, if the experiments and observations made in the light of set predictions prove particular hypothesis, then that is accepted. In case there are negative results for a prticular hypothesis, it is rejected. If any hypothesis is neither proved nor disproved, rather some exceptional results are observed it is modified in the light of that observation. Merits 1. Problem solving method helps in stimulating thinking 2. It helps in developing good study habits. 3. It develops reasoning power

87 4. It helps in stimulating thinking 5. The students learn to be self-dependent 6. It helps to improve knowledge. 7. It affords opportunities for participation in social activities 8. The method provides opportunities to the teachers to know in detail their pupils. 9. Knowledge is easily assimilated as it is the result of a purposeful activity 10. It gives the power of critical judgement 11. It helps to learn how to act in a new situation 12. Students learn facts which are meaningful and which have been discovered by their own efforts. Demerits 1. It involves a lot of time and the teachers find it difficult to cover the prescribed syllabus. 2. There is a lack of suitable reference and source books for children 3. Problem method needs very capable teachers to provide effective guidance to students 4. Generally speaking problem-solving involves mental activity only. There is less of bodily activity. 5. Small children do not possess sufficient background information and therefore, they fail to participate in discussions. 6. Through this method, the teacher lays stress on experimentation at the cost of other important aspects of Science teaching. 3.6.1 Learning by doing Method Different methods of teaching have been proposed or performed by different educational thinkers or schemes of thought in education. It is but desirable for the student to know about all of them. So that he can make a rational choice for herself. The knowledge of procedures, merits and demerits of all the methods will broaden the outlook of a would-be teacher. The choice for him is not to be made narrow.

88 It should be then left for him to decide from his wide information. Most teachers and trainers seem to believe that pupils learn best by doing. But how is this rather general belief to be put into practice? In particular: What ideas or theories are there to help us to explain and justify the belief that we learn best by doing? Does everyone learn by doing in the same way or to the same extent? What teaching and learning methods are there for us to use which involve learning by like? If our courses are redesigned to involve more learning by doing, what might they look like? How is it possible to change our teaching to involve learning by doing when we are surrounded by constraints? 'Learning by doing', and the term 'experiential learning', are commonly used to refer to several different aspects of learning. This guide is not concerned with the assessment of 'prior learning' : learning experiences which have taken place before learners enrol on courses and which are taken into account in the assessment of the course or the granting of exemptions from course Components. 3.6.2 Learning by doing/ Experiential learning theory It is common for courses to be described as either practical or theoretical : as either involving doing or involving thinking. Learning is seen to take place either 'on the job' or in the classroom'. Even in courses which contain both elements they tend to be sharply divided. An academic teacher may present theory in a lecture in the classroom whilst a practical supervisor is in charge of the follow-up practical experience in a workshop. It is not sufficient simply to have an experience in order to learn. Without reflecting upon this experience it may quickly be forgotten or its learning potential lost. It is from the feelings and thoughts emerging from this reflection that generalisations or concepts can be generated. And it is generalisations which enable new situations to be tackled effectively diagram. Similarly, if it is intended that behaviour should be changed by learning, it is not sufficient simply to learn new concepts and develop new generalisations. The learning must be tested out in new situations. The learner must make the link between theory

89 and action by planning for that action. Carrying it out, and then reflecting upon it, relating what happens back to the theory. It is not enough just to do, and neither is it enough just to think. Nor is it enough simply to do and think. Learning from doing must involve links between the doing and the thinking. The four stage model of learning by doing which is elaborated below is that of Kolb. Quite a few theorists have proposed cyclical models to explain how people learn from doing, but they all share the important features of Kolb's Model which itself derived from Lewin. Learning from experience involves four stages which follow each other in a cycle, as in the following diagram. Concrete Experience Active Experimentation Reflective observation Abstract Conceptualisation Fig : 1.1 The terms used here as labels for the four stages come from Kolb's Experiential Learning Theory, and placed in this sequence they form the experiential learning cycle. 3.6.3 Learning style Just as courses may be seen to be either mainly practical or mainly theoretical, so individuals may have particular preferences in their learning. While one person might prefer to formulate plans and define potential problems, another might prefer to get on and carry out the plans. There are distinct learning styles associated with each of the stages of the learning by doing cycle. These differences in style were illustrated graphically in a computing course. At the start of this computing course the students were set an open-ended computing problem to work on alone over the next four weeks. They then met to compare solutions to the problem, but also to compare the different ways in which they went about working on the problem. Three of the students displayed dramatically different styles.

90 Student A went straight to a computer keyboard and started keying in segments of a program. She didn't analyse the nature of the problem. As soon as it became apparent that the programming routines being written didn't work, new routines were written out and immediately tested in a trial and error way: mostly error. This student had created dozens of programming routines, none of which got close to solving the problem. She seemed not to learn from her mistakes. Student B appeared to start off like student A, going straight to the keyboard. He selected a procedure which he knew and implemented it. He wrote an extensive, detailed and complete programme which ran successfully, but which solved a problem quite different from the one which was set. He was unaware that he had tackled the wrong problem because he was so busy getting on with the task. Student C became intrigued by the problem itself and its underlying features. She started reading about this kind of problem and the reading led her into related areas which also contained intriguing problems. She could talk animatedly about the topic in general in an abstract way but hadn't even started writing any programming code to produce a solution. In terms of the learning by doing cycle these students were stuck at one part of the cycle to the virtual exclusion of the other three.

3.6.4 Practical Methods to implement the learning by doing cycle

3.6.4.1 Planning for experience: This section is concerned with methods for preparing learners prior to experiences so that they make the most of those experiences: for example through action planning and the negotiation of learning contracts. Experience Experimentation Reflection Conceptualisation

3.6.4.2 Increasing awareness of experience: This section is concerned with methods for heightening learners' awareness of their experiences so that they notice more and have more material upon which to reflect afterwards: for example through the use of log books.

91 Experience Experimentation Reflection Conceptualisation

4.3 Reviewing and reflecting upon experience: This section is concerned with what happens after learning experiences and how learning points can be drawn out through structured reflection: for example through the use of video recordings and self-assessment. Experience Experimentation Reflection Conceptualisation

Fig 1.2 3.7

Evaluation procedure with particular reference to Practicals and adaptations in Examination questions

Evaluation is an integral part of teaching. It is as essential to the teaching process as the content and method of communicating the content. In fact, effectiveness of teaching among other things, depends on the quality of evaluation and its utilization for improving the teaching-learning process.

Concept of Evaluation

The goal of education is all-round development of the child. It is all-round development that makes a human being. It implies that education should contribute to cognitive (Knowledge), affective (feelings, emotions, attitude and values), and psychomotor (skills) development of the child. Teaching is the process through which this educational goal is realised. Evaluation is a mirror which reflects the extent to which teaching objectives are achieved. Evaluation therefore has to be comprehensive. Comprehensive evaluation, as envisaged in the NPE programme of Action, implies that it should encompass all aspects of teaching objectives.

92 Teaching is a continuous activity. So evaluation is required to assess the pace of pupil progress, identify learning problems, and taking teaching-related decisions. By implication, evaluation is also a continuous process. The continuity of evaluation is essential for evolving effective teaching. In this way evaluation can be a day-to-day, lesson-to-lesson and unit-to-unit process. It is also known as formative evaluation. It assesses immediate teaching outcomes. The evaluation at the end of a term, a grade or a stage of education is known as summative evaluation. The word summative represents cumulative evaluation.

i) Evaluation Procedure with reference to Practical (a) Way of learning science: Practicale

One of the foremost methods by which children learn science is through first-hand experiences.

Even in the primary standard, whenever a teacher is trying to demonstrate or explain a concept, it is useful for her to have materials which show or display that action or system or method. The visually impaired child sometimes needs special opportunities for tactually exploring or having careful, prior explanations of, or follow-up information about.

But first-hand experiences should be correlated with helping children to recall what they have experienced, and making deductions from them. The second way is that the young children enjoy first-hand experience by undertaking field trips. A field trip to an industry, visits to the neighbourhood and community are useful in stimulating awareness of the environment.

There are many things that primary level children can do in which they can be active during group

excursions and field trips. During field trips, the children need to know what they are looking, they need to be oriented to what to expect, during the field trip. On their return, they should be asked to correlate their experiences with the lessons. This will help visually impaired children to develop concepts through first hand experiences. (b) Teaching Laboratory Sciences to Visually Impaired Children Authentically and generally, it has been largely admitted by teachers in the field of education of the visually impaired that methods adopted in instructing normal sighted children can be applied to the teaching of visually impaired children with accurate and precise modifications of the material. But it is a stupendous task to make visually impaired children understand ideas of physical and biological sciences. However, it should not be ruled out for these children because they are blind. Classroom

93 teaching or laboratory methods which are often conventional, can partly or seldom be wholly followed by visually impaired children. (c) Role of Experiments in Learning Scientific Concepts Laboratories are for the child's learning by doing. As a matter of fact, learning will never be complete if the child is just stuffed with the mere theoretical aspects of topics. Visually impaired children have the ability to perceive water boiling, evaporation of water and the like.

In a laboratory, once the child attains the ability to pour water into

a test tube, he can be given the confidence to use diluted acids in experiments. By the time the experiments with such diluted acids are performed by the Visually impaired child for himself, the student will be ready to start the examination of diluted acids. In all circumstances, the earnest attempt should be made to explore the possibilities for the visually impaired children in laboratories, rather than to avoid such experiences. At the high school level, it is usual to group children for experiments in the laboratory. While one child performs the experiment, another child is engaged in recording the results, yet another is engaged in observing the experiment. Therefore this is group learning. The children put all the facts together and present the experiment report. A visually impaired child can be made a member of such team and share the responsibility suitable to him. ii) Evaluation Procedure for adaptations in examination questions. a) Functions of Evaluations Evaluation is purported to perform several functions in teaching. It helps in the assessment of pre-requisites of the new learning tasks available with the learner. For example, for the learning of addition, the pupil should already have developed the concept of numbers and their position on the number line. For teaching the law of gravitation, it is ensured that the pupils have learnt the concepts of mass, acceleration, force and the relationship among them. It is used to assess the progress of learning the extent to which a particular child has learnt the new task. The progress of learning is always in relation to the teaching objectives. There are times, when the criteria of performance of the new learning task are not achieved. In other words, the progress of learning is not satisfactory. In that event, it is imperative

94 to diagnose the cause of shortfall. It requires diagnostic evaluation. It helps in designing remedial measures to achieve the desired level of performance. Evaluation is used for the improvement of Teaching. The diagnostic evaluation is both for the teacher as well as the pupil. b) Evaluation Procedure and Tools Evaluation data are collected through different sources. Informal evaluation is usually in progress when the teacher asks questions during the lesson or observes child behaviour in some solutions incidentally. For formal evaluation several systematic procedures are followed. Test can be written, or oral or a combination of both. The tests can be normative which are standardised. Through these tests the child's performance is considered in relation to the group of children on which the test has been standardised. The tests can also be criterion referenced tests. These tests pertain to the performance of the child on the content covered. These tests are very important for feedback on learning and improvement of teaching procedures. Systematic observation of child's behaviour is required for evaluating his performance in setting up experiments and his behaviour in social situations. Testing of manipulative skills is done through evaluation of the child in practicals. For example, setting up of science experiments" physical education, etc. Several types of questions are used in evaluation tools. The questions can be considered from the point of view of length of the answers expected. Very short Answer Type questions require answers in one or two words. For example: where was Gandhiji born? Name the capital of United Kingdom. Short answer Type questions require answers in 20-25 words. For example: Define social stratification in about 25 words. Essay type question can require answers of any length depending on the nature of content and developmental stage of the learner. For example: Explain in about 200 words - water cycle in nature illustrating with a diagram. Compare the parliamentary form of Government in USA giving atleast four points of difference and four of similarities in the two systems. Write an essay on National Integration in about 500 words. c) Adjustment and adaptations for Visually Impaired Children The adjustment and adaptation of evaluation and examination procedures can be

95 viewed from the point of view of the

medium of presentation of test items and the modalities of answering by the visually impaired children. The issues and practice needs to be examined from the point of view of blind children; and low vision children. The guiding principle is that the procedures should be as close to the practice with sighted children as the handicap permits. As in the case of curriculum, in evaluation and examination procedures also; substitution and omission are the last resort. The purpose of adjustment and adaptation is that the visually impaired child should not be at disadvantage in evaluation and examination due to his handicap. This section though not prescriptive, presents alternative approaches and preferred modes for the two groups of children.

d) For Blind Children Blind children here are those children who can read print and use braille reading. What are the ways in which questions can be communicated to these children and how can they answer. The possibilities can be :

1. Question Mode
2. Answering Mode
3. 1. Written in Braille
4. 1. Writes himself in Braille
5. 2. Written in print but read
6. 2. The scribe writes for him by a Reader for the blind
7. 3. Listening by the blind child
8. 3. Records on audio cassette.
9. from Audio cassette player
10. 4. Direct questioning orally
11. 4. Tells orally to the examiner directly by the examiner.
12. 5. Combination of the above.
13. 5. Combination of the above.

e) Questions in braille and self answering in braille It is the ideal mode as there is no intermediary between the examiner and the examinee. The child feels responsible for the omissions and commissions. But there is a problem in this mode. Braille reading and writing takes more time print reading. Should the blind children be allowed more time for answering the questions in braille? The obvious answer is - yes. It is also being provided in some cases. Those who are well exposed to the practice of braille reading and writing, will agree 96 that it cannot be uniform across grades and subjects. It depends on the minimum level of competence of braille reading and writing. It also depends on the nature of the subject matter. For example, the answers requiring diagrams as in Mathematics and Science will require more time than simple explanatory braille. No empirical evidence is available about the period of extra time to be allowed for the blind student. Even if the empirical evidence is available and one likes to provide the desired extra time, the child will feel fatigued. The child be allowed a brief rest of 10-15 minutes during the test if extra time for writing in braille comes to about one and half time more than what is required by the sighted child?

f) Use of scribe The blind child is provided a writer in this modality. Here the scribe reads the question, the blind child dictates and the scribe writes the answer. The print and cursory writing scripts are used. This modality is also being followed in many cases. The blind child when scores low he attributes the cause to the failure of the scribe to write correctly. Then there are a lot of problems relating to the selection of the scribe. The blind child would like to bring a scribe of his choice. While some boards insist on providing a scribe of their choice to ensure that the level of knowledge of the scribe is not above than that of the child. The boards want to appoint a scribe one class below the level of the blind examinee. The blind child invariably finds himself at a disadvantage. Bright blind child remains at much disadvantage if the scribe fails to reproduce with the examinee's speed and correctness.

g) Audio-recorded questions and audio recorded answers This mode is not yet tried out, but seems to have a lot of potentiality. However this mode may not suit for language tests where spellings are also evaluated. For tests requiring evaluation of spellings, the first mode is ideal. This mode has another limitation. The questions and answers involving diagrams may not be amenable to this modality.

h) Oral Questions Oral Answers This modality is also in use. It is in use in informal evaluation in the class- room. It is also in use in oral examination and practicals. Its scope and purpose are limited. The modalities suggested in this subsection present alternative modalities. It is not desirable to conform to one modality. The modality is to be selected taking into

97 consideration the objectives, content and level of the pupils. In examination the modality using the scribe is the least desirable. A combination of other modalities should be preferred. The curriculum, evaluation and examination should be viewed from the angle. i) Low Vision Children Low vision children are those who need large print reading material. For reading, they need large print. They can write like other sighted children but can't read their own handwriting. This they can achieve through training. They need magnifying glasses or spherical lense for reading. These children can be provided question papers in large print or/and magnifying glasses. As there is little facility for education of these children in general schools, these children also find their way into schools for the blind where they are subjected to teaching, evaluation and examination procedures meant for the blind. They are also provided scribe. They are forced to reading and writing braille which they resist. j) Questions in large print and answers in cursive writing It is possible to provide the question paper 18 or 36 point. It will be costlier as the number of such children may be very small. If a photocopier, with enlargement is available, it is possible to prepare copies of the same questions papers. The child can write answers questions in large print are made available. But he will not be able to correct the mistakes like other children who glance through their answers, if time permits. It is possible if magnifying glass or/and spherical lense are available. The problem can then be offset. The low vision child may require extra time for reading and writing than children with normal sight. The extra time to be allowed can be worked out on the basis of empirical evidence. k) Audio recorded questions and answers in cursive writing The questions can be recorded on audio cassettes if large print facilities are not available. Enlarged diagrams, wherever required, can be got made and instructions regarding the placement of diagram provided in the audio cassettes. Answers can be in cursive writing. l) Audio recorded questions and audio recorded answers As indicated in the subsection relating to adjustment and adaptation of evaluation

98 and examination procedures for the blind, the content and objective not requiring emphasis in spelling can be evaluated through this modality. The evaluation and examination procedures can be adjusted for this group of visually impaired children through the use of alternative modalities. 3.8 Let Us Sum Up The aims of teaching and study Sciences are to encourage and enable students to develop inquiring minds and curiosity about Science and natural world, develop skills of scientific enquiry to design and carry out scientific investigations, think analytically. The objective of science education refers to enabling students to understand the interdependence between science and society. At the end of the Course and within local and global contexts students should be able to describe and discuss ways in which science is applied and used to solve local and global problems, recognize and recall scientific information, analyze it, carry out scientific investigations. So Science education at any class must not only depend on text books. Hands on training and experimentation are necessary so that learners can visualize the things, interpret it and understand. There is no role of mechanical learning. 3.9 Check your progress: i) Identify the needs of Visually Impaired children in Learning Science at Secondary stage ii) Explain the difference steps of Problem Solving Methods iii) What is Evaluations? Write in brief examination procedure for Evaluating Science for Visual Impaired children iv) Explain the importance of of TLM for teaching Science for Visually Impaired children. 3.10 References l) Sing S.P : Research Methods in Social Sciences 2) Suresh K.P, Joseph Celene: Teaching and Testing Science Process Skills

99 3) Prakash Ravi, Ratho T.N : Emerging Trends in Teaching of Chemistry 4) Das R.C : Science Teaching 5) Sing Yogesh Kumar, Ruchika Nath : Teaching of General Science 6) Mukhopadhyay Suresh, Jangira N.K, Mani M.N.G and Raychowdhary.M : Source Book for Training Teachers of Visually Impaired Children 7) Mittal S.R. : Education of Children with Low Vision 8) Singh A.K : Teasts, Measurement and Research Methods in Behavioural Sciences 9) Lowenfeld Berthhold : The Visually Handicapped child in - School 10) Burgara, N.C : Visually Handicapped & Learning
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100 Unit - 4 Social Science Structure 4.1 Introduction 4.2 Objectives 4.3 Techniques of Preparation and Presentation of Adapted Tactile Maps, Diagrams and Globe 4.4 Procuring, Adapting and Use of different types of models 4.5 Organizing Field Trips 4.6 Teaching Skills: Dramatization, Narration, Explanation, Story-telling and Role Play 4.7 Evaluation of Concepts and Skills in Social Science with particular reference to Geography 4.8 Let us Sum Up 4.9 Check Your Progress 4.10

References 4.1 Introduction Visually impaired (VI) learners' needs and goals for learning and education are not different from those of the general learners. It is only the means of achieving these goals are different, though the content materials and subject matters are the same as those for the seeing learners. Lowenfeld (1959) has aptly said, "Education has aim at giving the blind child knowledge of the realities around him, the confidence to cope with these realities, and the feeling that he is recognized and accepted as an individual in his own right." In reality, if the VI children are exposed to the educational experiences and materials as used to the sighted children, they would not be able to satisfy their needs or to achieve the educational goals properly. Since normal educational experiences are approximately 85% visual, it may be easily imagined that the extent of difficulties the VI or blind children are to face only because of their visual problems. In order to make them capable

101 to receive educational inputs appropriately, the adapted alternatives, especially for the VI children should be developed. The obvious alternatives may be of many types. The special methods, materials and equipment can be employed utilizing the sense organs of touching, hearing, smelling and even tasting. Therefore, the curriculum for the VI students should include: Adaptations to the general teaching-learning materials, Use of some specialized models, Specially designed teaching skills with field trips for learning of the VI learners, Special evaluation planning for progression of concept and skill learning of the VI learners. 4.2 Objectives

After the completion of the Unit, learners would be able to- Acquire necessary techniques of preparation and presentation of adapted tactile TLM for Social Science; Adapt different types of models for teaching Social Science suitable for VI students; Organize field trips for VI students; Acquire different skills for teaching Social Science suitable for VI students; Evaluate concepts and skills in Social Science with Special reference to Geography. 4.3

Techniques of Preparation and Presentation of Adapted Tactile Maps, Diagrams and Globe

Tactile aids provide information to the VI individuals through the sense of touch. These may include Braille Materials, Braille marked tools or Adaptive aids like Tactile maps, Diagrams and Globe. Like printed materials, Braille materials are read with the fingertips reproduced by transcribers, publishers and printing houses. Braille markings are found on adaptive aids such as rulers, measuring cup and clocks in place of printed letter or numbers. A Braille-writer is six-key typewriter for typing Braille. It produces raised dots onto specially designed, heavy Braille paper.

102 4.3.1 Preparation of Adapted Tactile Maps, Diagrams and Globe The slate and stylus are writing tools used to write on Braille. The user places a sheet of Braille paper between the two metal plates of the slate. The stylus, a short metal prong fastened to a handle is held to the palm and pressed downward onto a paper within an open window. A raised dot is formed on the reverse side of the paper. The writing is read when the paper is turned over and dots are facing upward. Templates and writing guides are frames used in writing on lines or in specified spaces. Window openings in the templates serve as a guide for signing checks or writing letters. Raised line paper is writing paper with embossed lines to enable the user to follow a straight writing path. Paperless Braille or cassette Braille is an information system that is stored on audio cassette tapes and accessed in Braille. The user runs his/her fingers over display cells to read the text and pushes a button to access the next segment of recorded material. The user can produce, edit and record Braille with the system. It can be adopted for use with computer terminals, calculators and type writers. The raised line drawing kit is a board covered with a soft underlay of rubber. The user places a sheet of acetate over the board and draws on it, creating raised lines and an embossed picture. Tactile colour is a standardized system of 12 distinctive colours; each is assigned a specific texture. This allows visually impaired persons to better participate in creating or enjoying visual artwork. It is also useful in map-making, for labelling and as an educational resource. A Thermoform machine is a device that heats a sheet of plastic paper so that it may be moulded to whatever shape is placed beneath it. Thermoform machine can produce copies of Braille and also be used to create raised line maps or graphs. Tactile maps and globes are three-dimensional maps that are used as an orientation aid. They contain raised surface, textures, and Braille markings and are designed to be read with the fingertips, in a manner similar to Braille.

Tactile Graphics, including tactile pictures, tactile diagrams, tactile maps, and tactile graphs, are images that use raised surfaces so that a VI person can feel them. They are used to convey non-textual information such as maps, paintings, graphs and diagrams. Tactile graphics can be seen as a subset of accessible images. Images can be made accessible to the visually impaired in various ways, such as verbal description, sound,

103 tactual feedback. One of the most common uses for tactile graphics is the production of tactile maps. (

i) Basic Principles for Preparing Tactile Graphics Tactile graphics are essential components of Braille materials transcribed for use in educational and professional fields. Guidelines and standards for inclusion, design, and presentation of tactile graphics are found more necessary today with the advent of electronic text production and the proliferation of diagrams, illustrations, and graphs in educational texts: A tactile graphic is a representation of a print graphic designed in a manner that is the most meaningful to the reader. It is not an exact reproduction. The Braille code and format used in preparation of the tactile graphic must be consistent with the transcription of the main body of text. Many frames or image outlines found around print diagrams should also be omitted if they add extra lines without purpose. At times, image outlines are required to indicate containment such as water or land areas on a map. The tactile graphic should be positioned near the left margin of the page or indented according to the Braille code in use, rather than cantered. A blank line is required before and after the tactile graphic. A print graphic may be simplified as far as the original intent not being compromised. If the task does not involve measurement, modifications to size, position, or layout may be made to an illustration to clarify presentation. If the concept of depth is not required, a 3-dimensional view should be changed to a 2-dimensional view. If the reader is required to measure a line or an object, the line or object should not be lengthened or enlarged and must be raised and designed in a way that permits measurement with a Braille ruler. If the reader is required to measure an angle, the rays should be extended. If the reader is required to measure distance, the scale and graphic must be revised proportionately. Use transcribers notes to explain changes made to the print format.

104 A combination of symbols, keys, and words may be used to convey information. Since the use of a key involves an extra step for the reader to interpret the graphic, use a Braille label (word) instead of a keyed symbol when it will fit in the available space. Maintain consistency throughout a transcription when assigning alphabetic keys and/or textures to a particular item. The age and experience of the reader must be considered when designing a tactile graphic. Based on the student's skill level, it may be necessary to limit the number of key symbols when assigning areas, lines, and points.

Consider placing the tactile graphics on a separate page with limited text so that the graphic may be used with electronic text (e-text), as a tactile graphic supplement, or added to a collection for future use. Tactile graphics should be developed as distinct as possible keeping in mind the Braille reader's point of view. It is up to the teacher to present the information in a clear and concise manner for the VI student. If the original shapes and textures are necessary to convey the concept, or can simple geometric shapes or Braille signs be used to illustrate the concept omitting the unnecessary parts of the diagram (i.e. unreferenced or irrelevant sections of a map) so that the original shapes and textures can be presented on a larger and clearer scale. If the text requires measurements to be made or an operation to be performed: or if the original shapes, textures and total form are necessary to convey the concept, the lines and angles are reproduced retaining a proper scale. Edit! proofread the graphic with fingers, not with eyes and if someone says the graphic is 'pretty' or 'beautiful', take a second look, students may not be able to understand it. (ii)

Tactile Maps The use of maps is an important skill for all children to learn. For students who have visual impairments, learning to read a map is an important step towards his/her

independence, as well as a way to participate more fully in the regular geography and social studies curriculum.

This section offers suggestions on how to teach students to use

tactile maps, from the most basic object books to more complex tactile graphics.

According to Jacques Bertin, "Tactile map variables can help in determining how visual maps are to be produced; tactile maps have a formula as well. Although researchers have not standardized tactile map variables, these are usually included depending on the substrate - vibration, flutter, pressure, temperature, size, shape, texture/grain, orientation, and elevation."

105 (

a) Attaching Objects on Paper:

The types and forms of tactile maps began with the oldest and most rudimentary or a mixed media format. This tactile map is produced by simply attaching objects to a substrate to represent different items or symbols. More recent tactile maps are produced by computers through different means such as ink-jet printers. (

b)

Thermoform is one of the most common methods of producing tactile maps. This process is also known as vacuum forming. Thermoform maps or plans are created from a process where a sheet of plastic is heated and vacuumed on top of a model or master. The master can be made from many substances, although certain materials are more durable than others. Since this process involves creating a mould, it is somewhat time consuming. (c) Swell paper has a special coating of heat-reactive chemicals. Microcapsules of alcohol implanted in the paper fracture when exposed to heat and make the surface of the paper inflate. Placing black ink on the paper prior to a heat process provides control over the raised surface areas. This type of map is not as robust as the Thermoform map, but can be produced with less effort and expense. (

d) Modified Braille Embossers can also be used to produce tactile paper maps. (

e)

Ink-jet Tactile Maps are made by layering a specially designed ink. Each layer is cured by UV irradiation before the next layer is added. This technology is an offshoot of other industries, such as circuit board manufacturing and biomedical applications. (j) The substrate for Tactile Map is a very important attribute, since different materials can enhance or reduce legibility and durability. Several types of substrates can be used to produce a tactile map. These include rough or smooth plastic, rough or smooth paper or micro capsule paper, Brailing, or aluminium etc.

Many factors should be considered when choosing a substrate; these are included according to their respective function, durability, and portability. (g)

Typical Tactile Elevations: Thermoformed maps usually have an elevation of at least 1 mm. Swell Paper averages 0.5 mm and Braille embossers have a range from 0.25-1 mm. Ink-jet printers can be controlled to vary elevation as needed. [A study conducted by Sandra Jehoel (2009) tested various height levels and estimated that preferred tactile elevations fall between 40 and 80 micrometres depending on the substrate background, shape of the object and smoothness of 106 lines. Symbols such as a triangle, square and a circle should have a minimum base line length of 6.4, 5.0 and 5.5 mm respectively for proper recognition.] (h) Audio-tactile Maps or Graphic Tablets are interactive devices. Electronic tactile talking touch pad instruments use

Macro'media

Flash software with audio files to convey information to the blind or visually impaired user. As the user's finger engages a feature or symbol a recording provides information about the object, symbol or area. For example the sound of splashing water can be used for areas such as rivers or oceans. This format has great potential for transmitting information over the Internet which can be downloaded to a computer or hand-held device. [

A great deal of hardware already exists that can also be used by the VI students, if available, to interact with computer screen graphics. A vibrating mouse or other force feedback device can be adapted to turn any visual software generated map into a hybrid tactile map. The interactive signal to a device can be varied when crossing a boundary or symbol. High resolution refreshable Braille displays containing 1,500 to 12,000 pixels are already available in market. Graphic Braille display available in the market is DV -2 (from KGS) with 1,536 pixels, Hyperbraille with 7,200 pixels and TACTISPLAY Table/Walk (from Tactisplay Corp.) with 2,400x12,000 pixels respectively. TACTISPLAY table has total 12,000 pixels arranged in 120x 100.] (i) Zoom maps are a recently developed concept of

tactile map. These maps are designed specifically for those who can read Braille and have had no previous interaction with tactile maps. The term zoom is comparable to a zoom-able visual raster internet map. A country is divided into regions on the first map then the next zoomed map will have a breakdown of the regions and so forth until a city level is reached. These successive maps rely on a dependable texture as the map zoom progresses. This produces a familiarity as one zooms from the proceeding map. This is achieved in many instances with line orientation, area and consistent shape.

The Braille text on the map is placed next to a rectangular textured legend for area identification. (iv) Tactile Diagrams Pickles (1966) has advocated both the value and viability of drawing for the VI, even for totally and congenitally blind pupils. At the higher stage of school level, he claimed that after such a child has learnt to recognize objects by exploring their shapes and

107 dimensions through touch he/she should be given the means of making his own diagrams. Since this process is time consuming and offers difficulties in execution, its value can be questioned, but Pickles believes that it is an activity helpful both to those relying on touch alone, as well as for those using touch and slight vision in their understanding of embossed diagrams. The ability to use touch in this way is a skill which cuts across the curricula areas of the secondary school. The child with too little vision for making use of illustrations and visually presented diagrams is specially in need of training in understanding diagrammatic work in embossed relationships and connections, such as in the layout of a piece of laboratory apparatus. Furthermore, in justifying his emphasis on undertaking surface representation for diagrammatic work, Pickles claims that executing diagrams can be one way of learning to understand their implications. With a rubber mat providing a resilient base, a sheet of aluminium foil can be sued to take a negative (downward indented) line made by a ball point pen. The Sewell apparatus (RNIB) embodies a thin film of transparent plastic sheeting stretched over a rubber-surfaced board, and again, a special ball- point pen, an ordinary biro, or a spur wheel which cuts small dot-like indentations can be used for lines. Manilla paper used for Braille writing can take imprints from a spur wheel and the specialized geometry set available for the RNIB enabled user to make raised geometric figures on paper. Vincent (1970) has constructed a special drawing board which enables the student to prepare perspective drawing, but it is important that the pupil's understanding of what he/she is attempting to do is not superseded by devices that help him to produce work only understandable in sighted terms. Enthusiasm to make the map or diagram as informative as possible can lead to overcrowding of symbols, whilst the addition of Braille words in the body of the diagram causes confusion. A tactile diagram needs to have enough information to encourage exploration and interest but not so many raised lines, Braille labels, and varied textures that clarity is lost. A series of maps or diagrams, each displaying a particular aspect of what is to be presented, provides a more comprehensible illustration. For example, several basic raised outline maps of a country can be made with additions on one version to indicate climate, on another indications of vegetation, on another population or geological features etc. To crowd all this information on to one map by using different raised symbols likely to be confusing. The information received from such presentations needs to be discussed so that misapprehensions can be cleared up, and the pupil will also need training in interpreting the symbols used. Teachers will need to draw attention

108 verbally to the information represented and even to ensure that the map or diagram is being used the right way. 4.3.2 Presentation of Adapted Tactile Maps, Diagrams and Globe Children who are visually impaired can do virtually all the activities and tasks that sighted children taken for granted, but they often need to learn to do them in a different way or using different tools or materials. For instance, child may need reading materials in Braille rather than in print or may need to examine a live rabbit with his/her hands to understand what it is, rather than learning from a picture in a book. Other examples might be arranging a classroom to let the child sit close to the science teacher who is demonstrating an experiment or allowing him/her extra time to complete a test that the whole class is taking. Depending on the child's abilities and needs, he/she may need some adaptations to participate in the curriculum and various activities in school, as well as to make use of instructional materials. The child learns about such adaptations from his/her special/ inclusive teacher or orientation and mobility (O&M) instructor. Such adaptations in school are usually referred to by the terms 'accommodation' and 'modifications'. Different school systems attach different meanings to these terms, but 'accommodation' usually refers to a change in the way the child is taught or tested without changing the standard of learning or performance or the requirements that she needs to meet. Some examples include having extra time to complete assignments, using Braille or large-print materials, using different types of models, having assignments or tests broken into smaller parts, or completing assignments in a quiet setting away from other students. 'Modification' commonly refers to a change to what your child is learning or tested on that changes the standards or requirements she needs to meet. Being taught material at a lower gradelevel or having to complete fewer items on a test is examples of modifications, because these terms are not used in the same way in all schools. The VI students often cannot perceive information directly from their environment, but 'accommodations and modifications' help them do so. Something as simple as the 'flexibility' to sit closer to the chalkboard may meet your child's needs, or it could be necessary to alter the physical arrangement of the environment by providing additional furniture, shelving, or access to electrical outlets for the operation of specialized equipment.

109 Instructional materials need to be put into an accessible format for VI. It is important that all materials be considered—not just textbooks but also worksheets and all supplemental reading materials. It is also important to receive the VI child equally as his/her sighted classmates who read in print. (i) Materials Materials Explanation and Examples Braille Textbooks, Worksheets, all materials used in instruction provided in Braille; Tactile Graphics Printed Maps, Diagrams, Illustrations provided in tactile format; Audiotape Materials Books and other printed materials provided in audio-tape; Electronic Access Materials provided in an electronic format for access with a computer or electronic note-maker, for example, using an online encyclopaedia for studying for completing a term paper or reading a textbook in digital format; Print Book for parents If your child reads in Braille, he/she also receives a print copy of that textbook parental use; Highlighting Markers and highlighting tape are used to enhance the important parts of a text; Large-print Large-print books are used for instruction or portions of a book, such as a map, enlarged as needed; Manipulative Physical items (such as small toys, buttons, or beads) are used to demonstrate mathematical concepts or used in art classes to complete a tactile drawing. (ii) Tactile and Kinaesthetic Input Students with visual impairments use tactile and kinaesthetic input to learn about their environments. Such input should not be thought of as 'lesser senses' to use in the absence of vision, but as another system through which learning takes place (Klatzy & Lederman, 1988). Tactile and kinaesthetic input can provide students with information about objects they come in contact with and use. Any visual materials used in classrooms need to be adapted for use by students who do not have the visual skills required for the task.

110 Charts, models, maps, and graphs will have greater educational value for students with VI, if they can 'read' using the sense of touch. For example, outlining map boundaries with string enables students with VI to use their sense of touch to read maps. Whenever teachers use manipulative models, or other equipment, students with visual impairments need the opportunity to use their tactile and kinaesthetic senses to become familiar with the objects to benefit from their use in lessons. Teachers should introduce students with VI to materials and equipments used in activities such as science experiments before the activity. If students have the opportunity to learn about the materials or equipments before the activity begins, they will be more able to concentrate on the concept being taught rather than on what equipment they are using. Toward this end, a specialist will assist students and teachers in inclusive classrooms with adaptations as needed. (iii) Auditory Learning and Accommodations Auditory input provides another way of gaining information by the VI students.

Teachers should not assume, however, that students will understand verbal input in the same way and at the same depth as other normal students understand visual input.

Auditory language triggers the creation of mental images that correspond with words. Images are recalled to assist students in comprehending verbal language (Barraga & Erin, 1992). A student with VI is likely to have fewer and less detailed mental images to correspond with verbal language. Such images may differ according to a student's individual experiences and verbal input he/she has received from others (Whitmore & Maker, 1985). General teachers should observe and interact with students with VI in an effort to determine whether individual students can understand the verbal inputs. The teacher must check for comprehension during class discussions and when giving directions. If VI students are having difficulty in understanding what the teacher says, the teacher may need to clarify or expand on their background knowledge or vocabulary. Organizations providing services for people with VI offer audio-taped textbooks. Classmates can be designated as note-takers for students with VI. Class notes can then be audio-taped or transcribed using an enlarged font or Braille. General teachers may also develop verbal or other auditory cues as signals for attending important information or particular events. Teaching 'listening skill' is also very important. Efficient listening is crucial to classroom success for students with visual impairments. Improved listening skills help students with visual impairments increase their spoken and written communication and reading skills (Heward, 2000). Teachers can consult vision specialists to determine appropriate auditory accommodations for each student.

111 (iv) Visual Learning and Accommodations Most students with VI have some usable vision. Their visual learning can become more efficient if they can enhance their skill to use their vision through training or the use of assistive devices. Observe students to determine that they have visual skills sufficient for locating and tracking visual materials. Vision specialists can offer assistance in developing students' visual skills and in making accommodations necessary for helping students use their vision in productive ways. Such services include making maps, adapting reading materials, and assisting in general accommodations. Many options are available for teachers selecting reading and writing materials for students with VI. According to their needs and preferences, students may use printed or Braille materials. Printed materials should be clear and be printed using an easily readable font. Providing an easel to hold reading materials can help students with VI do close work more easily (Barraga & Erin, 1992). Black felt-tip pens and soft lead pencils are useful writing utensils for students with VI because of the increased amount of contrast they create against white writing paper (Koenig, 1996). An extra light source at the student's work area can also be helpful for some students (Heward, 2000). If a VI student is benefitted from an additional light, the light's placement should be determined in collaboration with the vision specialist. Some simple strategies for using printed materials can help students with VI learn visually without requiring huge adjustments to the classroom environment. Simply holding books or other materials closer is enough to help some students with visual impairments (Heward, 2000). Using magnification devices or large-print materials are two accommodations that are often implemented in the classroom (Barraga & Erin, 1992). Such equipments and materials should be available for VI students who need them. There are some other considerations for general teachers to remember during lessons and when preparing materials for use in the classroom: a. The student's position in the classroom in relation to visual presentations should allow for an unobstructed view! If necessary, allow the student to move to a position with a better vantage point when visual materials are being used. b. Information written on the chalkboard should be large. Dry erase boards are good alternatives to regular chalkboards. The bright background strongly contrasts with the colours (especially black) are used for them. c. All visual aids should have clear, sharp images. Materials with high contrast are easier for students with VI. For example, handouts should have very dark black or navy blue print on bright white paper.

112 4.4 Procuring, Adapting and Use of different types of Models Each student who is VI or blind has their own unique learning needs. The type of service should reflect a student's need for specialized instruction at a specific time in his/her development process. This may change as the special need student progresses through his/her education. Some students may require a residential or special school specifically designed for students who are blind. The majority of students with VI can be best served within their local school system. Depending on the students needs, they may need a consultation model, an itinerant model or to receive more intensive services in a resource room at a magnet school for students with VI. In order to help students reach their fullest potential, schools should provide a full array of options to assure appropriate placement of each student. 4.4.1 Need Assessment and Placement of VI Students The assessment of VI students has a very crucial role in identifying appropriate level of severity and to place them for educational support system scientifically. Widely used two techniques of need assessment techniques are given below: i) The VISSIT: The Visual Impairment Scale of Service Intensity of Texas (VISSIT) is designed to guide teachers of students with VI in determining the type and amount of itinerant services to recommend for students on their caseload. The individualized education programme (IEP) experts will take decision on the basis of the result of the Scale. This Scale supports the teachers in quantifying information for the IEP of the VI students. The goal of VISSIT is to provide guidance so that all students with VI get the benefit of an appropriate amount and type of service. (ii) The VSRS: The Vision Severity Rating Scale (VSRS) was developed by the Michigan Department of Education through a task force of the State of Michigan, USA. The scale is very useful for determining amount of services a VI student needs due to his/her additional impairments. This assessment should be done once in every three years since needs and levels of support changes over time to determine the appropriate amount of service a VI student requires at a particular phase of his/her developmental process. It has also been further developed to assess the Orientation and Mobility Severity Rating for students with additional disabilities.

113 4.4.2 Models for VI Learners Three such models are discussed below: (i) The Consultation Model The students who receive consultation require minimal or no direct services from a teacher of students with visual impairment (TVI). In this model, the service is provided to the adults who work with the students on behalf of the student with VI. It provides itinerant observations of the student within their educational environment to determine if they are receiving the most appropriate adaptations to their materials, environment and instruction and to collaborate with teachers and therapists. Possible scenarios where the consultation model is appropriate include: A student with a progressive vision loss whose visual function is still within the normal range may not need direct services. They may, instead, need to consult with the teachers and family about potential changes in the student's vision and ways to prepare the student for future. A student who is making adequate academic progress, is not lacking any disability - specific skills, and has appropriate natural supports that facilitate the ongoing development of skills related to functioning in all areas. The student may only need accommodations for testing, or the student's general education teachers and parents may benefit from 'consultation with the TVI A student whose multiple disabilities include VI may get frequently benefit best when the special education teacher embeds vision specific skills, activities and strategies into the routine and daily plan. The student in this model may require extensive consultation for team members planning, explaining the unique learning needs of the student. When providing consultation, the TVI should: a. Observe the student in a variety of contexts, c. Provide suggestions on material, environmental and curricular applications, d. Have frequent contact with the teacher(s), paraprofessionals, and therapists to support their goals! objectives and help them understand the student's visual needs. (ii) The itinerant Model: Students in the general education programme or those assigned to a self-contained classroom for multiple disabilities may require Itinerant direct services from a teacher

114 of the VI. The time that the Itinerant TVI spends with the student should be based only on the time required to meet the special education goals identified in the IEP and may vary from daily instruction to biweekly or weekly instruction. While some skills are best address in the general education classroom, others require privacy or a quiet environment. The teaching techniques to enhance vision should not be taught in isolation. It is important to look at what the needs and activities of the student are in

the

school and in their everyday life that are affected by their visual performance, and teach to those tasks. The TVI will make suggestions for appropriate environmental and mental adaptations. (c) The Resource Room model The Resource Room Model is designed for students who require daily support from a TVI. In this model, students attend' a school that has been designated as 'magnet' school for students of their similarly aged with VI, who need daily contact with TVI. A TVI is based at the Magnet School in order to be accessible to the students and their teachers throughout the school day. Students are assigned to a general or special education classroom for most of the school day. Students attending Magnet Resource Classrooms have intensive instructional needs related to their visual impairments. The amount of time spent in the VI classroom will vary among students, based on their unique needs. They will typically spend part of each day receiving instruction in the areas of the core curriculum and support that facilitates their academic progress. Although the TVI is not an academic tutor, the TVI may spend time ensuring that students understand concept introduced in the academic courses. Some students will receive instruction in ways to access academic subjects, such as reading or basic mathematics, to build a strong foundation upon which future learning can occur. Advantage: the TVI has more opportunities in this model to observe students in a variety of situations, including classrooms, bus lines, the tea-stall, the playground etc. providing them with more opportunities to assess the student's skills and areas of needed instruction throughout the day. Since they are available to students and general education teachers throughout the school day, they can provide immediate assistance to teachers who are uncertain how to include students with VI in the curriculum by helping these teachers adapt materials or modify instruction or by teaching classroom activities that cannot be easily adapted in other ways. Students in a VI Magnet School have more opportunities 115 to meet and frequently interact with other students who have visual impairments. Through planned and unplanned activities, they can discover issues they may have in common and solutions to problem related to their visual impairments. This model allows older and more fluent Braille readers the opportunities to mentor younger students.

Disadvantages: vantage of the VI Magnet School Model is that students may not attend their home schools and therefore may not attend school with their siblings and other children in their neighbourhoods. Because of the geographic distances between their homes and the school, students may find it impossible to attend planned or impromptu after-school or evening activities, and parents may be challenged to feel part of the school commun ity and to participate in parent-teacher activities or school advisory committees. 4.5 Organizing Field Trips

Children learn what others expect of them and thus develop their own expectations for themselves through daily experiences with their communities. Visually impaired

pre-schoolers

need enhanced, planned opportunities to learn about their communities through firsthand experiences. Community field trips can be important and help career development opportunities. They give

pre-schoolers

the chance to learn about what workers do in fire stations, physician offices, bakeries, post offices, or restaurants.'

Here are 5 tips for making the trip a positive learning experience from the book "

Skills for Success: A Career Education Handbook for Children and Adolescents with Visual Impairments "]: 1.

Hands-on learning opportunities are essential for children with visual impairments. Let the contact person at the community site know that children will need to touch equipment and explore the environment. Make arrangements for them to handle and explore selected items at the site. 2. Prepare children for the trip by discussing where they will be going. Ask, "What do you think will be there?"; "Who will be there?"; and "What will we see?" 3. Provide verbal labels and descriptions of the objects as the children examine them, for instance, "The fire truck is a big red truck" and "The fire-fighter

wears a hard hat and black rubber boots." 4. Use field trips to help children integrate concepts being introduced in other 116 activities. A trip to the petting zoo to learn about zookeepers or to the humane society to learn about veterinarians is a natural component of a unit on pets and the classification of animals. 5. Provide opportunities for children to meet adults with similar disabilities to theirs and to notice these people doing work or carrying out activities. Emphasize similarities in their adaptive tools and the adults' tools-for example, "Mrs. Daugherty's hearing aid is the same as yours." With field trips one can provide a broad range of experiential learning opportunities that are developmentally appropriate, from unusual places such as a pottery studio to traditional community sites such as a police station or farm. Every experience helps a child think more about "what do I want to be when I grow up?" Science educators today face the challenge of improving thinking skill, interest and success in science learning. They typically do this through the science curriculum which is taught in the formal classroom setting. 4.6 Teaching Skills: Role Play & Dramatization, Narration & Explanation, and Story-telling Schellin (2006) claims that simulation, role play and drama are three very useful learning techniques. According to him, simulation is longer than role play, and students keep their own identities instead of playing a role. In role play, on the other hand, students assume a role and play a part in a specific situation. 4.6.1 Role Play and Dramatization In drama, students are supposed to act out exactly what is written in a script. Schell in (2006) illustrates how the three tools can be combined, and demonstrates a model for a teaching method in which students practise simulation, role play, and drama in combination. Role plays a teaching method has many points in common with dramatization. He indicates, therefore, that it is preferable if teachers use the two synthetically. Even though there are some differences in length, creativity, and flexibility, all of these techniques can serve beneficially for learners as a rehearsal for real life, and inspire learners to acquire the target language in a comprehensive manner. The difference can be the length of the play, as well as the time needed to prepare, but they have many characteristics in common at the fundamental level; role play and

117 dramatization can be practised with almost the same procedure and they have similar effects on developing language skills. A very simple role play of a prepared dialogue and a creative drama might not be aimed to the same level of learners. Accordingly, we use the term 'role play' for a short sketch based on prepared scripts, 'short drama' for a drama which is inventive and contains just one scene, and 'creative drama' for a long, creative, and comprehensive type of drama. We can use the term 'dramatization' as a category which embraces all 'role-play', 'short drama' and 'creative drama'. The impact of dramatization in foreign language classes is quite remarkable, and students tend to enjoy themselves and learn many things including language skills from this activity, both as an actor and as an audience. The short dramas in classroom activities can be extended to long creative dramas to make it as a teaching method to learn the culture and civilization of the target language in an inclusive way. Very short drama or role-play activities are suitable even for beginners, if appropriate dialogues as a reference and teacher's help are provided. Moreover, there are definitely advantages for VI learners from the beginning to practise dramas in order to improve their communication skills for the following reasons: Right from the beginning the VI students can practise their pronunciation while having fun, as they practise their lines repeatedly. The fear of using a new language in front of others is diminished through the repeated performance. Repeating and using the target language from the beginner's level, the VI student will naturally acquire a living language, grasping and experiencing the meaning of the target language's world-view. The activity of dramatization is just a possible way to gain a sustainable, long-term effect in acquiring language. Kawakami may be right, as he said the effectiveness of dramatization activity is not something we can perceive immediately. Nevertheless, the language itself has a characteristic that we learn in the long term, while accumulating experiences of communication in many situations. Thus the successive activities of dramas must serve as a repertory of simulation of exemplified situations. (i) Procedure The whole class is first instructed about the activity of role-play and dramatization and its procedures. Then the students form pairs. Each pair get the worksheet with the 118 situations and is asked to choose one situation about which they will write a script for a short drama. They are supposed to think about the characterization of the drama characters and write a script cooperatively. The students are allowed to use freely consult dictionaries, reference or the textbook, and can ask questions to the teacher. The teacher shall collect all the audio or written scripts and give them back to the students with some grammatical corrections and some suggestions for expressions in the following week. Then the VI students will practise the modified script for about ten minutes. Finally, each pair will play the short drama. While a pair is acting out their original drama, other students carefully watch/ observe/ listen their plays. They are applauded at the end of each short drama. Therefore, the class has a spirited and friendly atmosphere, and students seem to quite enjoy writing a script inventively instead of just memorizing the dialogues in the textbook. (ii) Advantage Role play and dramatization can be classified as communicative methods of foreign language learning. In this section, we point out the problem of the tenet of the communicative approach that a top priority should be given to create meaning and that grammatical correctness is considered less important. In everyday conversation, it might be possible that we put a greater emphasis on conveying meaning than speaking correctly. Nevertheless, in classroom instruction, correctness of forms should be also respected, as long as it is a part of the education program. This article claims that the activity of the dramatization is one of the best and most appropriate methods for improving one's communicative skills as well as paying attention to the grammatical accuracy suggested by one's teacher. As the result of Question 2 demonstrates, error correction would not work as a deterrent for their creating drama in a short drama activity. Students memorize the modified scripts for performing a play, and as a result, they can acquire grammatical accuracy, while performing a role in a communicative way. (ii) Difficulties Sano (1989) points out one of major difficulties with conducting the activity of drama in a class that psychological pressure is a burden for students who are introvert in nature. Moreover, some VI students may feel nervous when making an oral presentation in front of an audience, even though they are not introvert or shy. The picture-story shows and puppet plays may be the solutions for these problems. However, they would not be fundamental solutions if students feel uncomfortable in the first place to speak in front of many people. Furthermore, one of the advantages of drama activities, reciting with natural gesture and facial expressions, would be ignored in picture-story shows and

119 puppet plays. Habituation to oral presentation in front of the class would be the best method to handle the anxiety of speaking in public by the VI students. This kind of accustomation permits students to fight against the fear of oral presentation and may serve them in their future experiences as well as in their drama activities in the class. Although several studies have been done to demonstrate the effectiveness of dramatization, few have been done for the VI students. 4.6.2 Narration and Story-telling Oller (1981) mentions the importance of meaningful communicative settings especially for the VI students. It is clear that the analysis of episodes and linking them up with semantic categories can constitute a central process in learning. Richard-Amato (1988) also indicates that presentation of episodically organized materials can indeed be an effective language teaching approach. Through materials that do not violate the logic of normal discourse, the student can receive optimal input which can enhance the ability to reproduce, understand, and recall the target language. This view of putting language learning into meaningful and comprehensive situations corresponds to the perspective of cognitive linguistics that we experience and cognize the world as a gestalt. It also conforms to one of the major theories in cognitive semantics, frame semantics, which claims that in order to understand the meaning of a word, encyclopedic knowledge concerning the word is indispensable. People have always told stories; it is the oldest form of remembering. In ancient times, long before written language was developed, people told stories to preserve the history, traditions, desires, and taboos of their social groups. Each generation told their stories to the next, which in turn told the stories to the youth of the generation that followed them. Since prehistory, all cultures have passed along such tales through the oral tradition, and they have always been an essential part of our humanness. Some stories were told just for entertainment. Others were used to share the history of a group of people and also to teach lessons and transmit values and beliefs. Still others were intended to explain natural phenomena-such as the changing of the seasons and the cycle of night and day- and usually involved the people's gods and other religious beliefs. Certain stories were accompanied by music and were sung instead of recited. These stories remained in a constant process of variation, depending on the memory, talent, or purpose of the storytellers (Anderson, 2005, 81).

120 Story-telling, the art of narrating a tale from memory rather than reading it is one of the oldest of all art forms, reaching back to prehistoric times. Storytelling involves two elements - selection and delivery. Many English and Foreign Language (EFL) teachers are interested in storytelling as a resource in teaching. A successful story-teller chooses adequate stories and must be a good performer, for the delivery is crucial and requires both preparation and rehearsal. Story-telling is the original form of teaching and has the potential of fostering emotional intelligence and help the child to gain insight into human behavior. Story-telling also promotes language learning by enriching learners' vocabulary and acquiring new language structures. Moreover, storytelling can provide a motivating and low anxiety context for language learning. The story-telling tips given in this article are meant to help the teacher-as-storyteller as he/she prepares for a storytelling 'performance' for students. Story-telling is the original form of teaching. There are still societies where it is the only form of teaching the beginners with VI, though attempts have been made to update it. A simple narration will always be the cornerstone of the art of teaching. Colloquial or literary, unaffected or flowery - the full range of language is present in stories developed in a unique way. The listeners may also be benefitted from observing non-polished speech created on-the-spot. While listening to stories, children develop a sense of structure that will later help them to understand the more complex stories of literature. In fact, stories are the oldest form of literature. Through traditional tales, people express their values, fears, hopes, and dreams. Oral stories are a direct expression of a literary and cultural heritage; and through them that heritage is appreciated, understood, and kept alive. Through a story, listeners experience a vicarious feeling for the past and a oneness with various cultures of the present as they gain insight into the motives and patterns of human behaviour. However, many storytellers feel that cognitive enrichment is not the primary aim of their art. Stories have numerous affective benefits for social and emotional development. A story session is a time to share feelings. A relaxed, happy relationship between storyteller and listener is established, drawing them together and building mutual confidence. Stories help children to know themselves and to know others so they can cope with the psychological problems of growing up. Story-telling is also a living art. Like music and dance, it is brought to life in performance. A story will be altered by the storyteller's background: his/her choice of setting and detail, and the rapport established with the audience. The storyteller's building materials are words, sounds, and language patterns. The tools are the voice, face, and hands. The

121 product is the creation of a shared human experience based on words and imagination. Storytelling is an individual art, and an imposed method or ready-to-use plan will prove inadequate. Beginning storytellers must go beyond the rules. They must know their personal strengths and develop their own unique style. (i) Advantages: The most important advantages of storytelling may be summarized as follows: Stories are motivating and fun and can help develop positive attitudes towards the foreign language and language learning. They can create a desire to continuum of language learning for VI students.. Stories exercise the imagination. Children can become personally involved in a story as they identify with the characters and try to interpret the narrative illustrations. This imaginative experience may develop VI learners' own creative powers. Listening to stories in class is a shared social experience. Reading and writing are often individual activities; storytelling provokes a shared response of laughter, sadness, excitement and anticipation which is not only enjoyable but can help build up VI child's confidence and encourage social and emotional development. Children with VI can enjoy listening to stories over and over again. This frequent repetition allows certain language items to be acquainted with while others are being overly reinforced. Many stories also contain natural repetition of key vocabulary and structures. This help children to remember every detail, so they can gradually learn to anticipate what is about to happen next in the story. Repetition also encourages participation in the narrative. Listening to stories allows the teacher to introduce or revise new vocabulary and sentence structures by exposing the VI children to language in varied, memorable and familiar contexts, which will enrich their thinking and gradually enter their own speech. There are three main dimensions in which stories can add to learning in the whole school curriculum: 1. Stories can be used to reinforce conceptual development in children (for example, color, size, shape, time, cause and effect, and so on). 2. Stories are means of developing learning. This major category covers - (a) 122 Reinforcing thinking strategies (for example, comparing, classifying, predicting, problem-solving, hypothesizing, planning, and so on). (b) Developing strategies for learning English (for example, guessing the meaning of new words, training the memory, self-testing, and so on). (c) - Developing study skills (for example, making, understanding and interpreting charts and graphs, making and learning to use dictionaries, organizing work, and so on). 3. Carefully selected stories can also be used to develop other subjects in the Curriculum, III particular:- Geography and the Environment in the local area, neighborhood parks, sports and games, using a map, using the atlas, the weather and climates around the world, cultural studies etc. (ii) Story Selection Selection requires an ability to evaluate stories and to discriminate between those that meet your learners' needs and those that do not. Although learning stories directly from other story-tellers is the traditional method, one learns most stories from books. Many publishers produce simplified storybooks especially for children learning English. However, there are many authentic storybooks written for English-speaking children which are also suitable for those learning English. As they have not been written specifically for the teaching of English as a foreign language, the language is not selected or graded. Many, however, contain language traditionally found in most beginner syllabuses. The advantage of using authentic storybooks is that they provide examples of 'real' language and help to bring the real world into the classroom. Very often simplified stories represent a watered-down version of the English language and can deceive both teacher and learners about the true nature of language. Authentic can also be very motivating for a child as they experience a strong sense of achievement at having worked with a "real" book. Furthermore, the quality of illustration is of a high standard, appealing to the young learner, and it plays an important role in aiding general comprehension. Wide reading gives authority to your telling. Teachers can choose from a wide range of storybooks: those that children are already familiar with in their mother tongue, such as traditional stories and fairy-tales; picture stories with non text, where the children build up the story together; rhyming stories; cumulative stories with predictable endings; humorous stories; stories with infectious rhythms; everyday stories; fantasy stories, animal stories, and so on.

How Children Benefit from Listening to Stories?

123 Hearing stories: 1. Stimulates the imagination. 2. Improves listening skills. 3. Instills a love of language, reading, and creative writing. 4. Improves language skills, such as vocabulary, comprehension, sequencing, and story recall. 5. Builds community by providing a common experience and collective language of story catch words and phrases. How Children Benefit from Telling Stories? Story-telling: 2. Increases self-esteem by building confidence in speaking before groups. 3. Improves expressive language skills and stimulates inventive thinking. 3. Promotes greater cooperation and stronger relationships among children and between students and teachers. If we know others' stories, we are less likely to judge or misunderstand them. 4. Encourages personal growth through risk-taking. 4.6.3 Explanation Explanations are integral to the learning process and can be used as an effective elementary social science teaching strategy when combined with opportunities for student activity. Effective explanations may involve the following: The use of clear language. Good teacher delivers the subject knowledge in simplified chunks, An awareness of what the students already know, The use of memorable examples. Ongoing questioning to check the level of understanding, Actively engaging all the students of a class. Pupils process information in different ways. Visual learners have a preference for reading words and looking at diagrams and images; auditory learners have a preference for

124 listening: tactile or kinaesthetic learners have a preference for touch and movement. Small modifications to the explanations can address each of these learning styles, thereby improving the educational experience more effectively to all the students. What makes an explanation effective? The teachers will be required to provide scientific explanations that engage all the students in a classroom irrespective of their special needs. Some of the following activities may encourage the students to start thinking about the respective learning process. Activity for giving a clear explanation: 1. What is the core information that the students need to know about a given topic? 2. What do the students already know? 3. What scientific vocabulary needs to be used? Does this need to be explained too? 4. How will the explanations be made engaging and memorable to the students? 5. What questions will be asked to check the students' understanding? 4.7

Evaluation of Concepts and Skills in Social Science with reference to Geography 4.7.1

Geography skills Students' Geographic skills under several categories need to be evaluated after the learning process being completed. Just like the normal students, VI learners also be evaluated using the slightly modified techniques. The basic Geographic skills are: (i) Geographic resource interpretation skills These include using maps, photographs, diagrams, cartoons, Images, statistics, keys, graphs, text, models, internet, speeches, surveys, films, TV, video clips and GIS to explain geographic information. a. Geographic resource construction skills include presenting spatial data which may include, but is not limited to, drawing sketch and precise maps, using GIS layering and/or other multi-media to present specific geographic information. b. Presenting statistical data may include, but is not limited to, constructing graphs, tables, performing calculations based on data.

125 c. Presenting visual data that may include, but is not limited to, taking photographs or drawing pictures, cartoons, multi-media. d. Complex presentations like multiple forms of data for example Visual, spatial and statistical combined. (ii) Communication skills It includes that being able to present geographic information in a variety of forms such as essays, paragraphs, poems, visuals, models, films, Powerpoint presentations, speeches, games, puzzles, blogs and graphic organisers. (iii) Social skills These include that being able to work in groups and being empathetic, appreciating different values, perspectives and viewpoints on different aspects of geography, establishing and justifying personal value positions, contributing and participating in the community. (iv) Fieldwork skills These include being able to gather information from the field using a variety of techniques Such as surveying, questionnaires, field sketching, measuring, photographing, interviewing and observing. (iv) Resources for Skill Evaluation In the examination a resource booklet is provided which is used to assess the students' understanding of the concepts and application of geographic skills. This may include a variety of resources such as maps, tables, diagrams, photographs, opinions. These will generally be about a particular geographic issue in a setting which could be from India or overseas. The resources provided at level I are more straight forward than those at levels 2 and 3. For example a topographic map at level I will be relatively easy to interpret. At level 3 topographic maps will be in their original state and be more complex, to interpret. Complex satellite imagery will only be used at higher levels. a. Mapping Distance, use of six figure grid references, use of latitude and longitude, compass direction, bearings, scale, area calculation, location of natural and cultural features, determination of height, cross sections, use of a key, precis map construction, recognition

126 of relationships, application of concepts, interpretation of other geographic maps like weather maps, cartograms. choropleth maps. b. Visuals Interpretation of photographs, cartoons or diagrams including pyramids and models such as a wind rose: interpreting and completing a continuum to show value positions. c. Graphing Interpretation and construction of bar graphs (single and multiple). line graphs (single and multiple), pie and percentage bar graphs, scatter graphs, dot distribution, picrograms. and climate graphs. d. Tables Recognition of patterns, simple calculation such as mean. mode. and conversion to percentages. At level III. the intention is for students to select and apply skills. This means that while the same skills are assessed as at level II students need to be able to select appropriate skills to answer questions. For example, students may be asked to give the location of a feature which requires them to use a combination of skills such as grid references, latitude and longitude, or direction and distance from another feature. They may be asked to describe the physical geography of a region which would draw on skills such as interpreting contour lines. cross sections. climate graphs and wind roses. e. The complexity of the examination questions Questions at level I are related to the use of a specific resource only. At level II, one or two resources may have to be used to answer questions. At level 3 several resources from throughout the resource booklet may be used to apply a skill. Instruction words will also differentiate the levels where longer written explanations are required. At level 1 most of the questions will be based around describe or describe and explain. At levels II and III, terms such as justify and evaluate may be used. f. Guidance given to students in the examination Candidates are given more direction at level 1 with less guidance at level III. For example, at level 1 a candidate will be told which type of graph to construct and be provided with 127 axes or asked to complete a graph that has been partially done, for example, complete the rainfall for a climate graph where the temperature is given. At level II. candidates will be told the type of graph to construct within a given space, whilst at level 3 candidates will have to select which is the appropriate graph to construct using more complex resources. At level III candidates will have to locate major features on a precis map: at level 2 to locate features where some outline is provided; and by level 3 only a minimal outline is provided for guidance.

4.7.2 Assessing geographic concepts

Conceptual understandings underpin the knowledge and skills assessed by the achievement standards (NCEA level I to III) and scholarship performance standards. Students are required to understand how these concepts can be applied to new settings, as well as applying them to the contexts they have studied specifically. Differentiation of concepts applies across the levels. A student's understanding of a concept at level I will be at a more basic level than an understanding at levels II or III. As students build geographical knowledge and skills, they will approach these concepts in different ways. By revisiting them in different contexts, they will come to refine and embed understandings. (i) The key concepts or big ideas in geography Geographic concepts allow for the exploration of relationships and connections between people and both natural and cultural environments. They have a spatial component. They provide a framework that geographers use to interpret and represent information about the world. The development of understanding of these concepts will allow VI students to participate as critical, active, informed and responsible citizens. The geography achievement objectives are based on conceptual understandings. A concept is a general idea, thought, or understanding. Conceptual understandings are what learners know and understand about a concept. When the concepts are elaborated 128 into generalisations, they become conceptual understandings. The key concepts are all derived directly from the Level VI to VIII achievement objectives for geography.

a. Local Environment It is expected that VI students will develop their understanding of concepts through time. Teachers may also choose additional concepts that may connect with the local environment or the circumstances of their students. Such concepts must be geographic in nature: they must have a spatial component. b. Spatial components relate to how features are arranged on the Earth's surface. For example, an understanding of 'environments' will be supported by students also developing an understanding of additional concepts such as location, distance and region. Other concepts may apply to specific contexts, for example, rehabilitation and mitigation for extreme natural events or natural increase and dependency ratio for population. c. Natural and Cultural Environment They have particular characteristics and features which can be the result of natural and/ or cultural processes. The particular characteristics of an environment may be similar to and/or different from another. A cultural environment includes people and/or the built environment. d. Perspectives Ways of seeing the world that help explain differences in decisions about, responses to, and interactions with environments. Perspectives are bodies of thought, theories or worldviews that shape people's values and have built up over time, they involve people's perceptions (how they view and interpret environments) and viewpoints (what they think) about geographic issues. Perceptions and viewpoints are influenced by people's values (deeply held beliefs about what is important or desirable), e. Processes It is a sequence of actions, natural and/or cultural, that shape and change environments, places and societies. Some examples of geographic processes include erosion, migration, desertification and globalisation.

Environmental Influences 5.7.2 Classroom Management 5.8 Let us Sum Up 5.9 Check Your Progress 5.10 References 5.1

Introduction: Low Vision is significant impairment of vision, but not blindness. It is important to identify children who have impaired Vision. There will be Psychological problems

133 associated with a diagnosis of low vision. One of the primary problems for low vision child is that there is very little which he can pick up just incidentally through his visual sense. He needs to be taught the process of discrimination between the forms, outlines, pictures and symbols which have never been brought to his/ her attention. So the purpose of any low vision education programme is to encourage and help each child with low vision make best use of vision. There are three aspects in training effective use of vision such as stimulation of vision, visual efficiency and utilization of vision. Use of vision in children having minimal amount of vision needs stimulation. Encouraging the use of vision is vital for children with low vision as it enhances their development, education and experiences. When an infant has severe visual impairment, to help him to learn to see, stimulation must be simple. The visual efficiency can be developed by training but cannot be measured or predicted clinically with any accuracy by medical, psychological or educational personnel. A variety of activities should be given for vision stimulation and visual efficiency. 5.2

Objectives After studying this unit the learners will be able to : Explain the meaning and importance of vision training. To carry out the activities for vision stimulation and visual efficiency training. Select and use the appropriate learning medium for low vision children. Plan programmes for training in reading and writing skills. Acquire the techniques of teaching Orientation and Mobility skills. Manage Class-room situations for low vision children. Provide necessary environmental modification in home and school. 5.3 Visual stimulation : Concept and procedure 5.3.1: Meaning and Importance of Vision Training Vision training, also known as vision therapy consists of a variety of programmes to enhance visual performance. It includes treatments for focusing, binocularity and eye movement problems.

134 Vision therapy can increase reading efficiency because the goal of vision training is to improve visual efficiency and visual processing. Children rubbing their eyes while reading, avoiding reading, or getting headaches while reading should be evaluated. Problems with focusing (accommodative insufficiency) or problems keeping words single (convergence or divergence problems) may be present. A full eye - health evaluation and vision training workup may reveal problem. Vision training is also appropriate for people learning how to coordinate the eyes after surgery for squint. Vision training can also be used in lazy eye (amblyopia) and includes patching the eye and doing various exercises. 5.3.2 : Aims of Vision Training The aims of vision training include the following : To encourage and help each child with low vision make best use of vision. To provide a variety and a number of opportunities for the child to learn about and understand his environment. There are three aspects in training for effective use of vision: 1. Stimulation of Vision Children who have very little vision or have not used vision need to know that they can use their vision. They may also need encouragement to do so. 2. Visual Efficiency How residual vision can be improved through vision training? Measures of vision do not change after training- visual acuity, visual fields will not change because of the training. 3. Utilization of Vision : How to use vision leads to knowing how to change the environment/ lighting choosing suitable materials and using low vision devices if needed. 5.3.3 Visual Stimulation: Concept and Procedure What is visual Stimulation? Encouraging the use of vision is vital for children with low vision as it enhances their development, education, and experiences. Use of vision in children having minimal amount of vision needs stimulation. Visual stimulation is the use of strong visual stimuli

135 to make an infant or child aware of the vision. These children usually have very limited visual capabilities and no visually guided functions. Smith and Cote (1982) stated that the area of brain, which is responsible for vision, would remain underdeveloped unless stimulation and visual experiences are provided. How efficiently the child functions visually is the direct result of the quality of sequential presentation of visual stimulation experiences. For visually impaired children, the use of vision is not an automatically learned process. Visual Stimulation Serves Multiple Purposes for children Who have residual vision. Who have vision but don't use the vision for visually oriented behaviours or for incidental learning. Who have vision but not learned to interpret what they see. The definition of blindness is based on measurements of visual acuity and visual field. These visual functions cannot be measured in young children with the techniques used in the assessment of adult persons. Many children in our country do not receive early intervention because of the present testing system. Visual impairment affects many areas of development. In infancy vision is very important in interaction - visual communication between the child and the parent, motor development, object permanence, spatial concepts etc. In pre school age visual communication is the dominant way of communication and visual impairment may effect social contacts, orientation & mobility etc. There is need to stimulate the existing vision to use and to develop assessment of functional vision and define related functions at different age levels. Activities for Stimulation of Vision When an infant has severe visual impairment, to help him to learn, to see, stimulation must be strong and simple. Playthings Toys are more effective for vision stimulation because they are more interesting and easy to use. Many usual playthings are useful. Contrast can be enhanced by adding colours to the surfaces of the play items. Bottle with Stripes Bottles with bright stripes on white background attract the infant to look. Sounds with the water in the bottle may give the child the other source of information - auditory, and

136 may attract the child to look at farther distances. By using different yarns on the surface can give different tactile qualities. Tactile information will be a compensatory source of information. The other source of information can be trained together with the use of vision. Shiny Objects Shiny surfaces that reflect light are strong stimuli for grasping, Plastic balls covered with shiny papers, shiny rattles etc., which have both visual and auditory stimulation can be used. String of Beads The string of beads can be kept in a holder. When the string is brought closer to the child's face the child can grasp it easily. The movement of the beads, its soft sound and the various colours of the beads will be an effective activator in early stimulation. Illuminated Toys Illuminated toys and ball or fluorescent ball that glows in a dimly lit room will activate a visually impaired infant. Flickering Lights When nothing else seems to work, one may try to use flickering lights at close distance. Because of flicker, the toy can be used by many children with very limited residual vision. The child expresses for the first time the joy of seeing light. Stimulation during the first month of life and certainly before age six is important for preventing visual deprivation. The presentation of visually interesting stimulus items will motivate a child to become visually attentive. The child might attain visual attention more rapidly provided with an opportunity to experience natural consequences

of using vision. 5.4 Selection of an appropriate medium of reading and writing

The ability to communicate effectively through speaking, listening, reading and writing to the extent of one's abilities is of fundamental importance in achieving assimilation into society. The most vital component of the total communication process is reading. Reading and writing is of equal importance and value for individuals with visual impairments. An efficient reading medium facilitates education and integration into school, learning and work environments.

137 5.4.1.

Choice of Reading Medium For sighted, print medium is the universal method of expressing language. However, for children with low vision the decision regarding the appropriate learning medium is not straightforward or predetermined in any way. Since literacy is measured by the ability to demonstrate effective reading and writing medium, much attention must be devoted to making decisions by which each person with visual impairment will read and write. 5.4.2. Visual Process in Print Reading Reading is not performed through continuous eye movement but through sudden changes of fixation, fixing a given point in a space, encompassing the surrounding letters. The speed limit of the eye to shift from the fixation to another is determined by the time that brain takes to process the information input. Faster reading is not achieved by quicker eye movement but an expansion of visual field. Visual process plays an important part in print reading. Reading speed is a factor specially affected by visual deficits. The reading speed is influenced by factors like visual functioning, cause of low vision and type of optical help etc. For many young people with low vision the inability to read is the most serious consequence of their eye disease because of the input it may have on learning process. Low vision persons have some differential characters that sometimes teachers may not be aware to evaluate. Textual information is processed differently by foveal and peripheral regions of retina. 5.4.3. Superior Medium Print or Braille? There has been ample discussion among the professionals in the field as to the superiority of one medium over another medium for students with low vision. However such discussion does not reflect a full appreciation of the complexities and differential characteristics of children with low vision. There can be no predetermined reading medium for all students within an arbitrary category and still uphold the principles of educating each child to his or her individual capabilities and needs.

The children who show a preference for gathering information visually can develop efficient reading skills through the visual channel, the primary consideration should be given to instruction in reading in print. For students who do not have sufficient visual functioning to develop efficient reading in print, the consideration can be given to instruction in reading Braille.

138 Some children may need both print and Braille for their education and life situations. The value of one medium over other is not a matter. The important factor is the degree of care that is taken in matching the appropriate reading medium with the child's individual sensory and learning capabilities and needs. The task of the teachers is to provide instruction learning medium or mediums which will allow the child to become a literate adult, not to restrict opportunities for achieving literacy by failing to match a child's existing abilities with the appropriate learning mediums. 5.4.4 Principles in Determining the Reading Medium The determination of the appropriate learning medium is but one of critical decisions. The appropriate learning medium is based on a set of fundamental principles that reflect the individuality and unique learning characteristics of each low vision child. These are:

Individual needs and abilities. The teachers should know the child's unique abilities and needs. Students with low vision possess a wide range of learning characteristics that are unique in themselves (e.g. reading with central vision, reading with peripheral vision etc.). So no global statement can be made for the total population. It should be based on the individual learning characters. The students who show a preference for gathering information visually can develop reading skills in print. The students who do not have sufficient visual functioning can be given instruction in Braille. Instruction in both print and Braille may be appropriate for some students as he may need very large print for some educational purposes and majority of his educational aspect he may be using Braille. Some children may use print in day time for short duration and Braille for night time. Some students

may read print but cannot write print. They can be allowed to use both methods. The decision should be based on the student's unique sensory capabilities - ability to receive information through sensory channels, stability and prognosis of the

139 eye condition. The decision should not be on arbitrary criteria such as visual acuity or legal blindness. Each student

with low vision should be assured that decisions regarding the learning medium are based on the sensory/overall visual functioning. The teacher who determines the medium should have professional training and professional judgement. The professional involved in the education of the children with low vision should realize that the children should learn to communicate effectively. The teachers and educational team should have professional judgement in matching the appropriate learning medium with the child's individual sensory and learning capabilities. 5.5 Techniques

and Procedures for developing reading and writing skills The children with visual problems can be identified with some simple techniques. Vision may be improved with spectacles, treatment and operation. Children and youth with low vision have unique educational needs. The functional vision assessment should state the child's primary mode of reading, whether it is regular print, large print or braille. 5.5.1 Programme for developing reading and writing skills Visual Reading/ Writing

In low vision services, print reading is the specific goal of the low vision persons.

Near acuity is measured in the functional assessment of near vision. A simplified near vision chart with a few print/ symbol (illiterate E card) is currently used by teachers.

When a low vision person considers reading as a task that may occur even as close as half an inch from the eyes. The test is to differentiate between : 1. Those people who can see normal print. 2. Those people who can read large print without aids 3. Those people who require magnification devices or

are

able to read very large print.

140 4. Those unable to read print with magnification devices or need Braille. Independent Visual Reading A child who is ready to begin reading will still need visual training in addition to techniques used in reading. 1. Activities to promote association of word symbols with objects and action pictures.

Use pictures of previously recognized objects accompanied by appropriate words.

141 (

b) Affix labels to things in the Classroom:

142

Action words can be written on individual cards for the child to choose and act out. 2. Activities to promote

discrimination, recognition and identification of individual letter and word. a) Match letters: Present letter in unlike configuration

Present letter in like configuration b) Match words: Unlike words

143 Like Words : eat dot Cat cat ate

144

Match letters in work pages n q o g q n g o 3.

Activities to foster and encourage visual reading of simple materials (a) Use known songs, verses and stories which children can read from memory. (b) Make flash cards of words taken from the song/ story and make the child build sentence. Crow Thirsty Forest Pot water

e.g. The Crow was thirsty. (C) Begin using textbooks. (d) Provide a story time. Children listen to a short story told by teacher or by an audiocassette. When they have completed listening, the child can follow reading the same

story. 4. Activities to increase reading speed The slow reading rate attained by most children with impaired vision is a major frustration. Speed reading techniques must be started early - before bad habits have already been formed. The aim of reading is not the single words which combine to

d a d k o a c e d m d o d

145

express these reading. Reading speed a minimum of 20/25 words per minute is needed for comprehension. Therefore:

a)

Systematic Scanning techniques which develop the ability to spot key words. Phrases, sentences and paragraphs need to be devised. b) Teach children to use principles of continuity and context to make intelligent guesses.

c) Encourage use of configuration clues. d)

Teach children to avoid sub - vocalization which concentrates attention on single words and parts of words rather than ideas expressed. e) The use of line marker/ typoscope offers help to reduce glare and increase contrast and readability f)

Develop good listening

skills

for more effective use of recorded materials and reader service. g) If visual aids are available, develop skill in the use of the devices. Activities to Develop Independent writing Skills Activities for writing can be given simultaneously along with reading activities. All eye-hand coordination activities prepare children for writing. These activities should be continued throughout the writing programme. Reinforce pre - writing activities before actual writing letters start. Some of the writing devices which improve contrast and facilitate writing are: Bold - tipped/ Fibre- tipped pen Black Ink Line Guide

Bold Line Paper

Writing slate used by sighted children and chalk Neck magnifier Closed Circuit Television Type writer Computer
146 5.6

Orientation and Mobility for Low Vision Children Orientation means an awareness of position in space. Mobility means the ability of

moving around through the environment safely, efficiently, and independently. Not all persons with low vision need orientation and mobility training but those who are unable to move with ease, independent mobility is achieved by gradually exposing them to increasingly complex situations. Successful mobility depends of effective use of visual information rather than a visual acuity. Even minimal visual function such as light perception can be useful. The important in visual functions are influence of visual field, visual acuity, lighting and contrast sensitivity. Of these four variables, peripheral field defect, light levels and contrast sensitivity are more closely related to mobility than is acuity. 5.6.1

Assessment Strategies The mobility assessment is the first step designing a mobility programme. Instruction may be brief or extended over a period of months depending on the age, goals and abilities. First the mobility Instructor/Special educator can conduct an interview to uncover problems in mobility related to eye condition and psychological difficulties. 5.6.2 Functional Assessment in Mobility A functional assessment is very important which is to be conducted indoors and out- doors under actual travel conditions. The functional assessment is to evaluate the child's use of visual information and ability to draw on previous experiences. The functional assessment includes the following areas: Identification and avoidance of obstacles Estimation of distances. Negotiation of steps, curbs and uneven surfaces. Ability to explore from one point to another. Lighting needs, and adjustment to variable light condition Discrimination of contrast Scanning skills Use of aids.

147 Use of inputs in other senses Ease and speed of travel. The best assessment is to hear what the Low vision person is telling about their needs, desire, problems etc. The Instructor should also observe the person in the environment. But keeping those in mind and record, it is more important to analyze actual performance Discrepancies may exist between the answers to interview questions and actual performance that could give the evaluator a basis for discussing realistic limitations with the low vision person and designing a practical programme around those limitations. 5.6.3 Training for Adult and Children The adult does not have to be "taught" to see because spatial concept is usually intact, visual memory and previous experiences are stored. A typical programme for an adult includes training in efficient use of vision and hearing, travel skills in the neighbourhood and using public transportation, sighted guide techniques, the use of long cane and use of visual aids. Children, particularly those whose low vision is congenital or of early onset, need intensive training. A typical programme for a child or young person includes visual simulation, body image, concept development, body movement, sensory training of non- visual senses, independent travel in the known environment, use of visual aids for example use of hand magnifiers to read maps, addresses, telephone numbers etc., and use of mobility techniques such as cane travel and sighted guide. 5.6.4 Mobility Aids and Techniques 1. Conventional Glasses Conventional spectacle is first prescribed by the eye care specialists to provide the best possible base line visual acuity. 2. Aids that control Light The visual aids that modify light, increase contrast or reduce glare includes visors, wide brimmed hats, sunglasses, frames with side shields and telescopes. For persons who are night blind, a bright light source from flash/ torch light may enable the person travel without cane.

148 3. Magnification Aids Monocular telescopes or head-borne bioptic telescopes may enable the low vision persons to localize, focus and track. 4. Minifiers A person with peripheral field loss can see the effect of minification by reversing a low- power monocular telescope. Minifiers are specially designed to reduce the image size horizontally, which expands only the lateral periphery of the field of vision. 5. Fresnel Prism A Fresnel prism is a series of prisms compressed into a flat plastic membrane. These are accurately placed on a pair of glasses in the area of a non- functional field of view. Do not interfere with the person's regular vision. The person who is using this, however, with a quick movement into the prism can see objects at the side without any head movement. The prism in effect, deflects light rays and cause those objects at one's side to appear in front of the person for easy viewing. This visual mobility aid is useful for those with severe constricted visual field caused by Retinitis Pigmentosa, Advanced Glaucoma, and less severe case like hemianoptic (half vision) field defects. Non - visual Aids and techniques Some low vision persons may have to use non- visual technique to supplement vision under some conditions such as absence of light, unfamiliar place or uneven terrain etc. Some of the non- visual aids and techniques are : 1. Sighted Guide A sighted guide technique allows the low vision person to travel comfortably with a companion. Person with peripheral field loss appreciate a sighted guide in poor lighting and a new situation. Older people are often more comfortable with sighted guide. 2. Long Cane The long cane, traditionally associated with blindness, can be used by persons with low vision. A person with night blindness who is able to get about easily during the day needs a cane in dim light or at night. A person with a limited visual field may more freely use residual vision for general orientation and a cane for obstacle and curbs detection.

149 Protective Arm Technique The protective arm technique is used to avoid injury to the upper and lower body. This technique is to be used if the person's acuity is insufficient for the occasional situation when no sighted guide or cane is available. Trailing Trailing is following a wall or other surface with the back of the hand. Trailing allows a person to remain in contact with physical guidelines to avoid becoming disoriented. Adaptations for optical visual functioning 1.

2. Illumination - the amount, direction and changes in lighting conditions are crucial for optimal visual functioning. 2. Wearing absorptive sun lenses which block ultra-violet and infra-red light rays significantly increases functional acuity. In addition it reduces the amount of time it takes to adjust from indoor to outdoor lighting and vice versa. 3. Wearing wide - brim hats or visors, or even using umbrella in the sun help to increase functional acuity and protect one's eye from glare. 4. When trying to discern an object, person or sign, position oneself in such a way that the sun comes from behind the person. Change angle of viewing to facilitate best position. 5. In dim light situations such as some rooms, restaurants and cinemas, use a portable light source such as a penlight or flashlight for spot checking. Appropriate sighted guide or cane techniques are also recommended in these situations where a person is rendered functionally blind. 6. Depth perception - judgement of presence of drop-offs such as curbs, steps and uneven terrain - is affected not only by the person's reduced visual acuity or fields, but by changes in lighting and contrast. 7. A cane is particularly helpful in these situations as it frees the persons in front of you is helpful especially if that person suddenly appears higher or lower in one's visual field or moves sharply to the right or left, indicating the presence of up and down steps, curbs or uneven terrain.

150 8. A broken shadow in one's line of path may be indicative of stairs. (E.g. the shadow of pole on a flight of stairs will appear as uneven and broken, not as a straight line.) Bumping into Obstacles If vision is always directed downward for safety purposes, using a cane allows freedom to scan more effectively and cover a wider path. Following the shoulder line of a person with distinctly contrasting or vivid colour clothing provides movement clues to avoid possible objects Learning to visually scan is a systematic search pattern as opposed to random, inefficient use of visual skills for visual cues in the environment. 5.7 Classroommanagement -

Seating arrangement, adjustable furniture, illumination, non-reflecting surfaces and colour contrast.

Low vision is a complex area within the field of visual impairments. Individuals with low vision can have very different amounts of vision and ways of seeing. Therefore, some environmental modifications are required. In case of low vision children extra care is required. Environmental modifications are used to improve the independent functioning of children with low vision. The environmental modifications should be provided within the environment where they will be, including home, community, and workplace. The low vision devices help the low vision children to use their vision more effectively. 5.7.1 Environmental Influences : A child with low vision may experience difficulty in acquiring concepts. Vision is an organizing sense that allows us to perceive objects at a distance and to make connections between these objects. Many concepts developed in childhood are learned incidentally through vision. If the visual sense is impaired, concepts may be incompletely developed or missed entirely. Because of this, it is important for children with low vision to directly experience as much of their world as possible and to receive augmented instruction in making connections between objects and processes.

151 5.7.2 Classroom Management (A) Lighting : Due to age- related changes in the cells of the lens and retina, most older adults require up to three times as much light as a 25 year old. Without adequate lighting, it may be difficult for an older adult to see doorsill in dim light or read the fine print on a medicine bottle. Unfortunately, many older adults, accustomed to conserving energy in the depression years, still live in minimally lit surroundings. Adding the correct type of lighting is one of the easiest and yet most powerful home changes we can make. Most of the products suggested below are available through local hardware, home remodeling centers or specialty stores. The simple addition of extra light fixtures or higher wattage bulbs, can make all the difference in a person's visual acuity. A 100 or 150 watt incandescent light, shining directly on the task at hand, may be appropriate for a reading lamp. More lighting is required in some cases i.e. Retinitis pigmentosa To increase the amount of overall lighting, a torchere, an upright which bounces light off the ceiling to other parts of the room, is an excellent solution. Until recently, torchere lamps were only manufactured with halogen bulbs which, due to the bulb's high temperature, posed serious fire risks. Today torchere lamps are available with colourcorrected fluorescent bulbs, a safer alternative to halogen. Reduce fumbling around in the dark during a power outage by installing a plug - in emergency light : the battery back - up unit turns on automatically during a blackout. If there is no light switch at the entrance to a room, add a wireless wall switch at the doorway. Use nightlights to light the pathway from the bedroom to the bathroom. In recreation and reading areas , provide plenty of floor lamps and table lamps. Advise people who are visually impaired that light should always be aimed at the work they are doing, not at the eyes. Place mirrors in such a way so that lighting doesn't reflect off them and create glare.

152 For window coverings, use adjustable blinds, sheer curtains or draperies, because they allow for the adjustment of natural light. Keep a few chairs near windows for reading or doing hand crafts in natural light. The light should come behind and to one side of the person. Dim or appropriate light is required in some cases i.e. Albinism (B) Seating Arrangement : The children can be placed in the middle of the front row. Not all low vision children prefer the front row. Children with tunnel vision will be comfortable when they sit little back and on the sides depending on the dominant eye. The children can sit where light comes more- near the window or door to use light. (C) Colour contrast: Colour, used as a visual identification system, can be a valuable tool in helping adults who have either low vision or difficulties with depth perception. Use strong colour contrasts to highlight where one surface begins and another ends : a dark wooden toilet seat against a white floor or a red plate against a white tablecloth are examples. Contrasting colours can be used for a wide range of household items and architectural features including doors, doorknobs, counters and tabletops, chair fabrics and bedspreads. Low- cost solutions include highlighting on/off controls with red nail polish and using glow- in - the - dark tape around the edge of tables and light switches. Place light objects against a dark background, a dark table near a white wall, for example, or a black switchplate on a white wall. Install doorknobs that contrast in colour with doors for easy location Paint the woodwork of the door frame a contrasting colour to make it easier to locate. Mark the edges of all steps and ramps with paint or tape of a highly contrasting colour.

153 (D) Furniture : Blackboard The blackboard should be cleaned regularly. Writing should be clear, large and uncluttered. White or yellow chalks provide the best contrast. Arrange furniture in small groupings so that people can converse easily. Make sure there is adequate lighting near furniture When purchasing new furniture, select upholstery with texture when possible. Texture provides tactile clues for identification. Avoid upholstery and floor covering with patterns. Stripes and checks can create confusion for people who are visually impaired. Use brightly coloured accessories, such as vases and lamps, to make furniture easier to locate. (E) Elimination of Hazards Remove electrical cords from pathways or tape down for safety. Do not have polished floors ; use nonskid, non glare products to clean and polish floors. Keep desk chairs and table chairs pushed in. Move large pieces of furniture out of the main traffic areas. (E) Hallways and Stairways In hallways , make sure that lighting is uniform throughout. Place drinking fountains and fire extinguishers along one wall only throughout hallways to allow individuals who are visually impaired to trail the other wall without encountering obstacles. Install grab bars or contrast tapes where they may be needed. Light stairways clearly

154 5.8 Let us Sum Up

Approximately 90% of individuals with visual impairments have functional low vision, just 10% are functionally blind. However, students with low vision are often an over looked

majority in the population of children who are visually impaired. Difficulties of students with low vision are often not as apparent as they are for students who are blind.

None the less,

students with low vision require direct instruction in literacy, visual efficiency, accessing the core curriculum, compensatory skills and more

there are many approaches for instructions. Teacher of students with visual impairment has a bigger role to play. They can beyond individualized education programme (IEP).

One of the principal concerns for students with low vision is their ability to access the visual environment.

Specific assistance is essential to negotiate such issues. Access to information is another important area where specific attention is required. Access to the core curriculum is the next issue which require specific. Providing optical device, preferential seating and handouts containing pertinent information are always helpful. In science subjects' hands on activities are very much useful and effective. Some specific interventions to achieve expanded core curriculum areas are very much significant; such areas may be

compensatory or functional academic skills, social interaction skills, independent living skill, recreation and leisure skill, career education

skills, use of assistive technology skills etc. All such issues and others aspects which are pertinent for teaching of children with low vision have been addressed here adequately. 5.9 Check your progress 1) Write down the importance of early identification and intervention programme for children with low vision. 2) Briefly explain the clinical evaluation of low vision using the equipment in Clinic. 3) Explain the procedure for screening of impaired vision with the commonly adapted test. 4) What is functional vision? How do you assess the visual skills? 5) Describe the method of selecting items/materials for the functional assessment

155 and enumerate the points to be borne in mind while administering the test. 6) What is visual stimulation? 7) Explain the role of teacher in managing the class with low vision children. 8) What is visual tracking? Explain with an example. 9) Write down the use of aspheric lens for vision training. 10) Describe the concept development of the Visually Impaired Child. 11) State a few modifications needed in the home environment to facilitate visual task of low vision child. 12) List the mobility aids and techniques used for effective movement of low vision persons. 13) What are the procedures followed to develop writing skills for low vision children. 14) Describe the procedures of selecting appropriate learning medium of low vision children

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Notes

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Any
system of education which ignores Indian conditions, requirements, history and sociology is too unscientific to
commend itself to any rational support. — Subhas Chandra Bose

1
B. Ed. Spl. Ed. (M. R. / H. I. / V. I)- ODL Programme AREA - C C - 15 : TECHNOLOGY AND EDUCATION OF THE VISUALLY
IMPAIRED A COLLABORATIVE PROGRAMME OF NETAJI SUBHAS OPEN UNIVERSITY AND REHABILITATION COUNCIL
OF INDIA
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TECHNOLOGY AND EDUCATION OF THE VISUALLY IMPAIRED
All rights reserved. No part of this work can be reproduced in any form
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3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA - C C-15 :

TECHNOLOGY AND EDUCATION OF THE VISUALLY IMPAIRED

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7 Netaji Subhas Open University AREA - C C-15 (V.I.) : TECHNOLOGY AND

EDUCATION OF THE VISUALLY IMPAIRED C - 15 □ □ □ □ □ TECHNOLOGY AND EDUCATION OF THE VISUALLY IMPAIRED UNIT - 1 : INTRODUCING EDUCATIONAL AND INFORMATION COMMUNICATION TECHNOLOGY 9-36 UNIT - 2 : ADAPTIVE TECHNOLOGIES 37-66 UNIT - 3 : ACCESS TO PRINT FOR THE VISUALLY IMPAIRED 67-95 UNIT - 4 : ASSISTIVE TECHNOLOGIES FOR THE VISUALLY IMPAIRED WITH REFERENCE TO SCHOOL-SUBJECTS AND LOW VISION 96-119

UNIT - 5 : COMPUTER-AIDED LEARNING 120-151

9 Unit-1 q Introducing Educational

and Information Communication Technology Structure : 1.1. Introduction : 1.2. Objective : 1.3. Educational Technology– Concept, Importance & Scope 1.3.1 Concept of Educational Technology 1.3.2 Importance of Educational Technology 1.3.3 Scope of Educational Technology 1.4. Difference Between Educational Technology and Technology in Education 1.5. Special Significance and Goals of Technology for the Education of Children with Visual Impairment 1.5.1 Significance of Technology for the Education of Children with Visual Impairment 1.5.2 Goal of Technology for the Educational of Children with Visual Impairment 1.6. Information and Communication Technology (ICT)–Concept and Special Significance for Teaching–Learning of the Visually Impaired 1.6.1 Concept of ICT 1.6.2 Significance of ICT for Teaching-Learning of the Visually Impaired 1.7. ICT and the UN Convention on the Rights of Persons with Disabilities 1.8. Let Us Sum Up 1.9. Check Your Progress 1.10. References 1.1 Introduction Technology in the form of adaptive and assistive devices, plays a crucial role in the education of the visually impaired. This course brings into sharp focus the need and importance of such technology both for the practicing teachers and the visually

10 impaired learners. While highlighting the significance of addressing the users point of view/feedback and involving mainstream professionals in developing required technologies, the course also dwells upon how best students with visual impairment get access to the printed text/material. The course also acquaints the student-teachers with various devices for making the teaching-learning process for important school subjects meaningful, exciting and rewarding for all concerned. The educational needs of children with low vision and related technological perspectives are addressed, too, along with critical contributions of computer-aided learning and interventions. 1.2. Objective :

After the completion of the Unit, learners would be able to–

- Acquire knowledge

- about the Importance and Scope of Educational Technology.
- Differentiate between Educational Technology and Technology in Education.
- Understand the importance of Technology for the Education of children with Visual Impairment;
- Relate the Concept and Nature of Educational Technology and ICT to the Education of Children with Visual Impairment;
- Evaluate concepts of ICT on the basis of the UN Convention on the Rights of Persons with Disabilities.

1.3. Educational Technology–concept, importance & scope

Modern age is the age of science and technology. The world of today is very dynamic. The life of man in the primitive age was altogether different from his life in the

sputnik age. There have been tremendous changes in the life style of human beings which may be attributed to the contribution of science and technology, science has extended the frontiers of our knowledge in various ways and directions. Science is considered to be a blessing to the

mankind. Nothing better has happened than the advent of science in man's life. The contribution of science and technology has been experienced in almost all the spheres of human life including education.

Before understanding the meaning of educational technology, it is essential to know the meaning of technology. The word 'Technology' derived from Greek word (techniques) which means an art which is related with skill and dexterity.

11 1.3.1

Concept

of Educational Technology Education

technology cannot be taken as a synonym to audio-visual aids,

and technology in education emphasizes the concept of service, i.e. the use of different equipment, gadgets and mass media.

It must mean technology of education presenting itself as a system for bringing improvement in the total process of teaching-learning by carefully analyzing its problems and obtaining the optimum results. Educational technology cannot be viewed in terms of

its part of processes.

Instructional technology, teaching technology, behaviour technology, programmed learning, micro-teaching, system analysis, management of teaching-learning, teacher or pupil's behaviour, etc. are all its constituents and resources. ●

Definitions :

Educational Technology is the systematic application

of scientific knowledge about teaching-learning and condition of learning to improve the efficiency of teaching and training. (

Leith, 1967).

Educational Technology can be conceived as science of techniques and methods by which educational objectives could be realized. (

Mitra, 1968)

Educational Technology can be defined as the application of the laws as well as the

recent discoveries of science and technology to the process of education. (Kulkurni, 1969) Educational Technology is concerned with the application of modern skill and techniques to requirements of educational training. This includes facilitation of learning by manipulation of media and methods, and the control of environment is so far as this reflects on learning. (Unwin, 1969) Educational Technology is concerned with

problems

of education and training context and it is characterized by the disciplined and systematic approach to the organization of resources for learning. (

Davis, 1971)

Educational Technology is concerned with providing appropriately designed learning situations which, holding the view of objectives to teaching or training, brings to bear the best means of instruction. (Richmond, 1979) Educational Technology

has to be seen as a part of a persistence and complex endeavor of bringing pupils, teachers and technical means together in an effective way. (Ford Foundation Team, 1971)

These definitions initially encompass the whole range of educational technology activities from the analytic methods of psychology of learning and teaching the audio-visual communication and mass media technology. The view propagated by these definitions may help us

to

conclude about the meaning and nature of educational technology as follows :

12 • Educational technology is concerned with the systematic application of science and technology in the field of education and thus maybe defined as the application of technology to education in order to further the case of the latter.

- Just as science and technology help in carrying out the practical task in general, educational technology helps in providing efficiency to the task of teaching and learning.
- Educational technology provides technical guidance and solution to the problems of education.
- Teaching is communication and educational technology can play an effective role in the communication between teacher and student.
- Educational technology encompasses the total teaching and learning process involving the elements like the following :
 - ▶ Specification of goals and behavioral objectives.
 - ▶ Analysis of the characteristics of learner.
 - ▶ Selection and organization of the content or subject matter to be learned.
 - ▶ Methods and strategies of the presentation of the content.
 - ▶ Use of aid-materials, software and hardware, mass media and communication techniques.
 - ▶ Effective arrangement of learning situation and learning environment.
 - ▶ Effective classroom control and management.
 - ▶ Continuous feedback and evaluation of the result.
- Educational technology is not limited to the use of audio-visual and does not symbolize merely educational hardware such as sophisticated gadgets and mechanical devices used in education. For the effective management of the total teaching learning process it tends to utilize the results of all goods, experiments and researches in the field of human learning and the art of communication and employs a combination of all possible human and non-human resources to achieve the desired educational objectives. In brief, educational technology should stand for a wide application of the available human and non-human resources for providing appropriate solution to the educational problems and to improve the process and products of education. •

Characteristics

Of Educational Technology : Characteristics of Educational Technology

are as follows : •

It

is based on scientific and technological advancements.

13 • It is more a practical discipline and less a theoretical one. • It

is a fast growing modern discipline. •

It makes use of the research findings of psychology, sociology, engineering, sciences and social psychology etc. and applies the same to the field of education. • It

brings

pupils, teachers and technical means together in an effective way. •

It

is the science of techniques and methods. It locates the problems in the field of education, remedies them and ultimately aims at improving the education system. ●

It is bound to improve the teacher, the learner and the teaching learning process. ●

Nature of Educational Technology : ● The basis of educational technology is science. ●

Educational Technology studies the effect of science and technology upon education. In other words, science and technology are used under educational technology. Hence, it is the practical aspect of science. ●

Educational Technology is a continuous, dynamic, progressive and effect-producing method. ●

New conceptions are possible only due to educational technology such as programmed learning, micro-teaching, simulated teaching, interaction analysis, video-tape, tape-recorder, projector and computer, etc. ●

Educational Technology accepts schools as a system. In this system, the school-building, furniture and teachers act as input while various methods, techniques,

strategies and the

teaching and examination with the help of audio-visual aids function in

th from of a

process. Lastly, the output is in of form of ability of the pupils. ●

Audio-visual aids cannot be termed as educational technology. It is because its concern is only with the process-aspect of educational technology and not with the input and output

aspects. But if these A.V. aids are used to achieve educational objectives, then

it can be

put in the category of Educational Technology. ●

Programmed

Instruction is also different from Educational Technology. Its main causes are that the student learns himself during the programmed instructions. It does

not allow

interaction between pupil and teacher. Hence, it can be used only for limited objectives and limited subject-matter.

Therefore, programmed instruction is merely a part of educational technology. ● Engineering Technology is not the educational technology

because the engineering technology has manufactured radio, tape-recorder, video-tape and T.V., etc., which are used in teachers as audio--visual aids, but still engineering technology

14 is different from educational technology. In education, it is accepted as hardware approach only. ●

Educational Technology cannot solve each and every problem of education. It can be used successfully in teaching and instructional

system only. ●

Some people assume that educational technology will replace the teacher which will make the teacher unemployed one day. It is their mistake. Educational technology can never replace the teacher. It is because of three aspects of educational technology.

These are 1. Input, 2. Process and 3. Output. Input is the teacher's job and therefore, educational technology cannot snatch the place of a teacher. In spite of this, educational technology develops cognitive domain only and not the affective domain. Affective domain can only be developed when an interaction between teachers and pupils takes place. Hence, educational technology cannot replace the teacher. ●

Objectives of Educational Technology :

Educational technology,

in the capacity of technology of education, provides valuable help in the total teaching-learning process for achieving the possible results in an economic way through the available human and non-human resources. In this respect, the major objectives of education technology can be summarized as follow : Objectives at the Macro Level In view of the broad educational goals. i.e., the macro level,

the objectives of educational technology can be listed in the following way : ● To identify educational needs/aspiration of the community. ● To determine the aims of education,

broad strategies and structure of education. ● To develop a sustainable curriculum with interaction with science, at and human values. ● To identify man-material resources and strategies for achieving the stipulated aims of education. ● To develop certain models leading to improvement of the process of teaching and learning. ● To develop the appropriate aids and equipment to meet the educational purposes. ● To identify the major constraints in the environment and the ways and means to tackle those. ● To help in extending educational opportunities to the masses especially the neglected section of the community. ● To manage the whole educational system covering planning, implementation and the evaluation phases. Objectives at the Micro Level

15 In view of specific classroom teaching i.e., the micro level, the objectives of educational technology are as follows : ● To identify and analyze the characteristics and educational needs of the pupils. ● To determine the specific classroom objectives and state them in behavioural terms. ● To analyze the contents of instruction and organize it in proper sequence. ● To identify the available teaching-learning materials and resources. ● To identify the nature of the interaction of the sub-systems like students, teachers, teaching-learning materials, content of instruction and methodologies. ● To plan the teaching strategies and utilize the man-material resources for achieving specific classroom objectives.

Approaches of Educational Technology : Educational Technology or hardware approach This type of educational technology

has its origin in physical science and engineering and is based on the concept of service, i.e., using technology in education (Silverman 1968).

While teaching in a big hall, teacher uses a microphone for making his voice audible, he may be said to approach such type of education technology for making his teaching effective. Such type of mechanical and teaching revolution has almost mechanized the teaching-learning process. Almost all the materials and equipment of hardware approach originally belong in

areas other than education and are being borrowed and utilized for educational purposes. Educational Technology II. or Software approach

Psychology of learning provided solid technology for bringing the desirable behaviour changes in the students and thus serves the cause of education by laying down definite instructional procedure, teaching behaviour and behaviour modification devices.

The

second type of educational technology is

sometimes referred to as instructional technology, teaching technology or behavioural technology. This type of technology tries to adopt a process-oriented technique for production of suitable teaching learning material, teaching-learning strategies, and evaluating techniques for the optimum results in the process of teaching and learning.

Educational technology basically stands for the techniques of developing and utilizing software and, that is why, it is referred to as the software approach. The materials, such as programmed material and teaching-learning strategies based on psychology of learning are usually known as software and the equipment and gadgets are called hardware.

16 Distinction between hardware and software technologies :

Educational Technology

III. or System Approach This type of educational technology is related

to the concept of system engineering which owes its origin to computer science. It represents the latest concept in educational technology of education. This

systems approach takes education as a system having a set of inputs which are subjected to a process, design to produce certain outputs which are intended to meet the stipulated objectives of the system.

Thus, in system approach, one has to make a continuous comparison of the different roles played by man, machine and media in a system of education and develop an appropriate instructional design and strategy in relation to the stipulated objectives. 1.3.2 Importance of Educational Technology Keeping an eye over such broad concepts of educational technology, one is able to map out the areas of its operation in terms of topic or aspects covered through its study or application. In brief, they may be summarized

as below : ●

Analysis of the process of teaching and learning : Educational technology tries to discuss the concept of teaching, analysis of the teaching process, variable of the teaching, phases of teaching, levels of teaching, theories of teaching, principles and maxims of teaching, the concept of learning, relevance of the theories, the relationship between teaching and learning.

Hardware
technology

Hardware

technology has its origin in physical sciences and applied engineering. It is more concerned with the production and utilization of audio-visual aid material and sophisticated instruments, and mass media learning for

the

helping the teacher and learners in their task.

It tries to adopt product-oriented approach. What is produced through software technology in the shape of teaching-learning material and strategy gets utilized by the hardware instruments and gadgets for effective teaching-learning.

Software technology

Software technology has its origin in behavioural sciences and their applied aspects concerning psychology of learning.

It makes

use of psychology of learning for the production and utilization of software techniques and materials in terms of learning materials, teaching learning strategies, and other devices for smoothing the task of teaching learning. It tries to adopt process-oriented technique or approach for the production of teaching- learning material.

What is produced here is made available for beign used by the hardware appliances.

17 ●

Spelling out the educational goals or objectives : Educational technology tries

to discuss the topics such as identification of education needs and aspirations of the community, survey of the resources available for satisfaction of these needs. ●

Development of curriculum : This aspect of educational technology is concerned with the designing of a suitable curriculum for the achievement of the

stipulated objectives. ●

Development of teaching – learning material : This area of educational technology is concerned with the production and development of the suitable teaching-learning material in veiw of stipulated objectives, design curriculum and available resources. ●

Teaching

preparation or teaching – training : Teacher is a key figure in any process of teaching and learning. Educational technology, therefore, takes care of the proper preparations of teachers for exercising their complex responsibilities. ●

Development and selection of the teaching learning strategies and topics : This aspect deals with the central problems of teaching learning act. Here educational technology tires to describe the ways and discovering, selecting and developing suitable strategies and tactics of teaching. ●

Development, selection and use of appropriate auido visual aids:

Teching- learning is greatly influenced and benefited by the use of appropriate audio-visual aids. Educational technology covers this aspets by discussing various types of audio-visual used for educational purpose, their proper select suiting to a particular taching-learning situation. ●

Effective utilization of the bardware and mass media : Various sophisticated instrument, equipment, gadget and communication devices through mechanization ane electronics revolution playing

an

effective role in the attainment of educational objectives by helping the teachers and learners in their respective roles. ●

To work for the effective utilization of the subsystem of education : Educational technology considers education as a system operating, in a systematic and scientific way, for the achievement of educational objectives. ●

To provide essential feedback and control through evaluation: Educational technology is essentially concerened with the task of exercising appropriate control over the process of teaching and learning by planning and devising suitable tools and devices for the continuous evaluation of the process and products of the teaching-learning activities.

18

Thus, educational technology

is concerned with all variables, phases, levels, and aspects of the teaching-learning process. In brief, it works for overall planning and organization of the system or subsystem of education. In above discussion, an attempt has been made to identify the importance of the subject educational technology by mapping out its field of operation, but in true sense, it is unwise to put hedge and boundaries around such a developing and fast growing subject. 1.3.3

Scope of Educational Technology

Educational Technology is as wide as Education itself. Educational Technology implies the use of all educational resources—Men, Materials, Methods and Techniquis, Means and Media in an integrated and systematic manner for optimized learning. Educatioal

Technology is comprehensive. It is associated with all aspects of educative process-methods, teaching strategies, learning materials, handling of various euqipment etc. The following 4M's

are the major components of Educational Technology : ● Methods : It is concerned with the devices such as Programmed Learning Team Teaching, Micro Teaching and

Personalized System of Instruction in Teaching Learning situations. ● Materials : Instructional materials such as Programmed Text book the material of this type may be handwritten or printed. ● Media : The media used here are audio, or visual or audiovisual. A few examples are radio, tape recorder, charts, films, educational television etc. ● Man Power : Man power controls educational technology in every way. Educational Technology without man is zero.

The

technologies included in it are mentioned below : ● Behavioural Technology : Behavioural technology is the important component of Educational Technology. It puts emphasis on the use of psychological principles in learning and teaching so that the behaviour of the teacher and pupils may be modified in accordance with the teaching objectives. ●

Instructional Technology : Instrucitional Technology means a network of techniques or devices employed to accomplish certain defined set of learning objectives. Instructional technology implies the application of psychological, sociological and scientific principles and knowledge to instruction for achieving the specific objectives of learning. ● Teaching Technology : Teaching is the social and professional activity. It is a process of development. Teaching

is

a

system of actions which induce learning

19 through interpersonal relationship. Teaching technology is the application of philosophical, sociological and scientific knowledge to teaching. ● Instructional Design : In order to bring desired changes in the pupils' behaviour, the teaching

situatios, working tools and new approaches were considered important in addition to the learning principles. The composite form of all these is instructional design. ● Training Psychology : Training Psychology is an important method of teaching and learning. Its development resulted out of the research work carried out on the complicated training problems and situations. Training psychology

emphasizes that the whole training task should be divided into three parts. These are : Preparing outline of the task. Task analysis Putting the task in sequence. The main role of training psychology is in Teacher Education. ●

Cybernetic Psychology : It's part of training psychology. Cybernetic psychology accepts human beings as machine.

Cybernetic psychology emphasizes the fact that all the methods of feedback bring the desired changes by controlling the behaviour of the pupil. ● System Analysis : System Analysis is a problem solving process in which the

needs of

the management are diagnosed and by using an appropriate method for solving the problem, evaluation is carried out. If you consider

the working areas, Eductional Technology includes the following : Curriculum Construction,

Teaching-Learning Strategies, Audio-Visual materials, Determining Educational Objectives, Training the teachers,

Feedback, Hardware and Software etc. In short, the scope of Educational Technology extends to all resources (human and non-human) for the augmentation and development of education.

Thus Educational Technology has a wide scope.

Use and Significance of Educational Technology (in the Indian context) :

In India, before the 1960's the term educational technology was almost unknown to the educational system. It was used as synonym to audio-visual teaching aids. The role of educational technologist in India, today, is not merely that of an audio-visual aid master, hardware expert, media expert or programmed text writer, but of one who is concerned with the information of an overall design to carry out an evaluation of the total process of education in terms of specific objectives.

Educational technology, as we find it today, has a meaningful present and promising future in our country. Some of the significant development in this direction may be summarized as follows :

20 •

There has been a wider and more effective utilization of radio for broadcasting educational programmes throughout the country.

These well planned programmes are now broadcast throughout the country for both in-school and out-of-school groups. •

Another significant development in the use of educational technology is concerned with the development of television programmes. • The third important area where educational technology has been useful is the problem of training and re-training a large number of school teachers in an effective way. • Another application of educational technology is being used in our country relates to language instruction. • Another field of operation of educational technology in our country is concerned with the correspondence education. • Another use

of which education

technology is being put in our country is concerned with preparation, development and utilization of audio-visual material, and handling as well as maintenance of the hardware appliances and sophisticated gadgets. • In the latest trend, educational technology is providing its worth by utilizing the services of computers and advanced form of ICT technology in the field of education.

Thus educational technology has been providing its worth in our country by guiding, planning, implementing and evaluating various programmes of formal as well as non-

formal education. 1.4. Difference Between Educational Technology

and Technology in Education The term "technology in education" refers to the use of technological advancement such as various equipment, materials and machines for educational purpose.

It invokes the increasingly complex range

of

audio-visual equipment, hardware and sophisticated electronic devices like projectors, films, radio, television, tape recorder, recording machines, tele-text and computer aided instructions for individualized and group learning.

The term technology in education is thus a service concept like technology in the service of farming and

agriculture or science in the service of mankind.

In this sense, educational technology can provide its services to the teachers of the following grounds :

21 • For explaining the purpose and functions of different forms of appliances, equipment and audio-visuals materials and mass media. • For providing training

and

acquiring the material and handling the equipment to overcome their reluctance to use new media and materials. • For showing the relevance to the use of equipment and material in the context of individualized and group learning for achieving the goals of formal or non- formal education.

Educational Technology

The term "technology of education" or "educational technology" cannot limit itself to the role of service as confined in the case of technology in education. The term, technology of the education, does not represent something added or helped from outside as sounded in the case of technology in education. It signifies a system of technological

approach to the problems of education. Emphasizing on this point of view, T. K., Robinson (1976) writes". The strongest protagonist for educational technologies are not, however satisfied with a role limited to technology in education and the provision of audio-visual aids. They see themselves as crucially involved in the design and evaluation of systems of learning involving an understanding of the psychology of learning and communication and information theory to be used to establish a rational for a good teaching practice which uses a variety of media and modes and which enables the teachers to deploy his skills more effectively and apply them more widely. This is technology of education.

In view of the discussion carried out in the above pages, the following conclusion can be drawn about the concepts of educational technology : ●

Educational technology cannot be taken as a synonym to audio-visual aids, and technology in education emphasizes the concept of services, i.e. the use of different equipment, gadgets and mass media. ● Educational technology must mean technology of education presenting itself as a system for bringing improvement in the total process of teaching-learning by carefully analyzing its problems and obtaining the optimum results. ●

Educational technology cannot be viewed in terms of its part or processes. Instructional technology, teaching technology, behaviour technology, programmed learning, micro-teaching, system analysis, management of teaching-learning, teacher or pupils behaviour, etc.

are all its constituents and resources.

22 1.5.

Special Significance and Goals of

Technology for the Education of Children with Visual Impairment 1.5.1 Special Significance of

Technology for the Education of Children with Visual Impairment 1.5.2 Goals of Technology for the Education of Children with Visual Impairment

In order to guarantee equal opportunities to all students, the accessibility of ICT educational tools is worldwide considered a major issue. Nowadays, visually impaired students can take advantages of a large number of effective assistive technologies but, while using electronic material for learning purposes, they often encounter a number of different accessibility and usability problems. The variety of obstacles they may find on their way is quite large mainly because the term "visually impaired" encompasses a wide range of deficits,

ranging from blindness to a number of other multifaceted, although less severe, visual impairments.

The accessibility requirements for e-learning products established by the laws in force can be considered an important step onwards; further measures, nevertheless, are still needed to foster the actual "usability" of such products by sight impaired people.

The Charter of Fundamental Rights of the European Union [2000] states that : "Any discrimination based on any ground such as gender, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation shall be prohibited." In the field of education, the basic concept of "Non-discrimination" entails the ability of all people to have "equal opportunity in education, regardless of their social class, ethnicity, background or physical disabilities" [Klironomos et al., 2005].

Students with disabilities have, then, the right to expect the same standard of education as their schoolmates and, in this view, they also have the right to access and use mainstream educational tools, including ICT based ones, which are generally referred to as "e- learning tools". Such tools are worldwide considered powerful tools to foster teaching [Hitchcock et al., 2003] but, at the same time, it is well known that, due to the widespread use of technological tools, "disadvantaged or excluded groups, including the unskilled, disabled and the elderly, face the danger of further marginalization [...]", in fact, "with the advent of the digital computer, and its broad penetration [...], disabled and elderly people face serious problems in accessing computing devices" [Stephanidis and Savidis, 2001] Anderson [2006] underlines that, in the field of education,

23 “while...technologies are beneficial and have been shown to help with educational tasks, their design and usability are an issue”. Students with disabilities may, in fact, face relevant difficulties both in “accessing and in “using” e-learning tools and, depending on the type of impairment, the types of obstacles encountered may vary considerably. In the following, the issue of the accessibility and usability of e-learning tools by visually impaired students is tackled, taking into account the fact that in almost all the developed countries they represent a significant part of the school population. In recent years, the World Health Organization [2004] has emphasized that “childhood blindness remains a significant problem, with an estimated 1.4 million blind children below age 1.5”, the problem appears even more relevant if we consider also the students with visual impairments other than blindness (the incidence of low vision being generally estimated three times greater than blindness). In the same report, in fact, it was found that, in 2002, there were 161 million (about 2.6% of the world population) visually impaired people in the world, of whom 124 million (about 2%) had low vision and 37 million (about 0.6%) were blind. Data of the World Health Organization seem to confirm, then, that sight impaired students are a relevant percentage of the overall population of the students with disabilities [Viisola, M., 1999]. Such students, in principle, could highly benefit from using ICT for educational purposes but they actually, despite the availability of a growing number of technology-enhanced and sophisticated assistive devices, face a number of accessibility problems [Burzagli et al., 2004]. The task of listing all such problems is not easy, mainly because students with visual disabilities are a highly heterogeneous category showing a wide range of different specific abilities, disabilities and needs; blind and low vision students, for instance, despite the fact that they are both often simply referred to as “visually impaired”, present very different visual problems, find different obstacles and ask for different kinds of help and support. What’s more, even the category of low vision students is a highly heterogeneous one : it encompasses a wide variety of different visual characteristics. In this perspective, the different instructional tools (those ICT based, as well as others), may meet or not to the needs of each single user, depending on her/his specific impairment. After a brief review of the e-learning tools that are widely used for educational purposes, examples are provided of some problems encountered by students with visual disabilities in accessing and using e-learning material. Such problems often result into obstacles for the effective use of the tools and may also have a negative influence on the overall learning process. In the end, a glance is taken to the accessibility requirements addressing the specific

24 needs of visually impaired people established by the Italian law in force, which directly recalls the Section 508 Rehabilitation Act 1. Different E-learning Tools for Different Visual Needs : While affording the choice of the e-learning tools to be used in concrete educational settings by visually impaired students, from one side, it is important to consider the nature, the specific features and the functionalities of the technological tools at hand; from the other side, it is necessary to take into account the actual, specific needs of the potential user/s (which are, of course, related to their impairments). To this end, in the following, an overview and a basic classification of the main tools used in the field of e-learning is proposed; subsequently, a quick look is taken to the different needs of the different categories of visually impaired students and to the main obstacles that they may encounter. • E-learning tools : Anohina, [2005] defines “e-learning” as a learning process that “takes place via any electronic medium”. In a global perspective, such a term refers, then, to any educational process making use of technological/electronic media and applications such as : “web-based teaching materials, hypermedia in general, multimedia CEFOMs, web sites, discussion boards, collaborative software, e-mail, wikis, computer aided assessment, educational animation, simulations, games, learning management software, etc...” [Wikipedia] in this view, the term “e-learning tools” encompasses at least those tools used for : □ Online learning : those educational resources made available through interconnected computer networks, comprising also synchronous and asynchronous communication tools, when used in an educational perspective. □ Computer-based learning : those learning materials locally available on the user’s PC and used when the computer is not connected to a network. □ M-learning : those educational tools made available through “mobile devices” such as palmtops (or handhelds), Personal Digital Assistants (PDAs), tablet PCs mobile or smart phones; such tools, may also take advantage of the connection to the net via “wireless transmission” [Hoppe et al, 2003]. The concept of “e-learning tool” is, then, linked both to the media (hardware devices) employed and to the programs (software applications) used to support the educational process. Such software applications can be roughly divided into : □ E-learning platforms : those internet-based environment expressly addressed to the delivery of integrated electronic educational contents and to the management of a variety of educational activities aimed at fulfilling specific

25 educational objectives 1 Section 508 of the Rehabilitation ACT Subpart C- Functional Performance Criteria § 1194.31) [Lin and Kuo, 2005]. All the digital contents made available by and through such platforms, are generally called "learning objects".

- Web based applications : those applications (both designed for educational purposes and used to fulfil educational objectives) which are directly accessible using any available browser and which don't need to be installed on the user PC.
- Stand-alone applications : those products (both "educational" and "used for education") which cannot be used directly via browser but that need to be installed locally, on the user machine; this category includes also products "downloadable" from the Web, but that still need to be installed on the computer.
- E-learning tools and the needs of visually impaired students : Examples of what kind of accessibility and usability problems can be found in the different categories of software applications are provided in the following, keeping aside, for the moment, all the possible problems linked to the use of computers in their standard configuration and of other specific hardware devices. While considering such obstacles, it is important to reflect on the fact that they are strictly related to the type of user impairment. Blind and low vision students encounter different types of obstacles : in order to fully access the contents, in fact, the first category needs necessarily to rely on screen readers, while the second category, thanks to optical aids and/or to specific customization options, may access a much wider variety of software applications, including, often, those with graphic interface. Other significant differences can be found among the needs of the different categories of low vision students due to the wide variety of their visual impairments [Dini et al, 2006].

1.6. Information and Communication Technology (ICT)-Concept and Special Significance for Teaching-Learning of the Visually Impaired

1.6.1 Concept of ICT

Information and Communication Technology (ICT) is an extended term for information technology (IT) which stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual system, which enable users to access, store, transmit, and manipulate information. The term ICT is also used to refer to the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system. There are large economic incentives (huge cost savings due to elimination of the telephone network) to merge the telephone network with the computer network system using a single unified system of cabling, signal distribution and management. However, ICT has no universal definition, as "the concepts, methods and applications involved in ICT are constantly evolving on an almost daily basis. The broadness of ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in digital form, e.g. personal computers, digital television, email, robots. For clarity, Zippo provided an ICT hierarchy where all levels of the hierarchy "contain some degree of commonality in that they are related to technologies that facilitate the transfer of information and various types of electronically mediated communications". Skills Framework for the Information Age is one of many models for describing and managing competencies for ICT professional for the 21st century. The phrase information and communication technology has been used by academic researchers since the 1980s, and the abbreviation ICT became popular after it was used in a report to the UK government by Dennis Stevenson in 1997, and in the revised National Curriculum for England, Wales and Northern Ireland in 2000. But in 2012, the Royal Society recommended that ICT should no longer be used in British schools "as it has attracted too many negative connotations", and with effect from 2014 the National Curriculum uses the word computing, which reflects the addition of computer programming into the curriculum.

Information and Communication Technology can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teachers' professional development and more efficient education management, governance and administration. UNESCO takes a holistic and comprehensive approach in promoting ICT in education. Access, inclusion and quality are among the main challenges they can address. The Organization's Intersectoral Platform for ICT in education focuses on these issues through the joint work of three of its sectors : Communication & Information, Education and Science. In modern society ICT is ever-present, with over three billion people having access to the Internet. With approximately 8 out of 10 Internet users owning a smartphone, information and data are increasing by leaps and bounds. This rapid growth, especially

27 in developing countries, has led ICT to become a keystone of everyday life, in which life without some facet of technology renders most of clerical, work and routine tasks dysfunctional. The most recent authoritative data, released in 2014, shows "that Internet use continues to grow steadily, at 6.6% globally in 2014 (3.3% in developed countries, 8.7% in the developing world); the number of Internet users in developing countries has doubled in five years (2009-2014), with two thirds of all people online now living in the developing world". However, hurdles are still at large. "Of the 4.3 billion people not yet using the Internet, 90% live in developing countries. In the world's 42 Least Connected Countries (LCCs), which are home to 2.5 billion people, access to ICTs remains largely out of reach, particularly for these countries, with many developing countries dearth of any type of Internet. This also includes the availability of telephone lines, particularly the availability of cellular coverage, and other forms of electronic transmission of data. The latest "Measuring the Information Society Report" cautiously stated that the increase in the aforementioned cellular data coverage is ostensible, as "many users have multiple subscriptions, with global growth figures sometimes translating into little real improvement in the level of connectivity of those at the very bottom of the pyramid; an estimated 450 million people worldwide live in place which are still out of reach of mobile cellular service". Favourably, the gap between the access to the Internet and mobile coverage has decreased substantially in the last fifteen years, in which "2015 is the deadline for achievements of an UN Millennium Development Goals (MDGs), which global leaders agreed upon in the year 2000, and the new data show ICT progress and highlight remaining gaps." ICT continues to take on new form, with nanotechnology set to usher in a new wave of ICT electronics and gadgets. ICT newest editions into the modern electronic world include smart watches, such as the Apple Watch, smart wristbands such as the Nike + Fuel Band, and smart TVs such as Google TV. With desktops soon becoming part of a bygone era, and laptops becoming the preferred method of computing, ICT continues to insinuate and later itself in the ever-charging globe. Information communication technologies play a role in facilitating accelerated pluralism in new social movements today. The internet according to Bruce Bimber is "accelerating the process of issue group formation and action" and coined the term accelerated pluralism to explain this new phenomena. ICTs are tools for "enabling social movement leaders and empowering dictators" in effect promoting societal change. ICTs can be used to garner grassroots support for a cause due to the internet allowing for political discourse and direct interventions with state policy as well as change the way complaints from the populace are handled by governments.

28 1.6.2 Significance of ICT for Teaching-Learning of the Visually Impaired For many blind or partially sighted learners, information and communication technology (ICT) computers can enable access to the curriculum by providing alternative methods of reading and recording work. It is likely that pupil with visual impairments may need to use ICT across most of the curriculum and that they will be following the same curriculum as their peers. There is range of different ways in which ICT can provide support for these learners. These include : ♦ Tools to support communication ♦ Improve access to information ♦ Curriculum tool to develop concepts in subject areas ♦ A means of production of learning materials in alternative formats. Key to effective learning is assessment of a large of factors. This may involve input from a range of professionals in order to assess : ♦ The learners functional vision. ♦ Mobility needs ♦ Curriculum needs ♦ Whether it is appropriate to use ICT. The success in the information society demands computer literacy. It is more or less impossible to complete an education let alone get and maintain a position on the job market without IT skills. Likewise, the ability to utilise information technology is important in most other aspects of life. Consider email for correspondence, home- banking, access to public services, access to library services, e-commerce, access to traffic information, the ability to book theatre tickets-just to name a few examples. As such, information technology, computer literacy and information access is important to everyone in information society, the visually impaired not excluded. In fact, these competencies may be even more important to people with visual disability. To some extent, IT competencies may eventually resolve some of the issues of underemployment and unemployment amongst the visually disabled. Information technology offers a range of possibilities to the blind and partially sighted : The computer can be used as an intelligent interface between the visually impaired and the sighted; information that would otherwise be inaccessible or require manual processing to become accessible can be automatically transformed into formats better suited for the visually impaired; as technologies emerge and mature, technologies

29 that were used solely as enabling technologies in the past are becoming mainstream, thus affecting price as well as quality; and finally, the ability to establish a virtual framework through the use of computers, geography and physical location matters less, hence increasing the opportunities in terms of employment and education. At the same time, however, information technology and the ways in which the technology is deployed represent an equal range of challenges. Although the Internet- in theory-makes information available to anyone who can use a computer, poor web-design raises new barriers. Furthermore, the short learning curve combined with relatively inexpensive solutions based on speech synthesis may further erode basic skills such as Braille literacy. Visually impaired have been able to command the user interfaces of computers using screen readers, speech synthesis, Braille displays and screen magnification systems. Furthermore, the visually impaired have access to the vast majority of all business applications, personal productivity tools, office applications, email system and web-browsers. Using enabling technology in combination with general-purpose computer system, the blind and partially sighted have been able to transform information from formats aimed at the sighted into formats more suitable to meet the needs of the visually impaired. Enabling technologies for such automatics transformation include Braille translation system, screen magnification system and text-to-speech engines. Today, all information is produced electronically and is-at least in theory-available directly from the publisher. A number of issues still remain, especially in the areas of copyright and copy protection. In addition to information published in print, vast amounts of information are available directly on the Internet and on CD ROM and DVD. Finally, electronic books (or eBooks) are emerging in the mainstream market. A recent survey estimated that, by 2005, electronic books will account for as much as 10 percent of the total American market for published books.

1.7. ICT and the UN Convention on the Rights of Persons with Disabilities

The Convention on the Rights of Persons with Disabilities (CRPD)

is the first international human rights treaty to place an obligation on States Parties to focus on mechanism for monitoring-Article 33(2). The provision does not seek to replace international monitoring, however, but rather to complement the work

of the U.N. Committee on the Rights of Persons with Disabilities-

whose mandate and functioning are set out in Articles 3, 4, 34, 36 and 37 of the CRPD and in the Optional Protocol.

30 The report by the Global Initiative on Inclusive Information and Communication Technologies (G3ict) and Disabled People's International (DPI) is but one example of how voluntary monitoring can be effected. This third edition of the CRPD ICT Accessibility Progress Report covers 76 countries including 74 ratifying countries, South Sudan (formerly part of ratifying country-Sudan) and the United States as a benchmark country. Those 76 countries represent 72 percent of the world population and 81 percent of the total population of ratifying countries. This report offers disability advocates, governments, civil society and international organizations monitoring the progress of the implementation of the CRPD by States Parties, a unique benchmarking tool that collects data on country laws, policies, and programs pertaining to accessible and assistive information and Communication Technologies (ICTs) around the globe. Based on the findings from the 2010 and 2012 editions of the CRPD ICT Accessibility Progress Report, it was clear that digital accessibility is not merely about greater use of technology by persons with disabilities. It is about transforming information-based policies and the ICT ecosystem. Addressing the ICT arena is part of a larger effort to build an information society based on ensuring people's right to communicate, use knowledge for their own ends, and overcome barriers on freedom to use, share and modify ICTs and information content. This comports with the theme of this year's High-Level Meeting on Disability and Development of the General Assembly on the realization of the Millennium Development Goals and other internationally-agreed development goals for persons with disabilities. The 2010 and 2012 editions of the CRPD ICT Accessibility Progress Report described how a disability inclusive development agenda is possible only if the multiple actors in the ICT arena commit to work in coordination, cooperation and collaboration. Developing a shared vision of a world information society that contributes to human development based on agreed upon principles, including persons with disabilities' right to access information, is a long-term undertaking. Strategic wisdom needs to inform future action, particularly in the negotiation of the empowerment of persons with disabilities through ICTs. ICT policies and programs should be seen not as one-time interventions, or solely as check-offs to demonstrate compliance with global treaties, but as processes which promote learning and human development from trial and error, and create spaces for the engagement of different social groups. Civil society actors, including NGOs and DPOs need to build their own capacities, develop perspectives, lobby with government and business, participate in national and international ICT policy-making processes, and

31 build constituencies among a wide cross-section of society on the role of ICTs for the promotion of equity for persons with disabilities. In 2013, the two sets of surveys from the CRPE ICT Accessibility Progress Report (3rd edition) were filled out by 86 local correspondents in 76 countries. Data collection for the third edition of the Progress Report was completed in cooperation with Disabled People's International (DPI) and various disabled person's organizations and experts in countries where DPI correspondents were not available. Convention on the Right of Persons with Disabilities 2013 ICT Accessibility Progress Report Where do we stand on CRPD implementation and disability-inclusive development in 2013? The data and information in the chapters ahead reflect the : • Degree to which each of the dispositions of the CRPD on Assistive Technologies (ATs) and ICT is actually enacted by ratifying countries in local laws, policies and regulations and their actual impact. • Nature and type of disability inclusive practices used by ratifying countries in local policies and programs. The report concludes with a brief set of recommendations that CRPD ratifying countries, DPOs and NGOs, national, regional and international development agencies could take to ensure increased progress in CRPD implementation and digital accessibility. These three recommendations are to : • Provide a legal foundation for ICT accessibility and reasonable accommodation in the country legislation which then can support and legitimize specific policies and programs; • Promote disability-inclusive policies and programs identified as priority areas by key stakeholders; and • Address gaps in capacity building through disability-inclusive cooperative development practices. • Introduced to ICT Accessibility in the CRPD : The significance of ICT accessibility for persons with disabilities is best described by the language found in paragraph (v) of the Preamble

of the convention on the Rights of persons with Disabilities (CRPD), which recognize "the importance of accessibility to the physical, social, economic and cultural environment, to health and education and to information and communication, in enabling persons with disabilities to fully enjoy all human rights and fundamental freedoms".

32 While the Preamble clearly defines accessibility as an enabler for persons with disabilities to exercise their rights, Article 3(f) of the Convention also identifies accessibility as one of its eight "General Principles". Article 9 is dedicated to accessibility and stipulates : "

To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communication technologies and system, and to other facilities and services open or provided to the public, both urban and in rural areas". Furthermore, Article 2 describes reasonable accommodation and the lack thereof as discrimination. In the case of information and communication technologies, because many accessibility and assistive solutions are available and already implemented, it can be inferred that the CRPD dispositions on reasonable accommodation apply in most cases. For example, an inaccessible website may not allow persons with disabilities to obtain information or use a service on an equal basis with others. Yet, methods to create accessible websites are well documented and if implemented correctly, do not cost more nor constitute a disproportionate or undue burden. Therefore, while the CRPD does not define accessibility as large as a right, it carries language which establishes the accessibility of information and Communication Technologies ("ICTs") as an obligation of States Parties and society at large. The notion that discrimination occurs when an ICT based service is inaccessible is consistent with emerging jurisprudence in the United States and the United Kingdom : inaccessible websites or inaccessible ATMs for instance do constitute discrimination against persons with disabilities because equal access is not provided while it could. The obligation to provide accessible ICT based products and services and ensure equal access is also reflected in many advanced policies and programs launched or promoted by States Parties around the world. Examples of such programs include : • Captioning or signing of television programs (implemented to some extent by 71 percent of the countries); • Offering relay services for deaf and speech impaired users of telephony (implemented by 26 percent of the countries); • Implementation of computer-based Assistive Technologies in schools and universities (52 percent of the countries have some level of implementation); • Providing accessible government websites (implemented by 45 percent of the countries); and, • Accessible public electronic kiosks or ATMs deployed (implemented by 39 percent of the countries).

33 While the above list cannot be exhaustive in the context of this introduction, it confirms that State Parties have in some areas acknowledged and acted upon the obligation to provide equal access to information and communication technologies and services, setting benchmarks for what constitutes reasonable ICT accommodation for persons with disabilities. • Treaty Implementation and the G3ict CRPD ICT Accessibility Progress Report : The G3ict CRPD ICT Accessibility Progress Report (3rd edition) is uniquely suited to address key aspects of treaty implementation, as well as serving as a path finding framework for the U.N. to adopt or adapt within its disability-inclusive development agenda towards 2015 and beyond. The G3ict CRPD Progress Report identifies the degree to which each of the dispositions of the CRPD on accessible ICTs and Assistive Technologies is actually enacted in local laws, policies and regulations and their impact. It includes 57 data points relative to the status of ICT and AT accessibility for each country surveyed. Data is collected and presented within the following three clusters of data points : • State Party CRPD legal and programmatic commitments; • State Party capacity for implementation; • Assessment of the State's implementation and actual results for persons with disabilities. By drawing links between State's commitments and implementation/impact on persons with disabilities and comparing data from various countries including from other international information and research sources. 16 significant findings, benchmarks and recommendations may be derived from the G3ict CRPD ICT Accessibility Progress Report for policy makers, international institutions business and industry, nongovernmental organization, disabled person's organization, and others. Results may be used by ratifying countries in order to improve their compliance with the CRPD. For example, governments may use the results to improve the consultation and participation process of Non-Governmental Organizations (NGOs) to the development and implementation of legislation. Furthermore, States could use CRPD results to request targeted training and support from their Institutions of Higher Education (IHE). Those IHEs could provide training to government entities on critical ICT and AT issues in which the country was deemed to be out-of-compliance.

34 The data may also be used by international bodies as a baseline against which those bodies can estimate or judge, in part, the adequacy and focus of their own CRPD responsibilities and commitments. International organizations can use the data to foster international cooperation and monitor existing needs for ICT and AT accessibility in communities. Furthermore, and in keeping with the conceptual framework and capacity building approach for the U.N. human rights treaty body system, G3ict has standardized its global survey using a structure-process-outcome data collection strategy. Convention on the Rights of Persons with Disabilities 2013 ICT Accessibility Progress Report For example, U.N. agencies such as UNDP, UNESCO, ILO, ITU or WHO in their role of providing technical assistance may use the data to identify policies and programs required by the CRPD and determine how to best engage State Parties in the implementation of those policies. On a regional level, DPOs and NGOs can also use the data to gauge the lack of CRPD compliance by governments in order to raise the awareness of the challenges and opportunities of ICTs and ATs for persons with disabilities and facilitate the sharing of lessons learned, good practices, tools and products. Results could also help DPOs and NGOs to determine which actions need to be taken to facilitate the implementation of the CRPD. What further steps can CRPD ratifying countries, DPOs and NGOs, national, regional and international development agencies take to ensure increased progress in CRPD implementation and digital accessibility? G3ict offers the following three recommendations : (a) Establish a legal foundation for successful CRPD implementation (of the ICT and AT provisions of the CRPD) (b) Promote disability inclusive policies and programs identified in priority areas by key stakeholders; and (c) Address gaps in capacity building through the use of disability-inclusive cooperative development practices. 1.8. Let Us Sum Up It is absolutely essential for any person to take appropriate decision in life. Subsequently access to information becomes essential for leading a meaningful life. ICT have revolutionized the manner in which access to information is provided to the

35 citizen. Technology advancements have also permitted disabled persons reach out and gain access to information through the computer equipped with specific provisions. Traditionally ICT has been a great boon to the disabled persons, having providing them with reading aids, audio books and other communication methods. Technology can also be used to reach out to a large number of persons with disabilities who are currently deprived of any educational and vocational opportunities. At present, the technological innovations have made the mode of communication effective, and the process and dissemination of information faster and opened up large avenues for successful employment. The purpose of assistive technology is to enable persons with VI, HI, loco motor difficulties, MR, etc. to achieve greater participation, choice and self-reliance in roles and activities that are important to them. The success in the application of assistive technology has many parameters. Firstly, the persons with disabilities should know what types of adaptation in technology are available in the field. Secondly, he/she should know in what ways it would empower him/her in mainstreaming, and thirdly, the individual should also understand his/her own potential for the better use of the technology.

1.9. Check Your Progress 1. What do you mean by educational technology? 2. State the basic natures of educational technology? 3. Discuss the importance of educational technology? 4. What are the scopes of educational technology? 5. What do you mean by technology in education? 6. State the differences between educational technology and technology in education. 7. What do you mean by technology in education? 8. State the differences between educational technology and technology in education. 9. What do you mean by information and communication technology? 10. What is the significance of ICT for teaching learning of visually impaired Students? 11. What is UNCRPD? 12. Write a short note on ICT accessibility in the UNCRPD.

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37 Unit - 2 q Adaptive Technologies 2.1 Introduction 2.2 Objectives 2.3 Concept and Purposes 2.3.1 Concept of Adaptive Technology 2.3.2 Purposes of Adaptive Technology 2.4 Basic Consideration - Access, Affordability and Availability 2.4.1 Access as the Basic Consideration of Adaptive Technologies 2.4.2 Affordability as the Basic Consideration of Adaptive Technologies 2.4.3 Availability as the Basic Consideration of Adaptive Technologies 2.5 Addressing User's Perspective in Developing Adaptive Technologies 2.6

Roles of IIT's and the Scientific Community 2.6.1 Role of

IIT's in Developing Adaptive Technologies 2.6.2 Role of Scientific Community in Developing Adaptive Technologies 2.7

Universal/ Inclusive Design - Concept, Advantages and Limitations 2.7.1 Concept of Universal/ Inclusive Design 2.7.2

Advantages of Universal/ Inclusive Design 2.7.3 Limitations of Universal/ Inclusive Design 2.8 Let Us Sum Up 2.9 Check

Your Progress 2.10 References 2.1 Introduction This chapter describes the developmental efforts related to adaptive

technologies, which can be combined with other technologies and processes to form an adaptive system. The goal of an adaptive system, is to create an instructionally sound and flexible

38 environment that supports learning for students with a range of abilities, disabilities, interests, backgrounds, and other characteristics. After defining key terms and establishing a rationale for adaptation, we present a general framework to discuss about adaptive technologies. 2.2 Objective

After the completion of the Unit, learners will be able to - • Acquire

Information about the Concept and Purposes of Adaptive Technology; • Acquire Knowledge about the Basic

Considerations of the Adaptive Technologies; • Understand User's Perspective for the Development of Adaptive

Technologies; • Consider the Role of IIT's and the other Scientific Community to Promote Adaptive Technologies; •

Evaluate the Concepts of Universal/ Inclusive Design. 2.3 Adaptive Technology - Concept and Purposes

Adaptive Technology is a broad term often used to describe both the products and services for people with special needs. It enhances the vocation, recreation, education, and independence of the user.

Any item, piece of equipment, or product system, whether acquired commercially off the shelf,

modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.

The

next thing that comes to mind is the question of who, how, where and when does one require and should be entitled to adaptive/assistive technology as well as to what extent and at what cost should it be available?

Adaptive

Technology can provide equality between visually impaired individuals and their sighted peers within the emerging information society. With the aid of the appropriate technological devices, visually impaired persons can independently access, process, store and transmit the same information handled by sighted people. Both use computers to manipulate this information. The only difference lies in the form in which the information is displayed. The vast proportion of employment, education and daily living activities require access to electronic information. Technology can, in innumerable instances, assist individuals who are blind or visually impaired to become active participants in their societies.

There are essentially five methods of output that can render computers and printed materials accessible for individuals who are blind or visually impaired:

39 Screen Reader, Braille Printer, reading device, electronic Braille displays, and text magnification. 2.3.1 Concept of

Adaptive

Technology

The term adaptive technology is often used as the synonym for assistive technology; however, they are different terms.

Assistive technology refers to "

any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities",

while adaptive technology covers items that are specifically designed for persons with disabilities and would seldom be used by

non-disabled persons. In other words, "assistive technology is any object or system that

increases or maintains the capabilities of people with disabilities," while adaptive technology is "any object or system that is specifically designed for the purpose of increasing or maintaining the capabilities of people with disabilities." Consequently, adaptive technology is a subset of assistive technology.

Adaptive technology often refers specifically to electronic and information technology access.

Adaptive

technology is

any item, piece of equipment, software program, or product system

that is used to increase, maintain, or improve

the functional capabilities of

persons with disabilities. ●

It can be low-tech:

communication boards made of cardboard or fuzzy felt. ● It can be high-tech: special-purpose computers. ● It can be hardware: prosthetics, mounting systems, and positioning devices. ● It can be computer hardware: special switches, keyboards, and pointing devices. ● It can be computer software: screen readers and communication programs. ● It can be inclusive or specialized learning materials and curriculum aids. ● It can be specialized curricular software. ● It can be much more-electronic devices, wheelchairs, walkers, braces, educational software, power lifts, pencil holders, eye-gaze and head trackers, and much more. Adaptive technology helps people who have difficulty speaking, typing, writing, remembering, pointing, seeing, hearing, learning, walking, and many other things. Different disabilities require different assistive technologies.

40 2.3.2. Purpose of Adaptive Technology An adaptive system adjusts itself to suit particular learner characteristics and needs of the learner. Adaptive technologies help achieve this goal and are typically controlled by the computational devices, adapting content for different learners' needs and sometimes preferences. Information is usually maintained within a learner model (LM), which is a representation of the learner managed by an adaptive system. LMs provide the basis for deciding how to provide personalized content to a particular individual and may include cognitive as well as noncognitive information. LMs have been used in many areas, such as adaptive educational and training systems (e.g., intelligent tutoring systems), help systems, and recommender systems. Adaptive systems may consist of hard or soft technologies (e.g., devices vs. algorithms). Hard technologies are devices that may be used in adaptive systems to capture learner information (e.g., eye-tracking devices) and thus can be used to detect and classify learners' performance data or affective states such as confusion, frustration, excitement, and boredom. Hard technologies also can be used to present content in different formats (e.g., tactile tablet to accommodate visual disabilities). Soft technologies represent algorithms, programs, or environments that broaden the types of interaction between students and computers. For instance, an adaptive algorithm may be employed in a program that selects an assessment task or learning object most appropriate for a learner at a particular point in time. The effectiveness of adaptive technologies hinges on accurate and informative student or learner models. For the remainder of this paper we use the terms student model (SM) and learner model (LM) interchangeably. Because this focuses on the educational functions of adaptive systems, we limit our modeling discussion to the context of students or learners, rather than more broadly defined users. Four-Process Adaptive Cycle is the success of any adaptive technology to promote learning requires accurate diagnosis of learner characteristics (e.g., knowledge, skill, motivation, persistence). The collection of learner information then can be used as the basis for the prescription of optimal content, such as hints, explanations, hypertext links, practice problems, encouragement, metacognitive support, and so forth. Our framework involves a four-process cycle connecting the learner to appropriate educational materials and resources (e.g., other learners, learning objects, applications, and pedagogical agents) through the use of a LM . The components of this four-process cycle are (a) capture, (b) analyze, 41 (c) select, and (d) present. Capture - The capture process entails gathering personal information about the learner as he or she interacts with the environment, depicted by the larger human figure. Relevant information can include cognitive as well as noncognitive aspects of the learner. This information is used to update internal models maintained by the system. Analyze - The analyze process requires the creation and maintenance of a model of the learner in relation to the domain, typically representing information in terms of inferences on current states. This is depicted as the smaller human figure (i.e., the SM). Select - Information (i.e., content in the broadest sense) is selected according to the model of the learner maintained by the system and the goals of the system (e.g., next learning object or test item). This process is often required to determine how and when to intervene. Four-process adaptive cycle. Present - Based on results from the select process, specific content is presented to the learner. This entails appropriate use of different media, devices, and technologies

42 efficiently to convey information to the learner. This model accommodates alternative scenarios. It describes some of these scenarios that involve different types of adaptation, starting with a completely adaptive cycle and continuing to a nonadaptive presentation. 2.4 Basic Consideration - Access, Affordability and Availability Before we begin our discussion on adaptive technologies that support learners in educational settings, we briefly define relevant terms. Most generally, to adapt means an adjustment from one situation or condition to another (e.g., software programs and persons are capable of adaptation). Technology refers to the application of science (methods or materials, such as electronic or digital products or systems) to achieve a particular objective, like the enhancement of learning. A system in this context refers to a network of related computer software, hardware, and data transmission devices. 2.4.1 Access as the Basic

Consideration of Adaptive Technologies Accessibility and usability of adaptive technology are closely related. Their goals, approaches, and guidelines overlap significantly. In most situations, such as when designing and developing websites and applications or other uses of technologies, it is most effective to address them together. There are a few situations when it is important to focus specifically on one aspect, such as when addressing discrimination against people with disabilities and when defining specific accessibility standards. Accessibility Accessibility addresses discriminatory aspects related to equivalent user experience for people with disabilities, including people with age-related impairments. Accessibility means that

people with disabilities can perceive, understand, navigate, and interact with technologies, and that they can contribute equally without barriers. Usability Usability and user experience design is about designing products to be effective, efficient, and satisfying. Specifically,

ISO defines usability as

the "extent to which a product can be used by specified users to achieve specified goals effectively, efficiently and with satisfaction in a specified context of use" (in ISO 9241-11). Inclusion Inclusive design, universal design, and design for all involves designing products, such as websites,

to be usable by everyone to the greatest extent possible, without the need for adaptation.

Inclusion addresses a broad range of issues including access to and quality of hardware, software, and Internet connectivity; computer literacy and skills; economic situation; education; geographic location; and language - as well as age and disability. Accessibility and Usability While accessibility focuses on people with disabilities, many accessibility requirements also improve usability for everyone. Accessibility especially benefits people without disabilities who are in limiting situations, such as using the web on a mobile phone when visual attention is elsewhere, in bright sunlight, in a dark room, in a quiet environment, in a noisy environment, and in an emergency. Accessibility includes both:

- Requirements that are more specific to people with disabilities - for example, they ensure that websites work well with assistive technologies such as screen readers that read aloud web pages, screen magnifiers that enlarge web pages, and voice recognition software that is used to input text. Most of these requirements are technical and relate to the underlying code rather than to the visual appearance.
- Requirements that are also general usability principles - which are included in accessibility requirements because they can be significant barriers to people with disabilities. For example, a website that is developed so that it can be used without a mouse is good usability; and use without a mouse is an accessibility requirement because people with some physical and visual disabilities cannot use a mouse at all. In defining accessibility requirements, care is usually taken to not include aspects that impact all people similarly, and only include aspects that put person with a disability is at a disadvantage relative to a person without a disability. Usability and user experience design significantly overlap with accessibility when "specified users" includes people with a range of disabilities and "specified context of use" includes accessibility considerations such as assistive technologies. However, the needs of people with disabilities are often not sufficiently addressed in usability practice and research. Additionally, accessibility includes a technical aspect that is usually not a focus of usability. In practice, basic accessibility is a prerequisite for usability. Accessibility and Inclusive Design Several accessibility requirements also benefit people and situations that are a focus of inclusive design. For example, Web Accessibility Benefits People With and Without Disabilities describes accessibility benefits to:

- people with low literacy or not fluent in the language
- people with low bandwidth connections or using older technologies
- new and infrequent users

However, accessibility focuses on disability and does not try to address broader issues. Other efforts, such as internationalization, address other inclusion issues. While people with disabilities are generally included in the scope of inclusive design, it is important to also maintain a specific focus on people with disabilities through accessibility so that the needs of people with disabilities are not diluted or overshadowed in the broader scope of inclusion. Keeping accessibility focused on disabilities encourages research and development on the specific needs of people with disabilities, and solutions that are optimized for these specific needs. Accessible

Design The goal of web accessibility is to make the web work well for people with disabilities. Accessible design has both a technical component and a user interface component. There are guidelines, standards, and techniques, such as the Web Content Accessibility Guidelines (WCAG), which is the international standard ISO/IEC 40500. If designers, developers, and project managers approach accessibility as a checklist of meeting accessibility standards, the focus is only on the technical aspects of accessibility, and the human interaction aspect is often lost. Combining accessibility standards and usability processes with real people ensures that web design is technically and functionally usable by people with disabilities. This is referred to as usable accessibility or accessible user experience. Usable Accessibility Web designers and developers can use usability processes, methods, and techniques, such as user-centered design (UCD) process and user experience design, to address the user interface component of accessibility. While the considerations of people with disabilities are not always included in common practices, they can be easily integrated into existing usability processes, methods, and techniques. Key aspects incorporating real people in design, including:

45 • Ensuring that everyone involved in web projects understands the basics of how people with disabilities use the Web, • Involving users with disabilities early and throughout the design process, and • Involving users in evaluating web accessibility. Accessibility standards also have an important role in accessible design. For example, understanding the basic Accessibility Principles and using the guidelines for developing early prototypes helps the development team provide basic accessibility so that when users do evaluations, they are able to use the prototype enough to provide useful feedback. Usability processes and user involvement alone cannot address all accessibility issues. Even large projects cannot cover the diversity of disabilities, adaptive strategies, and assistive technologies. Accessibility guidelines, standards, and techniques ensure that the wide range of issues are adequately covered. Accessibility practitioners and researchers can incorporate usability techniques to improve 'usable accessibility'. User experience designers and researchers can incorporate accessibility to make their designs work better for more people in more situations. Addressing accessibility, usability, and inclusion together can more effectively lead to a more accessible, usable, and inclusive web for everyone. Resources to help are linked throughout this page. The role of accessibility in a universal web is a related resource that: • provides a more in-depth exploration of the importance and benefits of accessibility as a distinct discipline continuing to focus on people with disabilities, • encourages increased communication and coordination between accessibility, usability, and inclusion research and practice in the design and development of guidelines, websites, browsers, assistive technologies, and other web tools. One of the largest problems that affect people with disabilities is discomfort with prostheses. An experiment performed in Massachusetts utilized 20 people with various sensors attached to their arms. The subjects tried different arm exercises, and the sensors recorded their movements. All of the data helped engineers develop new engineering concepts for prosthetics. Assistive and adaptive technology may attempt to improve the ergonomics of the devices themselves such as Dvorak and other alternative keyboard layouts, which offer

46 more ergonomic layouts of the keys. Assistive technology devices have been created to enable people with disabilities to use modern touch screen mobile computers such as the iPad, iPhone and iPod touch. The Pererro is a plug and play adapter for iOS devices which uses the built in Apple VoiceOver feature in combination with a basic switch. This brings touch screen technology to those who were previously unable to use it. Apple, with the release of iOS 7 had introduced the ability to navigate apps using switch control. Switch access could be activated either through an external bluetooth connected switch, single touch of the screen, or use of right and left head turns using the device's camera. Additional accessibility features include the use of Assistive Touch which allows a user to access multi-touch gestures through pre-programmed onscreen buttons. For users with physical disabilities a large variety of switches are available and customizable to the user's needs varying in size, shape, or amount of pressure required for activation. Switch access may be placed near any area of the body which has consistent and reliable mobility and less subject to fatigue. Common sites include the hands, head, and feet. Eye gaze and head mouse systems can also be used as an alternative mouse navigation. A user may utilize single or multiple switch sites and the process often involves a scanning through items on a screen and activating the switch once the desired object is highlighted. 2.4.2 Affordability as the Basic Consideration of Adaptive Technologies

Students with visual impairment face unique challenges in the educational environment. Not only must they be able to access text information across all curricular areas, but they also need to be able to participate fully in instruction that is often rich with visual content. Adaptive technology is one way of supporting them in that process. "

Adaptive

technology" refers to a range of tools, devices, and strategies that allow a student to accomplish a task that they would otherwise be unable to do, or would have difficulty accomplishing effectively. Adaptive technology can be simple or complex. Examples of low tech tools for students with visual impairment might include enlarged text or raised line paper, while high tech tools may encompass digital tools that "read" to the student, connect to a braille display, or even incorporate GPS. The term "visual impairment" describes a broad range of visual abilities and needs. Because each child is unique, what works well for one student may not work well for another. Selection of adaptive technology should be the result of a team process that takes into consideration feedback from family, educators, paraprofessionals, and the 47 student. It is important to remember that "high-tech" is not always the best solution for a student. Selected tools should reflect the student's unique strengths and needs, the activities he needs to be able to accomplish, and the environment in which he will be working. A student's need for assistive technology will likely change and evolve throughout his or her education, and in most cases, no single tool will meet all of a student's needs.

The purpose of this resource guide is to provide an introduction to the types of adaptive technology that may benefit students with visual impairment. Specific products and their features are not described here. Instead, a general overview of tools will help raise your awareness so that you are able to determine what tools to investigate further. A list of additional resources and vendors is provided at the end of this guide if you'd like to learn more. There is also a glossary of terms if you are unfamiliar with some of the terminology related to adaptive technology and visual impairment.

2.4.3 Availability as the Basic Consideration of Adaptive Technologies
Technology for Reading Reading is not only an essential part of the English Language Arts curriculum, but is also a key component of all other subject areas. Students rely on textbooks in science and social studies, complete word problems in math, and complete assessments that are often text-based.

Assistive technology tools

to support reading should reflect the student's level of visual functioning, their literacy development, as well as the environmental and task demands.

Environmental Considerations consider lighting and positioning of materials

for optimal visual function. For students with some existing visual function, providing text information in enlarged format may be the simplest strategy. As a general rule

of thumb, 18

point or 24 point font size is good, but enlarging beyond that may not be efficient. Enlarged text can be acquired through a variety of sources, including publishers and vendors, or materials modified through the magnification feature of copy machines, while text size of most digital materials can be easily adjusted to a user's preference. Handheld Magnifiers :

These

handheld magnifiers low-tech, portable tools allow students with some vision to access not only text, but other objects in their environment as well. They are available in a range of magnification power, are relatively inexpensive, and eliminate some material modification. However,

selection of

magnification power

48 should be based on the recommendations of a low vision specialist. A video magnifier can be used

for other objects as well. It may be in the form of

handheld device, a stand- alone device, or work with a computer, TV or projection system. Braille

for students who requires so : Braille is an essential tool for teaching literacy skills

and will serve as a lifelong skill. Learning Braille allows students to

experience

aspects of written language such as spelling, grammar and sentence structure, and will provide a valuable foundation for written language. Braille products can be obtained commercially or

can be created using

specialized software and a braille embosser. Braille Labelling items throughout the student's environment will not only reinforce vocabulary, spelling and reading but will also promote independence and assist with orientation. Audio books are generally recorded using human voice, and can be accessed

through the use of specialized computer software, devices, or mainstream tools like MP3 players. The various devices allow options in

features such as searching and navigating an audio file. While many students will find

the use of

audio books useful, educators warn not to rely solely on audio books for access

to

text. Students who are still developing literacy skills need continued access to print or braille,

while preferences of

older students vary. The use of digital text provides one of the widest ranges of options

to students with varying needs. Visual aspects of documents

and text can be customized, a variety of supports can be easily integrated, and digital text can be obtained through numerous resources. Digital text materials can be obtained commercially, through

providers of

accessible instructional materials, or created by instructors and students themselves, and can be accessed through a variety of tools including computers, mobile devices, or specialized devices such as braille notetakers. 1. Digital text generally allows user to adjust the visual display including font size, color, and contrast. 2. Digital text can be viewed on an enlarged monitor. 3. Computer magnification software can be used to view digital text, and can be customized by magnification level, area

of the display being magnified, and visual qualities of display. 4.

Text-to-speech software allows the computer to "read" digital text to the student in a digitized voice. Some programs will

highlight words as they are read, allowing students to follow along.

49 5. Refreshable braille displays can be connected to the digital text source, providing students

with the option to read the text tactually. 6. Scanners with optical character recognition (OCR) can be used to create digital text that

can then be used with any of the above tools. OCR scanners can be handheld or freestanding.

Technology for

Writing Writing Tools: Using bold felt-tip markers or soft lead pencils can provide greater contrast

on paper, allowing students with low vision to read with greater ease. Adaptive Paper: Specialized paper with darkened lines, raised lines, or using colour can significantly improve the writing of students with low vision. A slate and stylus can be equated to paper and pencil for individuals who are blind. This simple low tech tool allows students to quickly and efficiently complete simple tasks like creating labels or writing notes to themselves. The slate and stylus is not practical for longer writing tasks. A handheld digital recorder allows the student to record lectures, dictate assignments, or make notes to self.

Writing with traditional paper and pencil under a video magnification camera allows the student to view their work in real time

through the use of

a large monitor. Word processors are readily available and are highly adaptable. Text size and font can be customized or built-in operating system accessibility features can be used

to enhance the visual display. The use of adaptive keyboards with high contrast or enlarged keys can also be utilized.

Text-to-speech software can create a "talking word processor"

which provides feedback to

the student about what they have typed, while speech recognition software allows the student to dictate into a microphone, which the computer translates into text. Screen magnification software can enlarge the entire display or only selected portions and may or may not provide audio feedback. For students with no vision, a refreshable braille display can be used in conjunction with

the word processor, which will

display the text tactually allowing the student to reread and edit their own work. This strategy can be used with or without audio feedback,

which supports multisensory learners and allows the student to choose the

access method. The incorporation of braille has the potential to significantly improve the editing process.

50 A manual braillewriter is similar to a typewriter and is a simple, yet rugged device that is often introduced to students who are emergent readers and writers. As students progress, they may transition to an electronic braillewriter before beginning to use a

braille notetaker. A braille notetaker is a portable word processing device that utilizes the eight key braille input system and has

an integrated refreshable braille display. This tool encompasses many functional areas in addition to writing. Students can use a braille notetaker to complete assignments, read textbooks, and navigate the Internet. Although products and their features vary, many are available with speech output, Wi-Fi connectivity, access to e-mail, calculators, calendars and other personal organizational tools, or GPS navigation systems. The braille notetaker is a lifelong tool

and

should be introduced as soon as the student demonstrates readiness. A braille embosser

allows the student to print out their completed work in braille format.

Technology for Computer Access Skills and competence in computer use are essential to every student in the 21st century, and will significantly increase a student's success in their pursuit of higher education, vocation and independent living after graduating from high school. Instruction in basic keyboarding and word processing skills should begin early. As students grow older, use of social media tools should also be explicitly taught as key to participation and inclusion in higher education, many vocational settings, and society in general.

Adaptive Hardware - Hardware such as enlarged, large print or high contrast keyboards, as well as enlarged monitors may provide adequate supports to students with low vision, allowing them to use the computer independently.

Operating System - Accessibility Whether using a Mac, PC, desktop or mobile device, all operating systems have built-in accessibility features that may make the device easier to use. These include changes to visual display (i.e. high contrast, colour scheme, font size), enlarged icons, screen magnification, enlarging the cursor or pointer, or a built-in screen reader.

Specialized Accessibility Software - When built-in accessibility features do not provide adequate support, specialized software can be used to create a highly customized computer environment. This may include features such as text-to-speech feedback with and without text highlighting, the ability to customize what is magnified on the screen, greater customization of visual displays, voice navigation, and advanced screen reading features.

Refreshable Braille Display - A refreshable braille display can be used as a peripheral device with a desktop, laptop or mobile computing device, providing braille translation of documents, websites, and other text information.

In conclusion, we can say that to ensure that adaptive technologies enhance users' quality of life, future emphases should focus on consumer involvement in the selection and evaluation of appropriate assistive technology, and ways to make technologies more widely available and affordable.

2.5 Addressing User's Perspective in Developing Adaptive Technologies

Technology-particularly multimedia and ubiquitous computing-can help to enrich life, enhance productivity and promote independent living for people across the entire spectrum of abilities. People with visual impairment rely heavily on their sense of hearing. If an adaptive device provides auditory feedback, it could drown out important situational information. In the case of missed conversation, this would be inconvenient. In a situation like a traffic crossing, it would be hazardous. As a result, developing a wearable device that uses tactile cues such as pattern of vibrations to convey information. Truly revolutionary technologies require engagement with users throughout the design and development process. While it's helpful to get feedback and ideas from focus groups on users' needs, short sessions don't give a full understanding of the challenges and opportunities in developing adaptive technology solutions. It is imperative that people with disabilities play a leading role in envisioning, conceptualizing, developing, implementing, deploying, testing, and validating potential solutions, tools, and technologies.

David Hayden was a freshman double-majoring in math and computer science, and he also was visually impaired. Even sitting at the front of the class couldn't get him the access to the board to understand the process being enumerated in solving math problems or designing an algorithm by his professors. In his sophomore year, he began working at the CUbiC lab, developing an application on a tablet connected to a camera with a pan-tilt-zoom feature. He could take the device to his classes and have the video of the blackboard piped into his laptop. Then he did something even more clever-he split the screen into two halves. One side of the screen

52 showed the video of the blackboard while the other was used to design a "notes" interface. He linked sections of the class notes to individual frames from the video. David took the prototype to the classroom and shared it with other visually impaired students for obtaining their feedback, which he then used to further improve the device. At the end of his junior year, he submitted his invention to the worldwide Microsoft Imagine Cup competition in the "touch and tablet" category. He won both the national and world competitions in that category. After graduation, David received an internship opportunity at NASA and is now pursuing a Ph.D. at MIT. He's also manufacturing his Note-Taker prototype for use by others. Once visually impaired students started using Note-Taker in classrooms, something truly remarkable happened. Sighted students began asking for the technology for their own use. This is not actually uncommon among well-designed adaptive devices. For example, the first commercially successful typewriter, the Hansen Writing Ball, was designed to help blind people write through touch-typing. The QWERTY keyboards we use with our computers today are descendants of this accessibility tool. In reality, we are all looking for ways to enhance our abilities. For instance, a soldier on the battlefield needs better access to information at night or in stressful environments. One could argue that blindness is not only a disability but a concept. We are all blind from a touch perspective to distant environments like exploring the surface of Mars. Assistive technologies have the power to transcend our limitations and enrich our lives. There are the components of user's perspective: PURPOSE: The purpose of this work was to contribute to a better understanding of challenges and solutions to equitable provision of assistive technologies in resource limited environments by (i) describing sources of awareness, types of providers and costs of adaptive technologies; (ii) describing common reasons for not possessing adaptive technologies; and (iii) comparing these sources, providers, costs and reasons among younger and older men and women living in urban and rural settings. RESULTS:

Major sources of awareness, types of providers and costs paid varied between users of different types of adaptive technology. Lack of affordability was the main reason for not possessing adaptive technology. Outcome differences were found between younger and older groups, men and women, and literate and illiterate respondents, while no differences related to place of living were identified. Age, gender, type of impairment and socioeconomic status need to be considered when planning and implementing equitable provision of assistive technologies. Implications for Rehabilitation Provision of assistive technologies needs to be made affordable as lack of affordability was the major reason for not possessing such technologies. To ensure equitable provision of assistive technology, services ought to consider age, gender, impairment and socioeconomic status of their target groups. This includes offering a range of products of different sizes provided by culturally appropriate personnel at affordable cost, which to many may be at no or reduced cost. To cater to the assistive technology needs among the most vulnerable groups, assistive technology providers may learn from CBR strategies, such as, awareness raising and service delivery at community level, the use of local resources, collaboration and coordination, and the consideration of cultural factors. 2.6 Role of IIT's and the Scientific Community 2.6.1 Role of IIT's in Developing Adaptive Technologies The Indian Institutes of Technology play a vital role in India's social and economic development. IITs are apex institutions for engineering education and research. At present, there are twenty three Indian Institutes of Technology (IITs) viz. at Bombay, Delhi, Kanpur, Kharagpur, Madras, Guwahati, Roorkee, Hyderabad, Patna, Bhubaneswar, Ropar, Jodhpur, Gandhinagar, Indore, Mandi, Varanasi, Tiruppati, Palakkad, Goa, Jammu, Dharwad, and Bhilai. All are governed by The Institutes of Technology Act, 1961 which has declared them as "Institutions of national importance", and lays down their powers, duties, framework for governance etc. The main objective of IITs is to impart world class education in engineering and technology; to conduct research in the relevant fields, and to further advancement of learning and dissemination of knowledge, to develop, apply and transfer the required concepts and skills to solve problems and to design and develop technology-enhanced learning systems to promote students' pan-domain thinking skills. It deals with engineering and science domains, using disciplinary content as a vehicle to develop the relevant thinking skills. These Institutes are also contributing significantly to education and research in basic sciences and humanities.

54 The Goals and Objectives were derived from the Sarkar Committee Report and embodied in the IIT Act. In addition to the Sarkar Committee report, the IIT act and the Statutes of the IITs indicate the lines along which IITs should develop. According to these documents IITs are expected: • to be higher technical institutions and research in some branches of Engineering; • to provide for instruction and research in some branches of Engineering and Technology, Science and Arts for the advancement of learning and dissemination of knowledge in specific branches. • to ensure the advancement of knowledge through education and research, in both Pure and Applied Science, in engineering, Social science and Humanities; • to serve the community and nation (which are referred to as Extension activity) through the use of their resources both intellectual and material, particularly through Continuing Education for professionals working in Industry. The Science Policy Resolution (SPR) of the Government of India (1958) is a basic document of relevance to the IITs. The SPR resolves: • to foster, promote and sustain scientific research in all aspects - pure, applied and educational; • to ensure adequate supply of research scientists of higher quality; • to recognize the work of research scientists as an important component of the strength of the nation; • to encourage programmes for the training of scientific and technical personnel to fulfill the country's needs in science and education, agriculture and industry, and defense; • to encourage dissemination and discovery of knowledge in an atmosphere of scientific freedom. IITs also constitute a major source for research scientists of high caliber; they also are expected to serve the people of India and provide the country with benefits of application of their discovery and knowledge and as such are entitled to academic freedom and research support as implied in the SPR. Much in the same manner as IITs are part of the successful implementation of the SPR, they now have a greater responsibility for fulfilling the relevant goals of the Technology Policy Statement as well. As Institutes of Technology, their charter, is to resonate the expectations spelt out in the Technology Policy Statement.

55 The Technology Policy Statement (1983) affirms that, technology must relate to our people's aspirations and to our local needs to cover both manufacturing and servicing sectors. The Statement affirms that the base for this consists of trained manpower, which IITs are charged to develop. It envisages special attention to the promotion of newly emerging and frontier areas and encouraging research in these areas. IITs have a specific role to implement these avowed objectives of the Technology Policy Statement within their general charter of education, research and extension. Such goals require that IITs must • excel in all aspects of academic activity and produce a high quality science based engineering students; • survive on specialization, work increasingly in front-line areas that transcend disciplines; • have a perception and a value system appropriate to the pursuit of high science and high engineering science to meet the critically evaluated needs of the society in terms of products and processes using indigenous resources in close collaboration with manufacturing service sectors; • programme into their activities the emerging technological needs with a futuristic outlook; • accept extension and public services as a third dimension to their role in addition to education and research; • attain a stature that enables them to provide leadership with credibility. They should be the "think tanks" for higher education and research; • aim at preparing more of "creative engineers", "innovative thinkers" and "engineer entrepreneurs"; • develop a special nexus with rural development mainly by way of involvement in technology based solutions for problems in rural areas; • maintain and foster interactive linkages with leading technological institutions and centers of research in India and abroad • to develop in each student mastery of fundamentals, versatility of mind, motivation for learning, intellectual discipline and self-reliance which provide the best foundation for continuing professional achievement;

56 • to provide a liberal; as well as a professional education so that each student acquires a respect for moral values, a sense of their duties as a citizen, a feeling for taste and style, and a better human understanding. All these are required for leadership; • to send forth men and women of the highest professional competence with a breath of learning and a character to deal constructively with issues, and problems anticipated in the next decade relevant to the programmes of development of our country. IITs must seek through their research activities to create an atmosphere of intellectual excitement, a climate of inquiry and innovation in which a student develops a consuming interest for understanding issues of his own volition. • should not the IITs mainly concentrate on forging links with organized industrial sector for import and diversification of its technology? • should IITs commit their resources for developing appropriate rural technology for mass impact? • should not the Institutes strive for an optimal blend of a limited number of objectives in order that they do not spread their resources thinly? As Indian Institutes of Technology, they must recognize their inherent obligation to serve students and alumni, the profession of engineering, the world of scholarship, the nation and the society at large. IITs should seek to serve the community directly through the use of their facilities, wherever there is a need, to which they can respond easily. These objectives are derived from the original goals and not construed de-novo. The Report of the Committee on Post Graduation Engineering Education lays stress on the thrust areas such as Fibre Optics, Micro-electronics, Materials Science, Reliability Engineering, Robotics, Ocean Engineering, Computer Science etc. IITs have a significant role to build a superstructure in the form of Postgraduate Programmes in such thrust areas that go to influence the quality of Undergraduate Curriculum. In order to develop a curriculum they need to interact and develop linkages with their surroundings specially within the manufacture and service sectors. We are clear in our minds that the Technology Policy Statement and the Science Policy Resolution demand a conscious integrated approach covering technology assessment, technology acquisition, absorption, utilization and diffusion. This responsibility cannot be solely placed on the IITs. But IITs cannot escape participation in one or more aspects

57 of Technology development along with others. Technology policy studies may be initiated in or more IITs to enable them to to have a proper appraisal of modern technologies, and arrive at an assessment of their relevance to the needs of our society. Such studies will help orient research and curriculum to produce engineers alive to the needs of the nation. IITs would no longer be accused of training to the needs of the developed.

2.6.2 Role of Scientific Communities in Developing Adaptive Technologies

Rehabilitative and adaptive technology refers to tools, equipment, or products that can help a person with a disability to function successfully at school, home, work, and in the community. Disabilities are disorders, diseases, health conditions, or injuries that affect an individual's physical, intellectual, or mental well-being. Rehabilitative and adaptive technologies can help people with disabilities to function more easily in their everyday lives and can also make it easier for a caregiver to care for a disabled person. The term "rehabilitative technology" is sometimes used to refer to aids used to help people recover their functioning after injury or illness. "Adaptive technologies" may be as simple as a magnifying glass to improve visual perception or as complex as a computerized communication system. Some of these technologies are made possible through rehabilitative engineering research, which is the application of engineering and scientific principles to study how people with disabilities function in society. It includes studying barriers to optimal function and designing solutions so that people with disabilities can interact successfully in their environments. The NICHD houses the National Center for Medical Rehabilitation Research (NCMRR): The NCMRR has helped to advance scientific knowledge about disabilities and rehabilitation, while also providing vital support and focus for the field of medical rehabilitation to help ensure the health, independence, productivity, and quality of life of all people. Within the overall goals outlined some specific goals should be spelled out. It is that the scientific communities must continue to engage in manpower development. The students must be an agent of change of Technology practice in the country, and initiate a new working culture in our industry, with a view to increasing productivity and bringing to industry the capacity to innovate. Some technical graduates should, therefore, become entrepreneurs themselves for starting new science based, technology

58 oriented industries. They are thus to be so trained to build into their value system, a sense of responsibility to their country and a desire to serve for the society. Their perception should preclude Hi-Tech. as an important tool to solve ground level problems especially for the child with different needs. Some of the institutes, who have locational advantages, can involve themselves in the tasks related to the development of CWSN by means of supplying competent technical manpower and by offering laboratory solutions to the problems faced by them. Their method of instruction should be innovative and qualitatively different. For instance, Micro-electronics may be taught in other colleges as an educational programme, but who have research excellence in their proximity, on the other hand, would bring in a practical bias and illustrate a number of case studies relevant to their curricula. Their functions of teaching, research and extension would be perceived as an integrated block and not as separate identities. Without such an integration, a teacher cannot develop the personality of the taught in a wholesome fashion, relating what is taught to actual experience. The teacher's activity in extension activity will improve the quality of his research, in turn improving his teaching content. The students will then see him as the leader in research whose work is relevant. Some of the alumni settled abroad while responding to our questionnaire mentioned that a major cause of their migration abroad is the baseness of academic and research leaders. As the information Age is ushering in, thanks to the technological advancements in the area of Microelectronics, Materials Engineering and Bio-technology etc., the country will look towards to be lead-agents for promoting training, research support and technology development in many such thrust areas. The goals of these institute, therefore, must specifically include helping such changes happen in this country in a programmed manner and faster. It is for each institute to decide on what priority areas they need to emphasize, from time to time to plan for them.

2.7 Universal/ Inclusive Design - Concept, Advantages and Limitations

2.7.1 Concept of Universal/ Inclusive Design

Universal Design (close relation to inclusive design) refers to broad-spectrum ideas

59 meant to produce buildings, products and environments that are inherently accessible to older people, and people with disabilities. The term "universal design" was coined by the architect Ronald L. Mace to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life. However, it was the work of Selwyn Goldsmith, author of "Designing for the Disabled" (1963), who really pioneered the concept of free access for people with disabilities. Universal design emerged from slightly earlier barrier-free concepts, the broader accessibility movement, and adaptive and assistive technology and also seeks to blend aesthetics into these core considerations. As life expectancy rises and modern medicine increases the survival rate of those with significant injuries, illnesses, and birth defects, there is a growing interest in universal design. There are many industries in which universal design is having strong market penetration but there are many others in which it has not yet been adopted to any great extent. Universal design is also being applied to the design of technology, instruction, services, and other products and environments. Curb cuts or sidewalk ramps, essential for people in wheelchairs but also used by all, are a common example. Color-contrast dishware with steep sides that assists those with visual or dexterity problems are another. There are also cabinets with pull-out shelves, kitchen counters at several heights to accommodate different tasks and postures, and, amidst many of the world's public transit systems, low-floor buses that "kneel" (bring their front end to ground level to eliminate gap) and/or are equipped with ramps rather than on-board lifts. The Center for Universal Design at North Carolina State University expounds the following principles: 1) Equitable use 2) Flexibility in use 3) Simple and intuitive 4) Perceptible information 5) Tolerance for error 6) Low physical effort 7) Size and space for approach and use Each principle above is succinctly defined and contains a few brief guidelines that can

60 be applied to design processes in any realm: physical or digital. These principles are broader than those of accessible design and barrier-free design. Inclusive Design The British Standards Institute (2005) defines inclusive design as "The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible ... without the need for

special adaptation or specialised design." The UK government has defined inclusive design as '...a process that ensures that all buildings, places and spaces can be easily and comfortably accessed and used by everyone. Every design decision has the potential to include or exclude customers. Inclusive design emphasizes the contribution that understanding user diversity makes to informing these decisions, and thus to including as many people as possible. User diversity covers variation in capabilities, needs and aspirations. Inclusive design focuses on the diversity of people and the impact of this on design decisions. However, the complete set of performance indicators should consider a wider set of aspects concerned with People, Profit and Planet. The performance indicators should examine how the different aspects have an impact across the whole life-cycle of the product. This life-cycle typically involves the stages: 1. Develop it 2. Make it 3. Distribute & sell it 4. Use it 5. Pass it on 6. Reprocess it. For most current products, the user 'Passes it on' by throwing it in the bin, and 'Reprocess it' involves storage in landfill. However, recycling and refurbishment represent other alternatives for these stages.

Definition of inclusive design The British Standards Institute (2005) defines inclusive design as:

61 'The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible ... without the need for special adaptation or specialised design.'

Inclusive design does not suggest that it is always possible (or appropriate) to design one product to address the needs of the entire population. Instead, inclusive design guides an appropriate design response to diversity in the population through: Comparison with 'Universal design' 'Design for all' and 'Universal design' philosophies both have the same literal meaning. These philosophies originated from design of the built environment and websites, and were initially applied in the context of government provision (Design for All Foundation; Preiser and Ostroff, 2001). In the context of product design, both 'Design for all' and 'Universal design' approaches pragmatically accept that it is not always possible for one product to meet the needs of the entire population. Nevertheless, these approaches maintain that all mainstream products should be accessible to as many people as technically possible (Preiser and Ostroff, 2001). In contrast, inclusive design originated with product design, and focuses on choosing an appropriate target market for a particular design, and making informed decisions to maximise the 'Product performance indicators' for that target market. While inclusive design intends to extend the reach of mainstream products, it acknowledges the commercial constraints associated with satisfying the needs of the target market.

2.7.2 Advantages of Universal/ Inclusive Design

The case for making our society more universally accessible and usable to all is a compelling one on many fronts. Universal/ Inclusive Design proposes a progressive and evolving approach to the development of inclusive environments that can be accessed, understood and used to the greatest extent possible. Not only does Universal/ Inclusive Design make good business sense, it also has many compelling social and legal drivers. The human-centered approach to design that Universal Design supports is user-friendly and convenient, but is also respectful of user dignity, rights and privacy. The degree of difficulty that people experience when using a product, service or environment can vary, Such as: A person who has no significant problems but who would appreciate a well-designed accessible and usable product, service or environment;

62 1) A person who has little difficulty with all features; 2) A person who has difficulty with some features; 3) A person who has trouble with most features; 4) A person who is unable to use the product at all. The degree of personal benefit will vary accordingly. Therefore, if a product, service or environment is well designed, with accessibility and usability in mind, all of the people in the categories above will benefit. The age-distribution of the world's population is changing dramatically. People are living longer as a result of medical developments in the last century and healthier lifestyle changes. The number of people living with physical, sensory, mental health or intellectual impairments is increasing, as is the life expectancy of people with particularly severe or multiple impairments. Universal design/ Inclusive Design improves access and outcomes for everyone in a variety of situations. The goals of it are: 1. Equal Access - In order for a design to be truly universal, it must be useful to people with all kinds of conditions and abilities. This includes people with disabilities or activity limitations. 2. Flexibility - It's important that the design is flexible enough to apply to all different kinds of people who have a huge variety of different abilities or disability. An example might be providing information in Braille underneath signs so that people who are blind can read them. 3. Simplicity - The design should be easy to understand so that people with varying levels of education and experience can use it. 4. Effective communication - The design must convey the needed information to the user, even if they have limitations in their sensory capabilities or ability to process this information. 5. High tolerance for error - If a user accidentally makes a mistake while using the design, it's important that they are not harmed or their situation is not made more difficult as a result. 6. Minimal effort required - A person should be able to apply the design easily, even if they have limits to their physical or mental capabilities. 7. Suitable space and size for use - No matter what size a person is or how mobile they are, they should have enough space and the ability to effectively use the design. It

63 is by considering each of these seven principles that we help our clients ensure that they attain universal design on all types of projects. Other things that help the person to deal with: Independent Living Universal Design creates inclusive design solutions and promotes accessibility and usability, allowing people with all levels of ability to live independently. The ability of a person to remain as independent as possible can be influenced by how accessible and usable products, services and environments are. Factors that promote independent living, such as universal design, have a key role to play in dealing with this global phenomenon. Ability as a Continuum No two people are the same and no two people have exactly the same ability. The considerable variation that exists between people can be influenced by both external and internal factors. Ability can vary according to the type of activity in which a person is participating or the environment in which that person is carrying out the activity. Every person experiences reduced functioning at some stage during his or her lifetime. For example "noisy environments impair anyone's hearing; A Universal Design approach therefore requires an appreciation of the varied abilities of every person and to design in such a way that the resulting product, service or environment can be used by everyone regardless of age, size, ability or disability. Participation in Society In this technological age, the skills required to participate in society are becoming increasingly complex. As each technological innovation is adopted the risks to people who do not adopt of being excluded from accessing a whole range of financial, state, social or cultural services or amenities increases. Technology is increasingly embedded into the built environment and products so that the lines of what is specifically product, ICT or building design have become blurred. In order to facilitate people with differing abilities, of differing ages and sizes within society, systems and building must be designed with the user at the center of the design process. A universally designed environment promotes equality and makes life easier and safer for everyone. 2.7.3 Limitations of Universal/ Inclusive Design 1)

There is still pressure to prepare students for success on standardized tests.

64 2) Standardized tests are not differentiated. 3) Students and teachers are evaluated based on how well students are able to read random passages, make sense of them, and write their responses all within a given time limit. The content itself is often not engaging, the format is even less engaging, and the stakes are high, which create stress for all. States and districts are having trouble in attempting to retrofit existing tests to be more inclusive. However, this difficulty will be eliminated or reduced if tests are developed from the beginning to be inclusive of all students.

Inclusive design is nothing new but designing to accommodate the widest possible range of users in using fundamental principle of ergonomics and has been an integral part of our user-centered philosophy from the start. It is also not just aimed at older or disabled users. People of all ages and abilities can benefit from a more inclusive approach to design, for example those at a temporary disadvantage, such as mothers with prams, people travelling with luggage, tourists and non-English speakers. However, the two main drivers in universal/ inclusive design are undoubtedly the ageing population and the desire to better integrate into society those with disability. Inclusive/ universal design addresses accessibility to products, services and the built environment and the need to do this is enshrined in legislation. The term Universal/ Inclusive Design emphasizes the special purpose of learning environments-they are not created to provide information or shelter but to support and foster the changes in knowledge and skills that we call learning. While providing accessible spaces and materials is often essential to learning, it is not sufficient. Success requires that the components of pedagogy- the techniques, methods, scaffolds, and processes that are embedded in classrooms and curricula-are also accessible, and that the measure of their success is learning. Its framework is based in the neuroscience of learning, and its principles emphasize three key aspects of pedagogy: the means of representing information, the means for the expression of knowledge, and the means of engagement in learning (Rose & Meyer, 2002).

2.8 Let Us Sum Up Overall, adaptive technology aims to allow people with disabilities

to "participate more fully in all aspects of life (home, school, and community)" and

increases their opportunities for education, social interactions, and potential for meaningful employment. It creates greater independence and control for disabled individuals. For example, in one study of 1,342 infants, toddlers and preschoolers, all with some kind

65 of developmental, physical, sensory, or cognitive disability, the use of adaptive technology created improvements in child development. These included improvements in cognitive, social, communication, literacy, motor, adaptive, and increases in engagement in learning activities.

It has been found to lighten caregiver load. Both family and professional caregivers benefit from adaptive technology.

The time needed caring for a patient significantly decreases for a family member or friend with the use of adaptive technology. Studies show that care time for a professional caregiver's increases when adaptive technology is used, however their work load is significantly easier with adaptive technology taking over some of the jobs that a care giver would have to provide.

2.9 Check Your Progress

1. What do you mean by adaptive technology?
2. State the basic natures of adaptive technology.
3. Discuss the purpose of adaptive technology.
4. What are the basic consideration of Adaption Technologies?
5. Name some adaption technologies for Complete Access?
6. What do you mean by adaptive technology in the view point of users?
7. What are the components of user's perspective in developing adaptive technologies?
8. Point out the major notes on of IITs in the development of adaptive technologies?
9. What are the Primary notes of scientific communities for teaching learning of visually impaired students?
10. What do you mean by Universal Design?
11. What am the advantages of Inclusive design?
12. What are the significance of Universal/ Inclusive Design for visually impaired students?

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96 Unit 4 q

Assistive Technologies for the Visually Impaired with reference to School- Subjects and Low Vision Structure 4.1

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Technologies for Science 4.4.1 Tactile Thermometers 4.4.2 Colour Probes 4.4.3 Scientific and Mathematics Talking
Calculators 4.4.4 Light Probes 4.4.5 Weighing scales 4.4.6 Software and web resources for teaching Science 4.4.7 Models
4.5 Assistive Technologies for Social Science 4.5.1 Tactile/Embossed Maps 4.5.2 Charts & Diagrams 4.5.3 Models of
Different Types 4.5.4 Auditory Maps 4.5.5 Talking compass 4.5.6 GPS system 4.6. Low vision Devices:

97 4.6.1 Optical Devices 4.6.2 Non-Optical Devices 4.6.3 Projection Devices 4.7. Technology for developing Tactile
Diagrams 4.7.1 Thermoform and

Swell Paper technology 4.7.2 Software for developing tactile diagrams 4.8 Let us sum up 4.9 Check your progress 4.10

References & Suggested Readings 4.1 Introduction

Assistive technology

refers to a range of tools, devices, and strategies that allow a student to accomplish a task that they would otherwise be
unable to do, or would have difficulty accomplishing effectively. Assistive technology can be simple or complex.

Examples of low tech tools for students with visual impairments might include enlarged text or raised line paper, while
high tech tools may encompass digital tools that "speak" to the student, connect to a Braille display, or even incorporate
GPS.

As we are aware that

students with visual impairments face unique challenges in the educational environment. Not only must they be able to
access text information across all curricular areas, but they also need to be able to participate fully in instruction that is
often rich with visual content. Assistive technology is one way of supporting them in that process.

This is to ensure that students with visual

disabilities have the tools necessary to fully access and participate in the curriculum, with the greatest possible level of
independence. Even more important, use of assistive technology helps prepare students for independent living,
vocational pursuits, or higher education.

A student's need for assistive technology will likely change and evolve throughout his or her education, and in most
cases, no single tool will meet all of a student's needs

for any learning concepts of a particular subject. This unit

is to provide an introduction to the types of assistive technology that may benefit students with visual impairments.

Subject specific

assistive technologies are also being discussed in this unit. Some low vision aids are more specific to the job or task at hand, including the features and equipment options provided by the devices to perform visual tasks. Individuals with specific low vision needs might prefer certain visually supportive features such as

98 stronger magnification, additional lighting options, and portability of device. Therefore, this unit also explores the assistive technologies for students with low vision. 4.2 Objectives: When you will complete this unit, you will be able to: | Sensitize about need of assistive technologies for children with visual impairment to complete various academic activities. | Demonstrate general techniques of using assistive technologies designed for children with visual impairment. | Explain importance and significance of various assistive technologies for children with visual impairment. | Illustrate how assistive technologies could compensate the limitations imposed by the visual impairment to complete various subject specific tasks at school as well as at home. | Understand different optical, non-optical and other electronic aids and appliances meant for students with low vision. 4.3. Assistive Technologies for Mathematics Learning mathematics has

been always being found crucial for learners with visual impairment. There are two essential concerns related with learning mathematics. The first is a comprehensive system of notation, capable of expressing all mathematical relationships neatly and concisely. The second is apparatus (also including paper pencils), which enables the students to draw the picture (mathematical signs and notions) of the problem, and so to have something concrete before him. Students with visual impairment faces challenges in both above said concerns. First problem is being resolved through mathematical sign, symbols and notations in braille etc. Whereas second concern mainly resolved through assistive technologies. Here we are going to discuss various assistive technologies related with learning support to students with visual impairment while learning Mathematics. 4.3.1 Taylor Frame & Algebra and Arithmetic Types The Taylor Frame or, Taylor Mathematical Slate is a device used to teach Mathematics to blind students. Developed by William Taylor in England in the mid 19th century. It

99 was in common use until the early 1970's. The main purpose of this device is to aid in the teaching and working of problems of long division, multiplication of large numbers, subtraction, and addition. The Taylor Frame or Taylor Mathematical Slate consisted of an aluminum frame and a set of metal pegs or type with the patterns. Set of types are used that are moulded from hard yellow vinyl plastic, or are made up with lead. The frame has rows of opening each set out as an eight pointed star. The pegs could therefore be placed in the frame in one of eight orientations which could be used to represent numbers, letters or signs. Math can be composed in linear, vertical or in algebraic notation. At one end of arithmetic type, there are two dots placed along one side, at the other a solid raised bar along one side. By placing the type into the octagonal holes in the frame, the digits 0-9 and the mathematical signs of operation can be represented.

The surface of this aluminum frame is divided into star shaped holes with eight angles, thus allowing the double-ended metal types to be placed in different positions according to a set system.

With the help of these two types of type or, peg, there are total thirty two orientations (each peg has 16 orientation; 8 from each side) are available as follows:

100 Algebra types are symbols made up of metal to represent algebraic variables like x, y, z, a, b, c, d and others like, brackets, square root and index. These are used in Taylor frames. Similarly, arithmetic types are symbols made up of metal to represent numbers like 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 along with comparison signs like =, +, $\frac{\circ}{\circ}$, decimal point etc. 4.3.2

Abacus Abacus is a device used by visually impaired children for doing basic mathematical calculations. Abacus is rectangular in shape. Abacuses with varied columns are used in different countries. This instructional material is written specifically for the abacus

generally

with 13 columns. The common operations for this abacus are same with those of the abacuses with fewer columns, but the number of columns matters especially when fraction problems are solved. A bar is separating the abacus horizontally cutting across

all

the columns, leaving $\frac{2}{3}$ rd of the area below and $\frac{1}{3}$ rd of the area above. The lower portion is known as lower abacus and the upper portion is known as upper abacus. Each column in the lower abacus has four beads, each bead assumes the value

of

one. Each column in the upper

101 abacus has one bead and assumes the value

of five. It is a simple instrument for performing rapid arithmetical calculations. In the early 1960s, T.V. Cranmer, then director of the Division of services for the blind, Kentucky Department of Education, adapted an abacus that blind individuals could use. He added a foam backing to put tension on the beads and keeping them stable. He also increased the length of the rods to give more distance between beads and make them easily read by touch. Abacus generated enthusiasm among blind people and teachers of those with visual impairment. The Hadley School, USA also offers a correspondence course in the use of the abacus for blind people throughout the world. The abacus is an efficient and accurate tool that enables persons with visual impairment to perform mathematical calculations. It affords more speed and ease of manipulation than Braille writers, Taylor slates, pegboards and other cumbersome tools. But, in abacus one cannot retain the intermediate steps of the sum. 4.3.3

Geo Board The geo-board is a multi-purpose board for children with visual impairment.

This can be used for showing geometrical figures and graphs. It is a peg board, square or rectangular in shape with nails at equal distance, both lengthwise and width wise. The distance between the nails can be determined according to the levels of the students. The distance can be brought down

when a child entered to higher classes in the school. It is suggested that it should be at least one inch in the case of primary school children. It is a amazing tool for the teachers of visually impaired children for teaching of mathematical concepts. Rubber bands are used to show various shapes; eg. Triangle, rectangles,

102 square, etc. If

the distance between the nails is smaller, even circles can be shown. 4.3.3

Geometric Kit Geometry kit is available with many sellers which consist a draw board, different geometrical shapes, compass set to frame angles and shapes, spur wheels etc. Spur wheels are serrated wheel revolving in a plated metal handle. It is used for making continuous embossed lines on the reverse side of the paper.

Geometry mat may also be included in the kit which is

a sheet of rubber for use as a base in conjunction with the spur wheel and Braille paper for making geometrical drawings. Compass set may include

a foot ruler, a protractor and a set square in nylon. It enables visually impaired students to use the same techniques as his sighted counterpart. The foot ruler and set square have embossed markings for their convenience. The compass has a removable component fitted with a toothed wheel for drawing embossed dotted lines on the reverse of the Braille paper.

Comprehensive or extended part of kit also includes different three dimensional shapes to get proper concept of shapes in space or three-dimension. 4.3.4 Measuring Tapes and Scales Measuring tape is designed to indicate measurements by touch. An adapted measuring tape could be of any size. Generally it is available in sixty inches size (Five feet). It is a plastic coated fabric (as in other measuring tape) to reduce wear and tear. The measuring tape has different tactile marks for . inch, 1inch and 1 foot increments. This adapted measuring tape is known as tactile measuring tape. Similarly, Metal scales are also available for mathematical school

103 work; eg. Drawing a line of specific size etc. 4.3.5 Soft-wares for teaching Mathematics There are several mathematics learning software packages are available for strengthening of mathematical concepts among students with visual impairment. Few are listed as below: lllll Scientific Notebook Scientific Notebook (SN) is a software package. When installed on a laptop, the student has a very portable device, which is more than just a graphing scientific calculator.

It is also a math/text processor, so the student can do all assignments, calculations, and graphs in one document directly on the laptop. It has onscreen magnification up to 400%, or additional magnification software may be used.

With the right techniques, it is also possible for a blind student to work with matrices using Scientific Notebook and a screen reader to solve systems of equations and find regression lines. Furthermore, math teachers can enter all their worksheets, tests, etc. on this software,

and the teacher of the visually impaired can easily translate them into Nemeth code.

llll Graph-It PC Graph-It PC is designed for use with PCs and this is a product by Freedom Scientific. The student can type in an equation and produce a tactile graphic on most embossers. An audio representation of the graph can also be played through the speaker for a quick, sound-picture of the graph. The software is quite limited, however, and the tactile graphics and audio graph lack precision. llll Accessible Graphing Calculator (AGC) The Accessible Graphing Calculator (AGC) from ViewPlus Software Inc. is a self-voicing graphing scientific calculator software program. Unlike a hand-held calculator, it displays results through speech and sounds, as well as visually presenting numbers and graphs. This program is intended to have capabilities comparable to a full-featured hand-held scientific and statistical graphing calculator. The onscreen graphics are easily seen by a low vision student via an enlargement feature, and the graph can be listened to by using the sophisticated audio wave feature.

104 4.4. Assistive Technologies for Science Student with visual impairment

typically need some accommodations in order to safely and fully access to

the science curriculum. It is important to meet with the Teacher of Students with Visual Impairments to discuss the curriculum and objectives and content that will be covered during the school year. This is important for students following the standard course of study as well as those following a modified curriculum. The student's unique visual needs should be taken into consideration when determining how to make materials accessible. Science materials may include measuring devices, charts, reading materials, and equipment.

Following are few important science related assistive technologies to facilitate the learning of science concepts among students with visual impairment: 4.4.1

Tactile Thermometers The tactile demonstration thermometer allows students to independently read, set, and compare temperatures.

Popular tactile thermometer by APH, USA has

a two-textured, two-colored adjustable mercury column with an easy-grip tactile indicator. It usually

includes both Fahrenheit and Celsius scales presented in both large print and braille. Tactile degree markings every 5 and 10 degrees. The mercury column slides up and down to demonstrate temperature reading.

Usually talking clinical thermometer makes temperature-taking fun and easy for kids and adults. It's also an indispensable tool for the blind or visually impaired individual. This model's two-button design makes it extremely easy to use. Simply press the left button to turn the unit on, wait for the confirming beeps, then press the right button to begin taking your temperature. In about thirty seconds, you'll hear four beeps, followed by your body temperature announced in a very clear voice. The temperature will then be repeated once more, and the unit will automatically shut off after eight minutes, if you forget to turn it off yourself, that is. The thermometer is intended for oral or underarm use, and

announces and displays your temperature in either Fahrenheit or Celsius. 4.4.2 Colour probes Colour probes or colour detectors can be used by person with visual impairment or

105 those with little colour perception to distinguish colours. This may assist them to identify the colours. With the help of this device the affected person may be able to identify the colour of clothing or furnishings, distinguish between items such as food or check the ripeness of fruit. 4.4.3 Scientific and Mathematics Talking Calculators Talking calculator is a

very useful device for various calculation by students with visual disabilities. A talking calculator is an inexpensive and invaluable device for students with disabilities struggling with math at school. A talking calculator can verify the accuracy of keys pressed and give feedback to the user while making calculations. Talking calculators look and function like common calculators. However, this assistive technology devices has a built in speech synthesizer so that each key pressed is spoken out loud. This can help the user to verify that the numbers and operands have been entered correctly. The calculator also speaks the answer to the math problem. Talking calculators can be used at home, for everyday

calculations such as balancing a checkbook, grocery shopping, or calculating a recipe. For these uses, a basic model may be all that is needed. Talking calculators are capable of advanced mathematical operations, making it possible for the blind or visually impaired to perform these operations without the use of pen and paper. Various models are available for learning basic adding and subtracting operations at school to enabling students to complete more advanced subjects such as trigonometry. 4.4.4 Light probes Light probes or light detectors can be used by person with visual impairment or those with little light perception to get informed about how light or dark it is. The light probe is a handy device used for detecting of

lights are on or off, from ceiling lights to small LED lights on appliances. It does this by emitting different tones. It can also be used to detect which side of the paper writing is on when scanning, faxing or photocopying. 4.4.5 Weighing scales A talking scale announces weights and are available in a variety of sizes and styles. Kitchen scales may be the most valuable for science education, although bathroom scales and other types of scales are also available in talking formats.

106 4.4.6 Software and web resources for teaching Science Access STEM: AccessSTEM is the Alliance for Access to Science, Technology, Engineering, and Mathematics Disabilities, Opportunities, Internetworking & Technology (DO-IT). The AccessSTEM website is a space where K-12 teachers, postsecondary educators, and employers learn to make classroom and employment opportunities in science, technology, engineering and mathematics (STEM) accessible to individuals with disabilities, and share promising practices. Independence Science Independence Science provides talking and sensory products to increase accessibility in the science lab. This is a robust portal of technological and tactile solutions or experimentation and modeling. National Science Teachers Association (NSTA) NSTA "is the largest organization in the world committed to promoting excellence and innovation in science teaching and learning for all." The site contains resources for parents and information on teaching students with visual disabilities. EntryPoint! ENTRY POINT! is a program of the American Association for the Advancement of Science offering outstanding internship opportunities for students with apparent and non-apparent disabilities in science, engineering, mathematics and computer science. This association has developed unique partnerships with IBM, NASA, Merck, Google, Lockheed Martin, CVS, NAVAIR, Pfizer, Infosys, Shell, Procter & Gamble and university science laboratories to meet their human resources needs. Working with its partners, this association identifies and screens undergraduate and graduate students with disabilities who are pursuing degrees in science, engineering, mathematics, computer science, and some fields of business, and places them in paid summer internships. 4.4.7

Models Three-dimensional models are beneficial to all students when learning about science. This is particularly true for students with visual impairments. Students with visual impairment should be provided with models that they could be touched, explored, examined and communicated real concept. For students with visual impairment, it is

107 better to start with either the real object or, when this is not possible, it should be facilitated by a three dimensional model or object. There are abundant resources related with tactile models and diagrams in science. Tactile Astronomy is a web resource from Amazing Space, is a downloadable tactile image library for microcapsule paper. The

tactile graphics consists of vacuum-formed raised-line drawings that are intended to supplement the graphics in a students adapted textbook. It depicts objects, concepts, and relationships that are covered in nearly all elementary science textbooks. The drawings use several types of lines and textures, as well as different heights. 4.5.

Assistive Technologies for Social Science In inclusive setting, it is essential for classroom teachers and the special education teacher to collaborate and work together closely. Special education teacher to engage himself/herself in creating or developing accessible maps and materials. Materials need to be ready in a timely manner so they will be ready when classmates are presented with similar materials. The special education teacher may also need to provide models (eg. a model of a volcano, historical objects, etc.), depending on the topic. It is important that students first receive instruction in reading maps and other materials such as pie charts, bar graphs, and timelines. 4.5.1

Tactile/Embossed Maps The use of maps is an important skill for all children to learn. For students who have visual impairments, learning to read a map is an important step towards independence, as well as a way to participate more fully in the regular geography and social studies curriculum.

Teaching could be stimulated by using tactile maps, from the most basic object books to more complex tactile graphics.

It should be also remembered that apart from assistive technologies fieldtrips are also very helpful in teaching social science. 4.5.2 Charts & Diagrams Tactile resources are essential component, while teaching students with visual impairment. Teacher should be competent enough in developing tactile chart and diagram to elaborate social science concepts. Learning to use tactile diagrams is a skill which should be overtly taught, with plenty of time for practice.

Exploring a tactile

108 diagram systematically is the key to making sense of it. It is a very crucial task to cover whole concept in a single diagram. Teacher should encourage the students with visual impairment to explore a tactile chart (bar, pie, etc.). The student should read the data represented from each bar. Sticking to a routine method helps students to make sense of their tactile diagrams. 4.5.3 Models of Different Types Models in two dimension and three dimension are important tool to facilitate concept formation among students with visual impairment. While producing diagrams and handouts, teacher should think about whether all the information is necessary. He/she may be able to simplify the diagram and cut out some of the text, making it easier for a visually impaired students to access. Make sure that the work is printed on the correct colour paper, some students may prefer things on a certain paper or in a certain type face. Making models or presenting the same increase a visually impaired students understanding and appreciation. 4.5.4 Auditory Maps Human beings navigate through their environment by developing an orientation or, mental understanding of spatial relationships known as a spatial cognitive maps. Spatial cognitive maps for most people involves using visual information to development an understanding of the spatial relationship between the person and other objects. For mobility of persons with severe visual impairments, scope of taking visual clues and landmark is restricted. Other senses such as hearing, are used to collect information in order to build a spatial cognitive map. Therefore, an auditory maps could be a wonderful tool to get comprehension of geographical concepts among persons with visual impairment. 4.5.5 Talking compass Talking compass is a hand held device mainly helpful for getting around and taking physical measurements by persons with visual impairment. It is a compact and easy-to-

109 use talking compass. User simply points in the required direction, press the button, and the unit will speak the compass point. It includes

the four major compass points, as well as the four interim compass points.

Compass also features clear, digitized speech and ceramic piezoelectric speaker. 4.5.6 GPS system Survival and success depend on good orientation skills. This is an especially challenging fact for people who are blind, because they must use only auditory and tactile queues to determine their position in relation to other objects or places. For thousands of years, people used landmarks and line-of-sight to return home after a long day on the hunt, but these techniques became less effective the further they travelled. Eventually, explorers discovered consistent heavenly bodies that could aid with orientation. For example, early sailors kept a constellation to the left side of the ship to help with navigation. They could use this technique to reliably travel hundreds of miles. With the introduction of the Global Positioning System (GPS), the power to quickly and accurately determine one's place on earth) is available to anyone. It does not require any training. When combined with an accessible interface, and customizable and current information about points of interest, the tools provide a compelling picture of the locality and its characteristics. 4.6. Low vision Devices: Low-vision devices are designed to improve visual performance in children or individuals with low vision, thus enabling academic and social adaptation and providing enrichment of daily experiences. These devices could be categorized into following categories:

a. Optical

110 b. Non-optical c. Projective d. Mobile & Computer based 4.6.1 Optical Devices Low vision optical devices are devices which basically support vision through lenses. We can say these devices are based on magnification done by magnifiers. Optical devices could be grouped into two categories: 1) supporting near vision tasks, eg. Handheld magnifiers, stand and hand-held magnifiers, strong magnifying reading glasses; 2) supporting distance vision tasks, eg. small telescopes. Because these devices can provide greatly increased magnification powers and prescription strengths, along with higher-quality optics, they are different from regular glasses and commercially available magnifiers. These devices are also available with light source to support further. 4.6.2 Non-Optical Devices Non-optical devices are low vision aids that do not use magnifying lenses to improve visual function. They can improve the other visual aid's function or can even replace

111 optical aids. They enhance visual function by: | Lighting control | Enhanced contrast | Reduction of glare | Improving physical comfort Low vision non-optical devices can include a number of adaptations, such as reading stands, supplemental lighting, absorptive sunglasses, typoscopes, and tactile locator dots. They are often recommended as part of a low vision examination, and can be used in combination with magnifiers and other low vision optical devices that can help with reading and a variety of tasks. Few non-optical low vision devices are listed below: | Adjustable Reading Stand | Typoscope | Bold Pen | Reading Lamp | Absorptive Glasses | Writing Guide 4.6.3 Projection Devices Projection devices include Close Circuit Television (CCTV) and other projection based magnifier system. CCTV consists of a monitor and a camera that projects the enlarged image on the screen. Advantages are higher reading speed and greater working distance when compared to other aids. The larger working distance makes it easy to use for writing, drawing, or painting. It provides additional visual field, brightness, contrast, and polarity control, making it the choice for 112 diseases with low contrast and glare. It may allow magnification of 2 to 60 times with several features including black and white or color, and fixed-focus or autofocus, allowing objects to be seen at various distances. 4.7. Technology for developing Tactile Diagrams

Tactile graphics, including tactile pictures, tactile diagrams, tactile maps, and tactile graphs, are images that use raised surfaces so that a visually impaired

person can feel them. They are used to convey non-textual information such as maps, paintings, graphs and diagrams. Tactile graphics can be seen as a subset of accessible images. Images can be made accessible to the visually impaired in various ways, such as verbal description, sound, or haptic (

tactual) feedback. One of the most common uses for tactile graphics is the production of tactile maps.

The types and forms of tactile maps began with the oldest and most rudimentary or a mixed media format. This tactile map is produced by simply attaching objects to a substrate to represent different items or symbols. More recent tactile maps are produced by computers through different means such as an ink-jet printers. 4.7.1 Thermoform

and Swell Paper technology | Thermoform Technology

Thermoform is one of the most common methods of producing tactile maps. This process is also known as vacuum forming. Thermoform maps or plans are created from a process where a sheet of plastic is heated and vacuumed on top of a model or master. The master can be made from many substances, although certain materials are more durable than others. Since this process involves creating a mould, it is somewhat time consuming.

| Swell paper

Technology

Swell paper has a special coating of heat-reactive chemicals. Microcapsules of alcohol implanted in the paper fracture when exposed to heat and make the surface of the paper

113 inflate. Placing black ink on the paper prior to a heat process provides control over the raised surface areas. This type of map is not as robust as the Thermoform map, but can be produced with less effort and expense. 4.7.2

Software for developing tactile diagrams Drawings produced by computers can turn into raised lined (embossed) graphics for the visually impaired. The effective software applications for computer generated tactile graphics should contain scalable vector graphic components; e.g.- lines, shapes, freeform drawing tools, arrows, patterns, shapes fill, and line weight etc. Softwares that contain these components are the best tools to use when producing computer generated tactile graphics. Drawing that look like a picture are called bitmaps. Third-party software containing mainly scalable vector graphic tools. Corel Draw, Adobe Illustrator, and Microsoft Office (Word and PowerPoint) are the examples of these kind of software. With the help of this application software one can produce tactile graphic illustrations for science, maths and geography. These drawing applications may not have scalable vector graphic drawing components, however, they can be used to produce tactile graphics if a swell (encapsulated) paper device is doing the embossing. Few dedicated tactile graphics production software are as follows: | TactileView - Tactile Graphics The TactileView Software is a tactile graphics tool from house of Index embosser. TactileView's Design Software | Import complex graphics | Create tactile street maps | Draw custom graphics |

Add audio tags to tactile diagrams | Web catalog | Image and text combination | In addition compatible with learning environment

it is able to create subject wise support;

Math - Charts and graphs; Science - Diagrams for anatomy, geology, and other visual subjects; and Art & Mobility - tactile maps for mobility, raised art & drawings.

114 4.8 Let us sum up Learning Mathematics has been always being found crucial for learners with visual impairment. The Taylor Frame or, Taylor Mathematical Slate is a device used to teach Mathematics to blind students, Developed by William Taylor. The main purpose of this device is to aid in the teaching and working of problems of long division, multiplication of large numbers, subtraction, and addition.

Abacus is a device used by visually impaired children for doing basic Mathematical calculations. Abacus is rectangular in shape. Abacuses with varied columns are used in different countries.

Measuring tape is designed to indicate measurements by touch. There are several Mathematics learning software packages available for strengthening of Mathematical concepts among students with visual impairment including Scientific Notebook, Graph-It PC, etc.

Science materials may include measuring devices, charts, reading materials, and equipment.

Following are few important science related assistive technologies to facilitate the learning science concepts among students with visual impairment.

The tactile demonstration thermometer allows students to independently read, set, and compare temperatures.

It usually

includes both Fahrenheit and Celsius scales presented in both large print and Braille.

Talking calculator is a very useful device for various calculation by students with visual disabilities. A talking calculator is an inexpensive and invaluable device for students with disabilities struggling with maths at school. A talking calculator can verify the accuracy of keys pressed and give feedback to the user while making calculations. Talking calculators look and function like common calculators. The special education teacher may also need to provide models (ex., a model of a volcano, historical objects, etc.), depending on the topics of social sciences. It is important that students first receive instruction in reading maps and other materials such as pie charts, bar graphs, and timelines.

The use of maps is an important skill for all children to learn. For students who have visual impairments, learning to read a map is an important step towards independence, as well as a way to participate more fully in the regular geography and social studies curriculum.

Auditory maps could be a wonderful tool to get comprehension of geographical concepts among persons with visual impairment. With the introduction of the Global Positioning System (GPS), the power to quickly and accurately determine one's place on earth is available to anyone. It does not require any training. There are several low vision assistive technologies available to support use of remaining vision. These assistive technologies could be grouped into optical aids (using lens or

115 magnifier for magnification); non-optical aids (using environment control to make better lightening condition) and projective aids (using magnification based on projective devices).

Tactile graphics, including tactile pictures, tactile diagrams, tactile maps, and tactile graphs, are images that use raised surfaces so that a

visually impaired

person can feel them. They are used to convey non-textual information such as maps, paintings, graphs and diagrams.

4.9

Check your progress 1) The Taylor Frame or, Taylor Mathematical Slate is developed by: a. Robert Taylor b. William Taylor c. James Taylor d. Taylor Keith 2) The area of upper abacus and lower abacus is in proportion: a. $\frac{2}{3}$ and $\frac{1}{3}$ b. $\frac{3}{2}$ and $\frac{3}{1}$ c. $\frac{1}{3}$ and $\frac{2}{3}$ d. $\frac{3}{1}$ and $\frac{3}{2}$ 3) Spur wheels is

a. serrated wheel revolving in a plated metal handle b. used for making continuous embossed lines

c. create embossed line on the reverse side of the paper d. all of the above 4) Geo-board is meant for learning: a.

Geometrical calculations b. Geography c. Geostationary satellite d. Geometrical shapes 5) A talking calculator: a. can

verify the accuracy of keys pressed

116 b. give feedback to the user while making calculations c. Both d. None of the above e. Can show Movies f. Can play Games 6) Students with visual impairment should be provided with models that they could : a. Touch b. Explore c. Examine d. All of the above 7) In the geography and social studies classes, teaching should be stimulated by using a. tactile maps b. tactile graphics c. tactile chart d. all of the above 8) Audio or tactile map aims to a. Spatial cognition b. Self-actualization c. Conditioning d. As a Stimulus 9) Which one is not an optical aid for children with low vision: a. Stand Magnifier b. Telescope c. Handheld Magnifier d. Typoscope 10) Production process of thermoform is also known as : a. Sterilization

117 b. Chromonisation c. Random buffering d. Vacuum forming 4.10 References & Suggested Readings l American Printing House for the Blind (2015). Nearby Explorer Online. for Android User's Guide. American Printing House for the Blind Inc. l Biwas, P.C (2004). Education of children with Visual Impairment: in inclusive education. Delhi: Abhijeet Publication. l Bourgeault, S. E. (1969). The Method of Teaching the Blind: The Language Arts, Kuala Lumpur: American Foundation for the Overseas Blind. l Caitlin Dempsey GIS Software (2013). Developing Auditory Maps for the Blind. Retrieved from <https://www.gislounge.com/developing-auditory-maps-for-the-blind/> l Chaudhary, Monica. (2006). Low Vision Aids. New Delhi: Japee Brothers l Fatima, Roohi. (2010). Teaching aids in mathematics; a handbook for elementary teachers. New Delhi: Kanishka Pub. l Gerritsen, B. & Duffy, M. A. (2015). Helpful Non-Optical Devices for Low Vision. Retrieved from <http://www.visionaware.org/info/your-eye-condition/eye-health/overview-of-low-vision-devices/common-non-optical-devices/1245> l Gerritsen, B. & Duffy, M. A. (2015). What Are Low Vision Optical Devices? Retrieved from <http://www.visionaware.org/info/overview-of-low-vision-devices/low-vision-optical-devices/45> l Hersh, M.A & Johnson, M (Ed.) (2008). Assistive Technology for Visually Impaired and Blind People. London: Springer l ICEVI (2005). Mathematics made easy for children with visual impairment. International Council for Education of People with Visual Impairment (ICEVI). Retrieved From http://icevi.org/pdf/Mathematics_%20Made_%20Easy%20for%20Children_%20with%20_Visual%20Impairment.pdf l Kearney, G. (2012). Taylor Mathematical Slate. Commonwealth Braille and Talking Book Cooperative. Retrieved from <https://www.cbtbc.org/taylorslate/> 118 l

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120 UNIT - 5 q Computer-Aided Learning Structure 5.1 Introduction 5.2 Objectives: 5.3 Computer Aided Learning: Concept & Need 5.4 Social Media 5.4.1 Advantage of using social media in Education 5.4.2 Disadvantage of using social media in Education 5.4.3 Few Social Media Sites used in Education 5.5. Creation of Blogs 5.5.1 Blog: Concept & Classification 5.5.2 Blogging Platforms 5.5.3 Creation of Blog 5.6. Tele-Conferencing 5.6.1 Teleconferencing: Concept and Scope 5.6.2 Advantages of Teleconferencing 5.6.3 Limitations of Teleconferencing 5.7 Distance Learning and ICT 5.7.1 Distance Learning 5.7.2 ICT and Distance Education 5.8.

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e-Classroom: Concept 5.8.2 Objectives of the E-Classroom 5.8.2 e-Classroom: Adaptations for Visually Impaired 5.9 Let us sum up 5.10 Check your progress 5.11 References & Suggested Readings

121 5.1 Introduction Technology in the form of adaptive and assistive devices, plays a crucial role in the education of the visually impaired. This course brings into sharp focus the need and importance of such technologies both for the practicing teachers and the visually impaired learners. While highlighting the significance of addressing the users point of view/feedback and involving mainstream professionals in developing required technologies, the course also dwells upon on how best students with visual impairment get access to the printed text/material. The course also acquaints the student-teachers with various devices for making the teaching-learning process for important school subjects meaningful, exciting and rewarding for all concerned. The educational needs of children with low vision and related technological perspectives are addressed, too, along with critical contributions of computer-aided learning and interventions. 5.2 Objectives: In this unit we will explore the need, importance and components of computer-based teaching-learning processes. When you will complete this unit, you will be able to: | Sensitize about use of social media, teleconferencing and other tools in education of children with visual impairment. | Demonstrate understanding of computer-based teaching- learning processes. | Explain importance and components of social media, tele-conferencing and other tools of distance education for computer aided learning among students with visual impairment. | Illustrate how e-classroom could be useful for the children with visual impairment. | Understand the role of computer mediated learning among the children with visual impairment. 5.3 Computer Aided Learning: Concept & Need It is widely accepted that the integration of modern Information and Communication Technologies (ICT) into the teaching learning process has great potential. In fact, it

122 could be the most important way by which schools and institution can meet students' educational aspirations within reasonable time and resources. The use of computers in schools is basically vision as a teaching and learning aid besides to develop computer literacy amongst the children. Computer aided learning will help us to make the present teaching learning process joyful, interesting and easy to understand through audio-visual aids. Teachers resourced with multimedia contents to explain topics better are being widely appreciated by students. Overall it helps to improve quality of education in long term. Computer Aided Learning is an integrative technology, which describes an educational environment where a computer programme is used to assist the user in learning a particular subject. It refers to an overall integrated approach of instructional methods. Computer aided learning is a device as well as a learning strategy to make teaching more interesting, joyful and sustainable. Any use of computers to aid or support the education or training of people may be considered under computer aided learning. Computer aided learning can test attainment at any point, provide faster or slower routes through the material for people of different aptitudes, and can also maintain a progress record for the instructor.

5.4 Social Media

Social media are forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as text, pictures and videos). Social media has gained credibility over the years as a trusted source of information and platform where individuals or organizations can interact with other individuals. Social media infuses today's society with millions of us engrossed, some would argue to the point of unhealthy addiction, in the latest happenings via apps such as Facebook and Twitter. The use of social media in education provides students with the ability to get more useful information, to connect with learning groups and other educational systems that make education convenient. Social network tools afford students and institutions with multiple opportunities to improve learning methods. Students can benefit from online tutorials and resources that are shared through social networks. There is valuable knowledge to be gained through social media such as analytics and insights on various topics or issues for study purposes. Social media is also a medium where students can establish beneficial connections for their careers.

5.4.1 Advantage of using social media in Education

- 1) Connecting with experts: The great thing about using social media is that you soon learn who the experts are in particular fields and subjects. When you start following these experts you learn more and gain useful content from them, this empowers you to produce great results. Social media has the ability to broaden your perspective on various subjects and gives illuminating, instant content that is new. You have the opportunity of engaging experts to get answers on topics that you may need help in. Many institutions communicate with students via YouTube and Facebook.
- 2) Connect with Students: Learning colleges have the ability to connect with students through social media networks such as Facebook, Google Plus groups, and YouTube. These channels can be used to communicate campus news, make announcements and provide students with useful information. This builds engagement between the College and students which help tackle many student issues through the group interactions.
- 3) Institutions Resource Sharing: Institutions can share supportive and positive posts that reach all students that are connected to the networks and pages. You can initiate hashtags on social media to engage students and online

124 discussions that are helpful. Video is a prominent tool in social media trends that are effective and you can use it to share useful videos that inspire students and help them in their course subjects. Through social mediums such as YouTube, Facebook or Instagram live video the engagements between students and the institution can be sustained. It is advisable to be selective about which social platforms to use for the best practice. 4) It helps in Research process: Social media offers audience and subject monitoring tools that are useful and it is one of the best platforms to extract data. You can find out how the majority people feel about a particular topic or how experts perceive and advice on specific issues. This can help students compile and produce useful content for research. Whether students are working on an assignment, working on a project or trying to gain more insight on a subject, some of the best information and results can be extracted from social media. 5) Educational Tool: Today's students arrive at school, fluent in Web and social networking technologies. Teachers can make use of this knowledge to enhance opportunities to learn. With social media, teachers can promote cooperation and discussion, create meaningful conversation, exchange ideas, and boost student interaction. 6) Enhance Student Engagement: Social media is an effective way to increase student involvement and build better interaction skills. Learners who hardly ever raise a hand in class may feel more comfortable on Facebook, Twitter, or YouTube. Social media systems enable instructors to identify "back channels" that promote conversation and surface ideas that students are too shy or nervous to speak out in class. 7) Improve Communication among Students and Teachers: Facebook and Twitter can improve interaction among learners and teachers. Teachers can respond to student's, questions via a Facebook page or Twitter feed, post homework assignments and lesson plans, send messages and updates, schedule or announce upcoming events, and share interesting Web sites and multimedia content. Students can

125 use Twitter to get help from teachers or other students. A great way for teachers to give participation points in addition to in class participation is by having students tweet about something that was discussed in class. 8) Preparing Students for Successful Employment: Students entering the workforce can use social networking sites to network and find employment. With various social media, older students or alumnus can establish a professional connection with other students. Students could make web presence, post a resume, research a target company or school, and connect with other job seekers and employers. Career centres and alumni associations are using different social media (eg. Facebook & Twitter) to broadcast job openings and internships. Students could follow businesses or professional organizations on social media to stay updated on new opportunities and important developments in their field. 126 9) Social Media as a Tool to Develop Students s'

Voices: One of the major benefits of using social media with students is teaching them to communicate openly, honestly, and, above all, kindly with their peers. The perceived privacy or anonymity of being online is especially freeing for boys, who may otherwise feel it is uncool to engage in class discussions or to show their emotions. Therefore, it is imperative to use this teachable moment to promote empathetic communication. 10)

Work More Effectively: Social media allows you to change the paradigm from teacher as expert to group as expert. Rather than asking around between classes or sending and tracking emails to multiple people who may know answers, you can ask a global community via social media. 5.4.2

Disadvantage of using social media in Education Any

school and classroom need to have solid guidelines in place before you introduce technology. This keeps everyone safe and ensures your students only harness the power of social media for good.

Some challenges are also associated with the use of social media, which can affect children with visual impairment and others significantly. Following are few major disadvantages of using social media in education: a) Social Media can be a Distraction: A common issue among teachers is that social media is distracting in the classroom. These teachers maintain that resources like Facebook and Twitter divert students' attention away from what's happening in class and can disrupt the learning process. With the possibility that the use of social media tools can be an invitation for students to play truant, teachers should make sure they won't be abused. b) Cyberbullying: While social networking sites provide a way for students and teachers to link up, they can be a tool for harmful behaviour- even at school. Teachers who use social media as part of their teaching should be wary of possible risks and plan to intervene on minor

127 incidents before they become more serious. c) Discouraging Face-to-Face Communication: Some educators are worried that while real-time digital stream may create a safe situation for students who are uncomfortable expressing themselves, learners are missing valuable lessons in real-life social skills. Students may find themselves at a disadvantage during university admission or job interviews when they need to command attention and deliver a coherent message. At public events and in personal relationships, they need to be able to effectively express themselves and connect with others. Ultimately, while the debate continues over what role social media should play in the classroom, no one can argue the influence that social networking has on today's students. The new generation is tech-savvy generation and they conduct much of their life through social media including sharing of emotions and achievements. They are already using various social networking sites (viz. YouTube, Facebook, Twitter etc.) as tools for learning and collaboration. They expect that their education will follow suit. With this in mind, it seems practical and sensible for today's institutions to get on the social media and explore ways to successfully integrate these tools into the learning of students with visual disabilities.

5.4.3 Few Social Media Sites used in Education

We do have several social media platforms to connect and interact with educational purposes. Followings are few important social media platforms (other than popular Twitter and Facebook) through students and teachers could connect and interact with each other:

a) Twiducate: The Twiducate platform is a free resource for educators. Objective of Twiducate is to create a medium for teachers and students to continue their learning outside the classroom. It is

easily accessible and allows teachers to create a class community online using a class code rather than an email address. It also allows teachers to have total control over who is a member and what gets posted.

b) Blackboard: This is a popular course management system as well as academic social media for 128 school community. It allows multi stage restricted permission to access, create and edit the content. The decision to use Blackboard is usually made at the top tier. Blackboard is an incredibly powerful, safe and comprehensive platform.

It is not a free application. Rather, it is a very expensive platform. Again, it also lacks flexibility at higher extent. c)

Wikispaces Classroom: Wikispaces Classroom is a free social writing platform for education. It is easy to create a classroom workspace where a teacher and students can communicate and work on writing projects alone or in teams. Various assessment tools allow teachers to measure student contribution and engagement in real-time. Wikispaces Classroom works great on modern browsers, tablets, and phones. Wikispaces Classroom is free for teachers and students. Over ten million registered teachers and students are available on the platform. Teacher can assign, collaborate on, discuss and assess projects all within the site. It can even handle multimedia.

d) Edmodo: Edmodo is an excellent and free classroom management system. It includes news feeds, assessment tools, communication capabilities and security features.

It connects teachers students and others for educational purposes. e) Skype:

It is the one site that can bring the outside world right into your classroom. You can host authors, visit science labs or talk to resource persons from across the globe.

It allows two way tele- conferencing among resource persons and students. f) Academia.edu: Academia.edu is a social networking website for academics. The platform can be used

129 to share papers, monitor their impact, and follow the research in a particular field. It was launched in September 2008. The platform website allows its users to create a profile, upload their research or academic works, select areas of interests and then the user can browse the networks of people with similar interests. As of January 2017, there were 47 million users from around the world. g) Researchgate: ResearchGate is a social networking site for scientists and researchers to share research papers, ask and answer questions, and find collaborators. It is believed to be the largest academic social network in terms of active users. People that wish to use the site need to have an email address at a recognized institution or to be manually confirmed as a published researcher in order to sign up for an account.

Members of the site each have a user profile and can upload research output including papers, data, chapters, negative results, patents, research proposals, methods, presentations, and software source code. Users may also follow the activities of other users and engage in discussions with them. Users are also able to block interactions with other users.

5.5. Creation of Blogs A blog or, weblog

is a discussion or informational website published on the World Wide Web consisting of discrete, often informal diary-style text entries.

These text entries or multimedia entries are known as posts. Posts are typically displayed in reverse chronological order, so that

the most recent post appears first, at the top of the web page. 5.5.1

Blog: Concept & Classification The emergence and growth of blogs in the late 1990s coincided with the advent of web publishing tools that facilitated the posting of content by non-technical users who did not have much experience with HTML or computer programming. Previously, a knowledge of such technologies as HTML and File Transfer Protocol had been required to publish content on the Web. Having a blog and making posts on blog

130 could be termed as blogging. Blogging can be seen as a form of social networking service. Indeed, bloggers do not only produce content to post on their blogs, but also often build social relations with their readers and other bloggers.

Many blogs provide commentary on a particular subject or topic, ranging from politics to sports or education. A typical blog combines text, digital images, and links to other blogs, web pages, and other media related to its topic. The ability of readers to leave

publicly viewable comments, and interact with other commenters, is an important contribution to the popularity of many blogs.

However, blog owners or authors often moderate and filter online comments to remove hate speech or other offensive content. In education, blogs can be used as instructional resources. These blogs are referred to as edublogs. There are different types of blogs, differing not only in the type of content, but also in the way that content is delivered or written:

lllll **Personal blogs:** The personal blog is an ongoing online diary or commentary

written by an individual, rather than a corporation or organization. While the

vast majority of personal blogs attract very few readers, other than the blogger's immediate family and friends, a small number of personal blogs have become popular, to the point that they have attracted lucrative advertising sponsorship. A tiny number of personal bloggers have become famous, both in the online community and in the real world. lllll

Collaborative blogs A type of weblog in which posts are written and published by more than one author. The majority of high-profile collaborative blogs are based around

a single unifying theme, such as politics, technology or advocacy. In

recent years, the blogosphere has seen the emergence and growing popularity of more collaborative efforts, often set up by already established bloggers wishing to pool time and resources, both to reduce the pressure of maintaining a popular website and to attract a larger readership. l **Microblogging** Microblogging is the practice of posting small pieces of digital

content;Xwhich could be text, pictures, links, short videos, or other media on the Internet. Microblogging offers a portable communication mode that feels organic and spontaneous to many users. Examples of these include Twitter, Facebook, Tumblr etc.

131 l **Corporate or organizational blogs** Blog is generally personal or private in most cases. But, it can be for business or not-for-profit organization or government purposes. Corporate or organizational Blogs used internally, and only

available to employees via an Intranet are called corporate blogs. Companies use internal corporate blogs to enhance the communication, culture and employee engagement in a corporation. 5.5.2 **Blogging Platforms** There are several

blogging platforms. Followings are some important blogging platforms (other than Facebook and Twitter) where user can create their blog and post text, picture, videos etc. accordingly for educational purpose: 1) **Word Press:** Word Press is a Downloadable blogging (and website management) software, as well as of of the most popular blogging platform.

Currently 25 percent of the entire web blogs are powered by Word Press. The software you get from WordPress.org is a downloadable package, which you then have to upload/install on a web server you already manage. WordPress is very easy to use and need not any specific training for using it. Only having basic computer skills are enough for use blog managed by WordPress. Once, blog is being created, using this blogging platform on a daily basis to publish your posts is very straightforward and easier. There are more than enough free themes in the official directory at WordPress.org. 2)

Google Blogger Blogger is one of the oldest blogging platforms and owned by Google. The separate login account is not needed for creating a blog on blogger. One need to sign

132 up with his/her standard Google account, similarly to WordPress.com. Blogger takes care of all the technical heavy lifting, allowing you to just focus on creating content. Blogger platform is free but, personalized web domain and hoisting may lead to additional payment. When one creates blog on blogger, individual gets a subdomain like example.blogspot.com. You can change your custom domain too. Basic computer skills are enough to start blogging under Blogger. 3) Tumblr A trendy micro blogging hosted platform with a social network aspect. Tumblr is a great blogging platform optimized specifically for bloggers who want to publish short-form content, such as micro-blogs, quotes, images, videos, and animated pictures. Tumblr is also a community of users, ready to promote and comment on each other's work. Tumblr hosts your blog for no additional cost. No specific skills are required to start and run a Tumblr blog. The interface is user-friendly Tumblr blogs are easy to set up and easy to run afterwards. 4) Medium A publishing platform for your blog posts, stories and articles. Medium has grown in popularity a lot during the last couple of years (more than a million people have joined Medium). In short, it's a community of writers and bloggers, all using the same looking site design to share their opinions and stories on various topics. 1111 Wix: Wix is very easy to use when it comes to launching a new website. However, you do need to go through a couple of additional steps to add the blog module. Nothing too difficult but still. Overall, Wix provides a step-by-step wizard to get through the whole process. More than 500 designs available. There's a number of essential site management features built-in.

133 5.5.3 Creation of Blog Each platform does have certain specification and a certain path to create a blog on that. It is very difficult to discuss creation of blog on each and every blogging platforms. We are taking Google Blogger as an example to create a blog and use the same. Following are the steps to create a bog with help of Google Blogger: To set up a blog of your own Ø Go to <https://www.blogger.com/start> and Click the orange "Create a Blog" button. Ø Fill out the registration information, click that you accept the terms of service, then click "continue." Ø Fill in the information on the next screen, officially opening a Google account, then click "continue." Ø Give your blog a name (remember—it should suit your chosen character!) and choose a unique URL address. Check the availability on the URL you have chosen, and once you find an available one, click "continue." Ø Now comes the fun part: scroll through the available templates and select one you think would appeal to your character. Click "continue." Ø Congratulations! You should see the "Your blog has been created" screen. Click "start blogging now." To make a post Ø The most recent posts will always appear at the top of your blog. Ø Sign in to your blog at <https://www.blogger.com/start2> with the e-mail and password you gave during set-up. Ø Now you will see your dashboard page, with many options for what to do. Click the blue bubble that reads "New Post." Ø Type in a title for your post- this will show up above the text in your blog - then enter whatever text you wish in the box. You may also add images, videos, or links (see below). The menu across the top will allow you to alter the font, size, and color of your text, should you wish to do so. Keep your graphic design interesting, but remember that the text of your posts is more important than changing each letter into a rainbow of color. Try to make design decisions you believe your character would make. Ø Click "Publish Post." You will now be able to choose to "View Blog," "Edit Post," or "Create a New Post." Select an option.

134 To add an image to a post Ø Save an image to your desktop. If it is not an image you took, be sure to write down the source information and include that in a Sources Cited section on your blog. continued Blog Creation Steps (continued) Ø On the "New Post" page run your mouse across the menu of option icons just above the text box. Click on the little blue box with the mountain in it that reads "Add Image" when your mouse crosses it. Ø In the new box, click "Browse" and then choose the picture file from your desktop. Choose to place image in the left, center, or right of the screen. Choose to make image small, medium, or large. You may format and add up to five images at a time. Ø Click "I accept the terms of service" and then "Upload Image." Your images should soon appear in your post. To add a video to a post Ø Save a video file to your desktop. If it is not a video you took, be sure to write down the source information and include that in a Sources Cited section on your blog. Ø On the "New Post" page run your mouse across the menu of option icons just above the text box. Click on the little film strip that reads "Add Video" when your mouse crosses it. Choose the file from your desktop, give the video a title, accept the terms of service, and then click "Upload Video." To add a link to a post Ø Copy the desired URL from your web browser. Ø Copy the link into your post, and then highlight it again with the mouse. Ø Run your mouse across the menu of option icons just above the text box. Click on the one with a green circle that reads "Add Link" when your mouse crosses it. Paste or retype your link into the box and click OK. Ø Your text should change color and become a link. To edit or delete a post Ø From your main blog page (you can always access this page by choosing "View Blog"), choose "New Post." On the new post page, just above the main box, choose the link "Edit Posts."

135 Ø This will take you to a page showing all past posts. You may click the box for any post and then choose "Edit" on the far left. This will take you back into the page as if you are still continued. Blog Creation Steps (continued) working on the post for the first time. You can make any changes you wish and then click "Publish Post." The new post will replace the old one. Ø If you prefer to erase the post altogether, simply click "Delete" on the far right of the "Edit" page for the chosen post. To add a group of links, text, survey, or image to the sidebar Ø From your main blog page (you can always access this page by choosing "View Blog"), choose "Customize" in the upper right corner. Ø From the "Customize" page, you can add any number of page elements. On the upper right, choose "Add a Gadget." Ø Scroll through your gadget options, selecting the one you wish from: "Poll," "Link List," "Picture," or "Text." You can also try adding other gadgets' Xexperiment! Ø Follow the instructions for the gadget you choose and then click "Save" to put the gadget into your sidebar. This will return you to the layout page. Ø Back on the layout page, you can click "Preview" to see what your new gadget looks like, or you can click "Save" to make it part of your blog. Ø You can always delete gadgets from the layout page, simply by clicking "Edit" in the gadget's box, and then choosing "Remove." Ø You may also rearrange your page elements in this page by clicking and dragging any element to a new location. To add a footer image or quotation Ø From your main blog page (you can always access this page by choosing "View Blog"), choose "Customize" in the upper right corner. Ø From the "Customize" page, you can add any number of page elements. On the bottom of the page choose "Add a Gadget." You may now add a picture or text across the bottom just like you did in the sidebar in the previous menu.

136 5.6. Tele-Conferencing From the points of view of the teaching functions, interactivity and user friendliness, tele-conferencing emerges as an appropriate technology for reaching varied clientele groups in diverse settings. Teleconferencing means meeting through a telecommunications medium. It is a generic term for linking people between two or more locations by electronics.

This technology is famous in open and distance learning modalities. With the advancement of communication technologies and reduction of costs, various organizations are also opting this technology in their education and training programmes. 5.6.1 Teleconferencing: Concept and Scope The word 'tele' means distance. The word 'conference' means consultations, discussions. Through teleconferencing two or more locations situated at a distance are connected so that they can hear or both see and hear each other. It allows the distant sites to interact with each other and with the teaching end through phone, fax, and e- mail. The interactions occur in real time. This means that the learners/participants and the resource persons are present at the same time in different locations and are able to communicate with each other. There are three following essential features of teleconferencing: Ø Learners/participants present at particular time and in dispersed places Ø Resource persons present at the same time at the teaching end or different teaching ends. Ø Interactions between: Ø Learner–resource persons/AV materials at the teaching end(s). Ø Learner–learner at the learner center Ø Learner–facilitator/materials/activities at the learner center Ø Learner–learner at/between other learner centers

137 Ø Resource person–resource person. Tele-conferencing (especially video-conferencing) increases efficiency and results in a more profitable use of limited resources. It is a

very personal medium for human issues where face-to-face communications are necessary.

When you can see and hear the person you are talking to on a television monitor, they respond as though you were in the same room together.

Videoconferencing maximizes efficiency because it provides a way to meet with several groups in different locations, at the same time.

The communication in teleconferencing is both vertical and horizontal, and the emphasis is on interaction at all levels. Meaningful interaction in real time is the strength of teleconferencing, and this sets it apart from other technologies used in education. The one-way limitation of educational broadcasting is overcome through the technology configuration. Stimulating responses to visuals, situations, dialogue, discussion, sharing, active experimentation, project work, etc. encourage interactivity. Some of other features of tele-conferencing are as follows: Ø Move Information, Not People or physical things. Ø Electronic delivery is

more efficient than physically moving people to a site, whether it is a faculty member or administrator. Ø Save Time: Content presented by one or many sources is received in many places simultaneously and instantly. Travel is reduced resulting in more productive time.

Ø

Lower Costs: Costs (travel, meals, lodging) are reduced by keeping employees in the office, speeding up product development cycles, improving performance through frequent meetings with timely information.

Ø Accessible: Through any origination site in the world. Ø Larger Audiences: More people can attend. The larger the audience,

the lower cost per person. Ø Adaptable: Useful for business, associations, hospitals, and institutions to discuss, inform, train, educate or present.

Ø

Flexible: With a remote receive or transmit truck, a transmit or receive site can be located anywhere.

138 Ø Security: Signals can be encrypted (scrambled) when it is necessary. Encryption prevents outside viewers. Ø Unity: Provides a shared sense of identity. People feel more a part of the group...more often. Individuals or groups at multiple locations can be linked frequently.

Ø

Timely: For time-critical information, sites can be linked quickly. An audio or point-to-point teleconference can be convened in three minutes. Ø Interactive: Dynamic; requires the user's active participation. It enhances personal communication. When used well for learning, the interactivity will enhance the learning and the teaching experience. Ø Concretization of experience Ø Reflective observation Teleconferencing could have different technical configurations and applications. It includes use of telephone for audio conferencing, graphics in addition to audio for audio-graphic conferencing, television and/or computer for video conferencing. Following are different types of Teleconferencing: Ø Audio Teleconferencing: Sometimes, it is called as Voice-only conference or, conference calling. Interactively links people in remote locations via telephone lines. Audio bridges tie all lines together. Meetings can be conducted via audio conference.

Preplanning is necessary which includes naming a chair, setting an agenda, and providing printed materials to participants ahead of time so that they can be reviewed.

Distance learning can be conducted by audio conference. Ø Audiographics Teleconferencing: Uses narrowband telecommunications channels to transmit visual information such as graphics, alpha- numerics, documents, and video

pictures as an adjunct to voice communication. Other terms are desk-top computer

conferencing and enhanced audio. Devices include electronic tablets/ boards, freeze-frame video terminals, integrated graphics systems, Fax, remote- access microfiche and slide projectors, optical graphic scanners, and voice/data terminals.

Ø Computer Teleconferencing:

Uses telephone lines to connect two or more computers and modems. Anything that can be done on a computer can be sent over the lines.

It can be

synchronous or asynchronous. An example of an asynchronous mode is electronic mail.

Using electronic mail (E-Mail), memos, reports, updates,

139 newsletters can be sent to anyone on the local area network (LAN) or wide area network (WAN).

Items generated on computer which are normally printed and then sent by facsimile can be sent by E-Mail. Computer conferencing is an emerging area for distance education. Some institutions offer credit programmes completely by computer. Through computers, faculty, students and administrators have easy access to one another as well as access to database resources provided through libraries. Ø Video Teleconferencing: Combines

audio and video to provide voice communications and video images. Can be one-way video/two-way audio, or two- way video/two-way audio.

It

can display anything that can be captured by a TV camera.

In two-way audio/video systems, a common application is to show people which creates a social presence that resembles face-to-face meetings and classes and enables participants to see the facial expressions of participants at remote sites.

Video conferencing is an effective way to use one teacher who teaches to a number of sites. It is very cost effective for classes which may have a small number of students enrolled at each site. Rural areas benefit particularly from classes provided through video conferencing when they work with a larger institution.

5.6.2 Advantages of Teleconferencing

- Ø It provides learning to large groups, which are geographically dispersed.
- Ø For organizations, delivery costs are reduced with resultant cost benefit in terms of time, travelling and spread of resources over large groups
- Ø It makes the best use of the available resources by expanding their learning opportunity and taking the resources to the learners.
- Ø It overcomes time or scheduling problems for the learners who can assemble at a learning centre for a limited period only because of their full time or part time work, and family and community commitments.
- Ø It can be designed to meet local specific requirements of training in terms of content, language and conditions.

140 Ø There is greater appeal, motivation and retention of information as a variety of teaching methodologies are used.

- Ø By using animation, graphics and other techniques, teleconferencing is good at showing processes for demonstrations and experiments, thereby concretizing learning.
- Ø By conveying sights, sounds, and the spirit of the subject, it provides a more rounded view of an issue.
- Ø It provides uniformity of training, which is interactive. On the basis of feedback, instructors can make appropriate shifts in the teaching strategies to meet learner needs.
- Ø The element of interactivity in teleconferencing is encouraged through dialogue and by stimulating responses to situations and visuals. The opportunity of dialogue allows the learners to discuss, question, and challenge issues. Stimulating the learners to respond to situations and visuals leads to higher processes of learning. As the learners become familiar with the technology and its practices, their communication and learning skills are enhanced.
- Ø Interactivity gives a sense of participation and an active environment for learning.
- Ø The learners may feel themselves to be a part of the 'real-life' learning situation, and though located on different sites they feel they are connected. Relationships are established as in a group situation.
- Ø For the field functionaries in remote rural areas, it reduces the sense of isolation, encourages sharing of concerns and ideas, and helps solve their problems.

5.6.3 Limitations of Teleconferencing

Teleconferencing has its limitations, but these can be overcome to a great extent by corrective measures and using appropriate content, planning, organization and management.

- Ø If the number of centers is increased, time for interactivity for each center is correspondingly reduced.
- Ø Since teleconferencing demands real time interaction, the learners are required to be present at particular times and places. Otherwise it will not work. It may be difficult for learners to do so because of logistics problems and other regional reasons resulting in poor attendance at the sessions.

141 Ø Evaluation of learning could be a challenge in tele-conferencing.

- Ø Teleconferencing to be effective for any type and purpose would require planning, teaching strategy, development of content and materials, presentation techniques and evaluation.

5.7 Distance Learning and ICT Technology

is not limited to the use of machines, and the aim is to apply the scientific knowledge in order to obtain a practical result. The humankind has created science and technologies, from the wheel to the computer, and the changes were significant in their relations between the human beings and the nature, overcoming the traditional learning and teaching process. We cannot simply use a resource. It is important that all the pedagogical action is previously prepared, using structured objectives and allowing students to keep in touch with new and different contents. By doing it, learners are stimulated to build new relations with themes previously acquired. The teaching work makes use of a pool of technological assets, aiming the learning appropriation according to the mediation of the educator, with diversified resources and from different methodological procedures. Technology becomes the mediation for Distance Education and the technology serves as a vehicle through which the course is conducted.

5.7.1 Distance Learning

In conventional system of education teaching-learning takes place in classrooms, where the students and teachers meet regularly at fixed timings. Distance education was an educational mode supplementary, complementary and alternative to conventional/ traditional system of education, depending on the situation it was practised. Today it has evolved into an independent system of education. The growth of communication technologies and the cognitive sciences which are flexible enough to use the technologies for pedagogic purposes have key roles in

distance education. The term open and distance learning and its definition are relatively new in the field of education, having gained prominence only in the past 20 years. The language and terms used to describe distance learning activities can still be confusing, and geographical differences in usage.

There is no one definition of open and distance learning. Rather, there are many approaches to defining the term. Most definitions, however, pay attention to the following characteristics:

- Ø separation of teacher and learner in time or place, or in both time and place;

Ø

use of mixed-media courseware, including print, radio and television broadcasts, video and audio cassettes, computer-based learning and telecommunications. Courseware tends to be pre-tested and validated before use; Ø two-way communication allows learners and tutors to interact as distinguished from the passive receipt of broadcast signals. Ø Communication can be synchronous or asynchronous; Ø possibility of face-to-face meetings for tutorials, learner-learner interaction, library study and laboratory or practice sessions; and Ø institutional accreditation.

5.7.2 ICT and Distance Education Distance education is an educational innovation to meet the ever increasing and diversified educational needs and demands of the society which are sequel to changing social, economic, and other conditions on one hand and technological developments on the other. Information and communication technology has widened the scope of educational technology and enhanced the efficiency of educational communication coupled with accuracy and speed of feedback. As a result of this, it has become possible to offer a variety of educational programmes to different sections or groups of people through various media of communication. Distance Education follows the evolution of the communication technologies, which gives support to this kind of education. In this context, the teacher may understand that technology contributions as a pedagogical resource will occur continuously. Then, he/she needs to act according to this possibility, planning his/her practices and organizing the pedagogical actions as a mediation for this learning process, trying to 143 overcome expectations and, consequently, the appropriation of knowledge. The development of new technologies, which has instigated a revolution in our society and in people's jobs, has permitted other possibilities for teaching and learning process. It has also provided the development of new alternatives for the Distance Education modality, combining the familiar educational resources with the tools of the Information and Communications Technologies (ICTs). These directions point to the renovation of teaching by formulating a wider conception of the educational process in order to meet the demand of the society. In doing so, the ICTs can be used by the higher education institutes aiming to adequate and make their contents available, then giving rise to a greater flexibility of access to the distance courses.

5.8.

e-Classroom: Concept and adaptations for children with visual impairment

Teaching without chalk and blackboard made possible through technology that serves as fundamental structural changes as integral to achieving significant improvements in productivity. It used to support both teaching and learning, technology infuses classrooms with digital learning tools, such as computers and hand held devices. Student engagement and motivation; and accelerates learning. Technology also has the power to transform teaching by ushering in a new model of connected teaching. This model links teachers to their students and to professional content, resources, and systems to help them improve their own instruction and personalized learning.

5.8.1 e-Classroom: Concept E-classroom as part of our educational technology eliminates the barrier to quickly access new information and it bridges the gap between the rich and the poor and urban

144 to remote areas to quest for quality learning. This type of learning creates opportunities to teachers and pupils/students to use the educational resources and other technologies that can increase educational productivity by accelerating the rate of learning reducing costs associated with instructional materials and better utilizing teacher's time. E- classroom has also the potential to improve educational productivity by accelerating the rate of learning, taking advantage of learning time outside of school hours, reducing the cost of instructional materials, and utilizing teacher's time. It also helps to develop the mindset of the students towards positive thinking and quest for more learning towards excellence. These can be particularly useful in rural areas where online learning can help teachers and learners accessible to information and to overcome distance. Digital resources like electronic grade books, digital portfolios, learning games, is a powerful tools to help teachers create more engaging and interactive teaching ways of learning on teacher and student performance, are a few ways that technology can be utilized to transform learning.

5.8.2 Objectives of the E-Classroom There are a number of pedagogical methods and models of instruction. Rather the goals of the electronic classroom focus on the support of a wide range of instructional and classroom activities. The high level goals of the electronic classroom are as follows: Ø To provide a more interactive learning experience than is generally possible in the traditional classroom.

Ø To provide interactive and hypermedia technologies during classroom interaction. Ø

To increase student-to-student and student-to-teacher interaction and collaboration. Ø To provide students with an integrated learning environment with access to hypermedia databases,

telecommunications, and simulations. One primary theme running through these objectives is interactivity, to involve the student actively in the learning process. The other primary theme is to enrich the educational environment. Hypermedia provides a way to bring text, graphics, audio, and video together;

145 telecommunications opens up a window to the world; and simulations provide dynamic, graphic models of abstract systems and theories. These technological objectives, however, should in no way obscure or take precedence over higher educational objectives. A good lecture devoid of technology may be necessary to engage students in a theme.

Face-to-face, unmediated interaction may be necessary to drive a point home. Only when it proves beneficial should the instruction turn to the electronic media. The narrow view of the electronic classroom is that it is a room with computers and multimedia displays. The broader view is that it

is an electronic environment that supports the many processes

of

classroom education. But to provide such an environment the classroom must have some combination of the following elements: Ø A computer workstation for the instructor. Ø A multimedia system capable of presenting a variety of types of information (e.g., text, graphics, animation, audio, and video). Ø A database of educational materials within the classroom.

Ø

A computer workstation for each student Ø A local area network that allows communication among all of the workstations, and the viewing and sharing of screen images. Ø A system that provides storage, sharing, and transfer of documents.

Ø

A telecommunication system to link the classroom to external educational resources. 5.8.3

e-Classroom: Adaptations for Visually Impaired The Internet and internet based learning are tremendously important, including the lives of people who are blind or visually impaired. The world-wide-web makes daily life a lot easier for most of us but there are also people who cannot fully take advantage of the benefits of the web such as blind people. Not every e-classroom platform is optimally designed for use by individuals with visual impairments. When an e- classroom is built without regard to proper web design, they become inaccessible by people with vision loss who use access technology. Fortunately, things are changing and blind people can use the web just like everyone else although web accessibility for blind people is far from ideal. Everyone could be benefited by accessible e-classroom. The same good techniques that

146 make platform accessible to those of us who use access technology benefit users of other devices as well. For example, people with slower Internet connections and those using devices such as cell phones or tablets that have smaller screens. Since the web and computers are primarily a visual media, blind people obviously cannot use it without specially designed technology. They typically use web browsers which are specially designed for blind people or the so-called screen readers - software programmes which work by speaking the text. Some, however, also use the refreshable Braille display which, like its name suggests, converts textual information into Braille characters. In addition to enabling blind people to understand the content on a particular website, screen readers can also "detect" text that is highlighted or differently coloured, read pre- selected text on demand, "determine" the location of the cursor, etc. by which they make the web fully accessible to blind people but only under condition that the websites they are accessing are designed with the use of codes that can be "read" by screen readers. Despite the ethical standards, not all website and web based platforms are fully accessible for blind or visually impaired people. This is partly related to the fact that blind people form a small percentage of disabled web users and partly due to misconception that making proper adjustments to improve web accessibility is complicated and expensive. But it is not complicated nor expensive. It is important to mention that web accessibility for blind people does not affect the attractiveness or usability of the website for non-disabled people in any way. And proper adjustments that make a website accessible for all users regardless of their disabilities are not expensive nor complicated. 5.9 Let us sum up Computer Aided Learning is an integrative technology, which describes an educational environment where a computer programme is used to assist the user in learning a particular subject. It refers to an overall integrated approach of instructional methods.

147 Computer aided learning is a device as well as a learning strategy to make teaching more interesting joyful and sustainable. Social media are forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as text, pictures and videos) Social media has gained credibility over the years as a trusted source of information and platform where individuals or organizations can interact with other individuals. Social media infuses today's society with millions of us engrossed, some would argue to the point of unhealthy addiction, in the latest happenings via apps such as Facebook and Twitter. The use of social media in education provides students with the ability to get more useful information, to connect with learning groups and other educational systems that make education convenient. Social network tools afford students and institutions with multiple opportunities to improve learning methods. A blog or, weblog

is a discussion or informational website published on the World Wide Web consisting of discrete, often informal diary-style text entries.

These text entries or multimedia entries are known as posts. Posts are typically displayed in reverse chronological order, so that

the most recent post appears first, at the top of the web page.

The emergence and growth of blogs in the late 1990s coincided with the advent of web publishing tools that facilitated the posting of content by non-technical users who did not have much experience with HTML or computer programming. Blogging can be seen as a form of social networking service. Indeed, bloggers do not only produce content to post on their blogs, but also often build social relations with their readers and other bloggers.

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publicly viewable comments, and interact with other commenters,

is an important contribution to the popularity of many blogs.

However, blog owners or authors often moderate and filter online comments to remove hate speech or other offensive content. In education, blogs can be used as instructional resources. These blogs are referred to as edublogs. Through teleconferencing two or more locations situated at a distance are connected so that they can hear or both see and hear each other. It allows the distant sites to interact with each other and with the teaching end through phone, fax, and e-mail. The interactions occur in real time. This means that the learners/ participants and the resource persons are present at the same time in different locations and are able to communicate with each other. Tele-conferencing (especially video-

148 conferencing)

increases efficiency and results in a more profitable use of limited

resources. It is a

very personal medium for human issues where face-to-face communications are necessary.

When you can see and hear the person you are talking to on a television monitor, they respond as though you were in the same room together.

Videoconferencing maximizes efficiency because it provides a way to meet with several groups in different locations, at the same time.

The communication in teleconferencing is both vertical and horizontal, and the emphasis is on interaction at all levels. Meaningful interaction in real time is the strength of teleconferencing, and this sets it apart from other technologies used in education. The one-way limitation of educational broadcasting is overcome through the technology configuration. Stimulating responses to visuals, situations, dialogue, discussion, sharing, active experimentation, project work, etc. encourage interactivity. E-classroom as part of our educational technology eliminates the barrier to quickly access new information in the field of research and it bridges the gap between the rich and the poor and urban to remote areas to quest for quality learning. This type of learning creates opportunities to teachers and pupils/students to use the educational resources and other technologies that can increase educational productivity by accelerating the rate of learning reducing costs associated with instructional materials and better utilizing teacher's time. E-classroom has also the potential to improve educational productivity by accelerating the rate of learning, taking advantage of learning time outside of school hours, reducing the cost of instructional materials, and utilizing teacher's time.

5.10 Check your progress

- 1) Computer aided learning is to make teaching more: a. interesting b. joyful c. sustainable d. all of the above
- 2) Computer aided learning is a _____ to make teaching more interesting: a. device b. learning strategy c. Both d. None
- 3) Social media are forms of a. electronic communication b. face to face meeting c. Personal meeting d. Sharing papers
- 4) Major disadvantages of using social media in education: a. It may create distraction b. Cyberbullying c. Discouraging Face-to-Face Communication d. All of the above
- 5) Wikispaces Classroom is a free social writing platform for a. Education b. Industry c. Movies d. Games
- 6) In blogs posts are typically in a. reverse chronological order b. chronological order c. random order d. increasing post size
- 7) Essential features of teaching through teleconferencing: a. Learners present at particular time at dispersed places b. Resource persons present at the same time at the teaching end c. Interactions between them (a & b) d. All of the above

150 8) In e-classroom technology contributions are as : a. learning barrier b. content facilitator c. pedagogical resource d. readiness

9) e-learning creates opportunities to teachers and pupils to a. Use the educational resources b. Use other technologies that can increase educational productivity c. Accelerating the rate of learning d. Reducing costs associated with instructional materials.

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TECHNOLOGY AND EDUCATION TECHNOLOGY AND EDUCATION OF THE VISUALLY IMPAIRED OF THE VISUALLY IMPAIRED C-15 (V .I)

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mission? Any system of education which ignores Indian conditions, requirements, history and sociology is too unscientific to commend itself to any rational support. — Subhas Chandra Bose

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Chairman Prof. Subha Sankar Sarkar, Vice Chancellor, Netaji Subhas Open University, Kolkata-64 Convenor Prof. Atindranath Dey, Director, School of Education, Netaji Subhas Open University, Kolkata-64 Course Writers Unit - 1 Mrs. Minakshi Kushari Unit - 2 Mrs. Arpita Chatterjee Unit - 3 Mrs. Pamela Samaddar Unit - 4 Mr. Kishore Kumar Saha Unit - 5 Mr. Kishore Kumar Saha Editor Mr. Indranil Chatterjee Processing General and Format Editing Ms. Swapna Deb In-house Processing In-charge Ms. Swapna Deb The Self Instructional Material (SIM) is prepared keeping conformity with the B.Ed.Spl. Edn.(MR/HI/VI) Programme as prepared and circulated by the Rehabilitation Council of India, New Delhi and adopted by NSOU on and from the 2015-2017 academic session. AREA - C DISABILITY SPECIALIZATION COURSE CODE - C-15 (H.I.) TECHNOLOGY AND DISABILITY (H.I.) All rights reserved. No part of this work can be reproduced in any form without the written permission from the NSOU authorities. Mohan Kumar Chattopadhyay Registrar

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA - C C-15 (H.I) : TECHNOLOGY AND DISABILITY

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7 Netaji Subhas Open University AREA - C C-15 (H.I) : TECHNOLOGY AND

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Unit - 1 □ □ □ □ □ Technology in Education and Instruction 1.1. Introduction 1.2 Objectives 1.3 Educational and Instructional Technology - Meaning, Nature, Scope, Definition, Objectives and Significance 1.3.1

Meaning and definition

of

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10 1.7 Implication of the above for inclusion 1.7.1

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1.1 Introduction There was a time when students used to be clustered at the feet of their gurus to listen and memorize what was read to them from a precious, laboriously produced hand written manuscript. Then gradually came the printed book which was a form of automation, a kind of teaching machine and students got their own copy to study on their own. So the function of the teacher has been changed. The teacher got relief from the tedious duty of reading information and got time to counsel and provide individualized teaching to students. The teacher got time to improve teaching by Explanation, interpretation and correlate the mass of information and knowledge available in text book to make the learning easier and joyful for the learners. But as the world is progressing very rapidly due to new innovations in the field of science and technology which can be seen everywhere in our daily lives, we need to prepare our children for this new world by changing the way we educate them. The 21st century is dealing with two basic problems namely population explosion and information explosion. The educational institutions has been affected with the increased number of students due to population explosion, increased mobility of students, increased range of students abilities and diverse backgrounds. The world has become a global village and due to technological advancement information flows rapidly among learners. The Administrators and Teachers are actively searching for ways to prepare students for the future, and the educational system has been evolving faster than ever before. A classroom is no longer consisting of four walls with a blackboard and a lecturer in front, talking to students instead of interacting with them. Interactive whiteboards, tablet PCs, projectors, mobiles and a host of other tools allow teachers to present information

11 in ways that prompt discussion and collaboration and make learning interactive and accessible. Educationists believe that if technology is properly supported and widely used in teaching and learning process could help the most of the pressing needs and many teaching problems can be solved by the proper use of rich experience that can be gained through various media. In this technological era therefore, a modern and updated teacher must take full advantage of the existing technological resources to help facilitate students learning. In this first unit of, we will make an attempt at understanding the concept and nature of educational technology. This unit will also help us to understand hardware, software, and systems approaches to educational technology. The scope of educational technology, recent trends and significance of ET. We will also know about another important learning point, the concept of universal design of learning and individualized instruction which can help teachers to teach children with learning problems or who are differently able to access education with the help of educational and instructional technology. 1.2 Objectives After going through this unit, the learner will be able to l Understand the concept of educational technology; l Understand the scope and importance of educational technology in the teaching- learning process; l Understand the role of technology in education and acquire knowledge about its various approaches and modes. l differentiate hardware, software, and systems approach to educational technology; l classify different types of educational technologies and recent trends l understand the concept and importance of universal design of learning and individualised instruction 1.3

Educational and Instructional Technology - Meaning, Nature, Scope, Definition, Objectives and Significance 1.3.1

Meaning and Definition of Educational Technology - Before understanding the meaning of educational technology we should first of all know

12 the meaning of technology. In general we say the application of scientific laws and principles for the purpose of making daily life easy and comfortable is technology. With the help of these applications we make different machines and devices which accelerate and systematize our daily life. Therefore technology refers to two aspects namely - theoretical, based on ideas and practical based on putting those ideas into practice. When we use technology for the purpose of accelerating and facilitating educational process and to make the education accessible to all kind of learners, that technology is called as educational technology. But this is not the complete meaning of educational technology. For many of us the term 'educational technology' is associated only with the equipment and with the hardware, which is used, viz. over head projector (OHP), LCD projector, television, computer etc. However, the concept of educational technology should not be confused or limited with the electronic gadgetry; it has a broader meaning. In its wider perspectives ET includes the entire process of the setting of educational goals, the continuous reforms of curriculum, the tryout of new teaching methods and materials, the evaluation of the education system as an integrated whole and if necessary, resetting of goals on the basis of the findings of evaluation and innovations.

Educational technology implies the use of all type of educational resources - men, materials, machine, methods and techniques, means and media in an integrated and systematic manner for optimizing teaching learning process in its best possible manner. Educationists have understood educational technology in different ways, some of these dimensions are: J.K Gailberth in his book *The New Industrial State* has given two main characteristics of every technology: 1. Systematic application of scientific knowledge to the practical tasks and 2. The division of the practical task into sections and sub sections. These two techniques are followed in educational technology too. For example by using educational technology the teacher first determines the teaching objectives then creates environment, all inputs (hardware and software), selects and applies appropriate teaching strategies for achieving teaching objectives. At the end the teacher will evaluate the students to understand whether the teaching objectives have been achieved or not. If the outputs of the students are not satisfactory then changes will be made in the strategies so that teaching objectives can be achieved. This whole process completes into four stages: 1. Analysis of teaching tasks including inputs, process and outputs. 2. Observation or combined search and analysis for some specific components which has been used during teaching learning process.

13 3. Drawing conclusions about what strategy or behaviour has been successful. 4. Translating the experience into usable language for the benefit of other teachers. Second meaning is Mechanization of educational process of human knowledge for the benefit of big masses through three phases (A) Preservation of knowledge like printed books, tape recorder, CDs and digitals. (B) Transmission of knowledge - sharing knowledge with the help of media. (C) Advancement of knowledge - through machine knowledge reaches to mass and when they face any problem and they try to find out the solution with the help of technology and intelligence then knowledge advances automatically. Third meaning is ET unites the science of learning with Art of teaching. Definitions of educational technology: There are number of definitions of educational technology which have been provided by educationists, Researchers and scholars over the years. Some of the representative definitions are given below to get a better understanding of the term "educational technology".

G.

O.M. Leith: "Educational Technology is the systematic application of scientific knowledge about teaching-learning and conditions of learning to improve the efficiency of teaching and training (Leith, 1967)."

S.S. Kulkarni: "

Educational Technology can be defined as the application of the laws as well as recent discoveries of science and technology to the process of education (Kulkarni, 1969)."

D. Unwin: "Educational Technology in concerned with the application of modern skill and techniques to requirements of

educational training. This includes facilitation of learning by manipulation of media and methods, and the control of environment is so far as this reflects on learning (

Unwin, 1969)." W. Kenneth Richmond: "Educational Technology is concerned with providing appropriately designed learning situations which, holding the view of objectives of teaching or training, bring to bear the best means of instruction (Richmond, 1979)."

J.R. Gases: "

Educational

Technology has to be seen as a part of persistence and complex endeavor of bringing pupils, teachers and technical means together

is

an effective way (Ford Foundation Team, 1971)."

14

US President Commission of Enquiry: "Educational Technology may be defined as

a systematic way of designing, carrying out and evaluating a

total process of teaching and learning in terms of specific objectives based on

findings from research in human learning and communication (

cited in, tucker, 1979:159). "

Educational technology offers the means

to reach large numbers in remote and inaccessible areas, remove disparity in educational facilities available to the disadvantaged, and provide individualized instruction to learners conveniently suited to their needs and pace of learning (

NPE, 1986). - Educational technology is a communication process resulting from the application of scientific methods to

the behavioural science of teaching and learning. This communication may or may not require the use of media such as

television broadcasts, radio, cassettes etc. (UNESCO, 2001). Based on the above discussion we may conclude that

Educational technology is concerned with the systematic application of science and technology in the field of education.

It is helpful for both, the teacher and learner to set the learning objectives, strategies, procedures, materials and establish

a good communication between them and make the teaching learning process more effective. 1.3.2 Nature of

Educational Technology | ET is the applications of scientific principles to education. | ET is the development of methods

and techniques for effective teaching-learning. | ET is not confined to the use of electronic media in Education. It

includes systems approach also. | ET involves total teaching and learning process:input, output and process aspects of

education. | ET provides technical guidance and solution to the educational problems. | It helps in effective

communication between teacher and students. | ET speed up the process of learning. | ET is very effective in large

classroom management by using projector, microphone, speaker etc. | ET can train large masses with the help of media.

15 | New concepts are coming out with help of edu tech like e-learning, online learning, mobile learning etc. So we can

say educational technology has the potential to bring about improvement in education both qualitatively and

quantitatively. 1.3.3 Objectives of Educational Technology | General Objectives The objectives of Educational Technology

at macro level or broad level are as under: 1. Identifying educational needs of the community. 2. Determining the aims of

education. 3. Developing a suitable curriculum. 4. Developing certain models to improve the process of teaching and

learning. 5. Identifying the human and non-human resources. 6. Developing

the appropriate aids and equipment to meet the educational needs. 7. Identifying the major obstacles in the

educational environment and the ways and means to tackle those. 7. Suggesting remedies to overcome the above traced

out obstacles. 8. Managing the whole system of education including planning, implementation and the evaluation

phases. | Specific Objectives The objectives of educational technology

at micro-level i.e., in view of specific class- room teaching are as under: 1. Identifying the educational needs and

analyzing the characteristics of the pupils. 2. Determining the class-room objectives in behavioural terms. 3. Analysing

the contents of instructions and

organise them sequentially. 4. Identifying the available and necessary teaching-learning materials and resources. 5.

Planning the suitable teaching strategies 6. Utilizing the man-material resources for achieving specific classroom

objectives.

16 7. Evaluating class-room teaching in terms of students' performance. 8. Providing feedback to the teacher and the students for betterment of teaching- learning process. Regarding objectives of Educational Technology, Hilliard Joson has given the following objectives : 1. Transmission of Information. 2. Serving as role model. 3. Assisting the practice of specific skills. 4. Contribution to the provision of feedback. l

Main Objectives of Educational Technology 1. To help to improve the environment required for the teaching learning process. 2. To make the class-room teaching-learning more effective. 3. To modify the behaviour of the teacher and the learner. 4. To improve and update the methods of

teaching and learning. 1.3.4 Origin and history of educational technology: To describe the emergence of educational technology we need to discuss it from two aspects. The first aspect is the global and general worldwide historical development, while the second aspect relates to the historical development at the local level or Indian history. Global Historical Development of Educational Technology Stone Age Period: We have studied in our school that during Stone Age people used to live in cave and they used to draw on the cave wall, tree trunk, slabs, and rocks to share their experience. There was no teaching concept or standardized writing language for communication. People used to experience and learn from the environment. Those drawings are associated with the invention of writing technology. At about 3100 B.C Egyptians devised a system of picture writing called hieroglyphics. Gradually standardized writing system evolved in many countries. With the progress of civilization education system emerged. Socrates used to teach his pupil with oral dialogue system and pupil used to memorize it. Hand written books were in uses for teaching.

17 The Age of Book and Chalkboard In 1456, Johann Guttenberg developed the printing machine and printed the first Bible. With this invention, the art of printing spread widely and other books were produced. The one each to one teaching or verbal method of teaching changed and knowledge spread among pupil in the form of books. School system started and teacher started teaching with the help of blackboard and chalk. Mass Communication Age The invention of the radio and the television made a significant landmark in the development of Educational technology worldwide. Knowledge spread all over the world without any boundary and to the mass. Mass education and education to less privileged society was easy with the help of this technology. Though, the radio served this purpose better than the television as it was low cost. The Information Communication Age/Computer Age The invention of the computer has remarkably changed the educational practice the world over. With computer technology comes the information age. The first computer was invented by IBM. With the advent of the computer technology the following developments started (Conway, 1990): (i) Electronic board akin to the white boards with special pens capable to transferring data written on it to the system; (ii) Multimedia system equipped with a sound blaster and speakers; (iii) CD-ROM player / DVD-ROM player (on which audio, images and video files are recorded); (iv) Video disk player and a videotape player controlled by the personal computer PC); (v) PC - PC conferencing mode; (vi) The touch screen and voice recognition/communication devices for the special education students; (vii) The digital camera that combines very well with computer where images can be shown and be manipulated / printed; (viii) Advances in virtual reality - virtual libraries, virtual universities, etc. Computers are now using packaged instructions like CAI, CBI, and CAL either in a mediated form or in non-mediated form using any or a combination of the styles of drill and practice, tutorials, games, simulations, and/or interactive knowledge-based system.

18 So nowadays education does not depend on face to face interaction between teacher and learner and a closed set up rather than education is now anytime anywhere matter with the help of technological devices and programmed learning. Online learning with the help of internet facility has opened limitless quantity of doors of possibilities for contemporary learner to make their life happier than ever before. Use of educational technology in India: Indian education started with Gurukul system where pupil used to listen to their gurus and learn. Then gradually came the age of books and some other teaching material like, blackboard chalk, teaching aids etc. Before 1960 the term educational technology was not popular to Indian education system. But now educational technology is being used in all sector of education and both in formal and non formal education system. The use of technology properly started and became popular after the invention of radio. In 1929 Bombay aired some educational programmes for school children for the first time. As the radio network cover most of the part of the country so it was easy to reach many people at a time. Thus various education programme was started to develop to educate the mass. Radio was used to teach people about agriculture, weather, basic literacy and educational programmes for both in school and out school groups. The school TV project was first introduced in Delhi in 1961 and it is widely used in education sector. In the year 1972-1973 govt. of India launched first education technology project.

With the advent of satellite services and with the launching of EDUSAT project,

television started to be used more and more for the national development and reached to the masses living in remote or rural areas. The central institute of technology NCERT established in 1984. The CIET started working to develop software materials to meet the educational needs and also conducted research, trained human resource to use educational technology in education sector. In 1975, the satellite television experiment (SITE) was launched. INSAT was used by UGC. National open school and IGNOU established in 1979 and 1985. Distance mode education, NOS started to use technology with combination of media and it was helpful for those who could not complete formal education. For teaching foreign languages like, German, Spanish, French etc also technology is used.

19 Nowadays we are using computers, advanced form of ICT and internet in association with various technological aids in education sector. Country like India where population is very high and scope of higher education is limited in rural and remote areas technology is kind of boon which can help to learn at own place. To sum up, educational technology in India is being used as under: Ø School broadcast Ø TV Telecast lessons Ø Teacher preparation Ø Distance education Ø Correspondence courses Ø Development of audio- visual materials Ø Language teaching Ø Production of multipurpose kits or instructional aids Ø Computer literacy and studies in schools.

1.3.5 The Scope of Educational Technology (By Lucido, 1997)

Educational

technology is the

development, application, and evaluation

of systems, technique, and aids to improve the process of human learning. (

Association for Educational

Communication and Technology)

ET is

the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning. (

Hoffman, 1994-2009, as

cited by www.books.google.com) ET is a systematic, iterative process for designing instruction or training used to improve performance. As

Educational technology aims to improve the quality of human learning process so

the scope is unlimited as it tries to reach out to more and more people involved in the teaching-learning process. The scope of educational technology

can be described under the following points: 1. Spelling out Educational goals and Objectives. Ø Help for the formulation of objectives and goals of education based on individualized and social needs.

20 2. Curriculum Development. Ø Planning of curricular and co-curricular inputs in order to realize planned goals and objectives. 3. Developing Teaching-Learning materials and Resources. Ø Develops necessary learning materials in the form of

programmed learning books, computer learning packages, mass media instruction, individualized self- instructional packages etc. 4.

Developing Human resources. Ø ET covers the area of teacher education. 5. Developing Strategies. Ø

Teaching strategies, approaches and methods are devised and developed catering to different types of students. 6.

Developing Multi-Sensory Aids. Ø Design, development of audio visual aids. 7. Develops Feedback Mechanism. Ø ET

develops tool of evaluation to provide feedback. 8. Develops Passive Instruction Services. Ø Educational radio, TV, computers are used for transmitting information. They are passive services since all decisions are in the hands of the providers, i.e., what to be presented, for how long, in what sequence and when. 9. Develops Interactive Instruction

Services. Ø ET tries to provide opportunities for the learner to control the pace, mode of presentation etc. e.g. Computer Assisted Instruction (CAI), Teleconferencing via Internet etc. 10. Develops Learning Environments. Ø ET develops learning

environment that are learner friendly. Eg. Simulation 11. Developing Information Resources. Ø ET bridging the gap between developments in Information Technology and Education. Information Resources:Eg. E-libraries, On line

encyclopaedia,World Wide Web, 12. Develops Communication Devices. Ø ET has developed communication devices for students who have problem in communication.

21 Thus we can say Educational technology aims at increasing efficiency, effectiveness of teaching learning process and simultaneously aims at bringing pedagogical changes for betterment of education.

It works for over all

planning and organization of the system or subsystem of education. 1.4

Educational Technology

and Instructional Technology: Role and Recent Trends The two concepts Educational Technology and Instructional Technology are used interchangeably. Instructional Technology is a subset of educational technology, based on the concept that instruction is a subset of education. Educational Technology is wider concept than Instructional Technology as education is wider than instruction. Instructional Technology is the theory and application of proper tools and techniques in instructional settings, while educational technology is concerned with whole education process and contexts. All parameters of instructional technology are suited within that of educational technology, while all of educational technology does not suit within the parameters of instructional technology. Instructional Technology is not merely a knowledge area that deals only with audiovisual instructional materials. It is a way to think about problems of teaching and learning to find workable solutions (Wittich&Schuller, 1973). 1.4.1 Definition and Meaning of Instructional Technology

As defined by Momurin (1970), Instructional technology

is a

systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction.

Sharma (1989) defined

instructional technology

as a network of techniques or devices employed to accomplish certain defined set of learning objectives.

Instructional technology applies the

principles and theories of psychological learning to get deep insight into the content, structure and sequence of instruction to develop instructional resources for attaining desired learning outcomes. In other words, instructional technology works at shaping the instructional uses of the materials to turn them into instructional resources.

In brief we can say the term "Instruction" refers to systematically organized programme designed to produce certain knowledge, skill, understanding, attitude, and behaviour patterns among learners.

22 The term "Technology" refers to systematic application of scientific or other organized knowledge to practical tasks.

So a technology of Instruction is a particular systematic arrangement of teaching learning events designed to put the knowledge into practice in a predictable effective manner so as to attain specific objectives.

Further, Instructional technology determines

and provides appropriate stimuli to the learner to produce appropriate responses for making learning more effective.

The

definition of Instructional Technology prepared by

the

Association for Educational Communications and Technology (2000) is as follows,

Instructional Technology is

the Theory and Practice of Design, Development, Utilization, Management, and Evaluation of processes and resources for learning.

23

From the above it is understood, theory consists of concepts, constructs, principles, and propositions that serve as the body of knowledge; Practice is the application of that knowledge to solve problems; Design refers to the process of specifying conditions for learning; Development refers to the process of translating the design specifications into physical form; Utilization refers to the use of processes and resources for learning; Management refers to processes for controlling Instructional Technology, and Evaluation is the process for determining the adequacy of instruction. (Seels & Richey, 1994). Through Instructional Technology teachers share content or information to the learners. Contents can be presented on three levels, memory, understanding and reflective levels. However instructional Technology present the content to the second level of teaching only and for reflective level of teaching, help of teaching technology is necessary. In a similar way communication also has two elements verbal and nonverbal. When teacher asks question and students give answer then it is called as verbal communication. But when teacher uses his body actions or gestures or material for communicating the content then it is called as nonverbal instruction. For example if a teacher wants to show the meaning of clap to the class he does the activity and say it is clap. Instruction can be provided by the teacher or by the machine like in online learning or self instructional material, and it does not make any difference. For example Open Universities gives teaching instructions by using TV, radio or Internet to thousands of students in a single sitting and who's over is interested can take the benefit of this program. So instructional technology is based on hardware approach as all the communication with the learners are being done by using audio video recorder, radio or television or computers. There is no direct interaction between teacher and students as we see in teaching or behaviour Technologies. Here teacher plays the role of an instructor and he/ she does not invite the students to participate in the lesson. With effective communication skill teachers makes the instruction proves interesting and intellectually stimulating. In instructional technology, instructional materials are prepared based on the objectives formulated in advance, and then content is presented by using different strategies, techniques and material. At the end the outcomes of the learners are evaluated in order to ascertain whether instructional process is successful or not. A teacher needs knowledge of psychological and scientific principles and laws and awareness of social values and norms, teaching maxims and principles of teaching while preparing instructional materials.

24 1.4.2 Characteristics of Instructional Technology: 1. Objectives of cognitive domain can be achieved. 2. This technology is helpful to fill up the deficiency of effective teachers because we can communicate the instructional material to thousands of learners at a time by recording the lecture of an effective teacher into machines. 3. By the use of this technology students can learn according to their own ability and needs and pace. Can practice same content repeatedly as long as he wants without the help of teacher. 4. With trial and error process students learn independently. Students can be reinforced regularly which will lead to for the right responses to occur. 5. Analysis of the subject matter is also possible with the help of this technology and it can make the presentation easy and logical. 6. Developing instructional technologies based on psychological learning theories and principles. To develop a successful instructional plan/strategy for a specific content following steps should be kept in mind: 1. Setting of instructional objectives To develop a successful instructional plan first we needs to plan and set instructional objectives. After learning the content or matter what type of behavioural changes are expected from the learner that needs to be decided and written

in behavioural terms by taking the help of Robert eggert's approach Robert Miller approach or RCEM approach before proceeding further in the task of imparting instruction. Instructional objectives must be based on the following: Ø

Grade level of the learner Ø

the physical emotional social and mental potential of the learner

Ø

the previous experiences of the learner related to the subject and topic Ø the main material resources available for imparting instruction

Taking decisions about the instructional material Based on the instructional objectives learning experience and teaching materials need to be decided and organized for delivering the instructions successfully. Instructional material will be selected and used based on the

following the principles of simple to Complex specific to general theory to practice etc.

There are different types of teaching learning material available from visual to audio-visual aids and many technologically advanced products like computer, projector, audio books etc, so the teacher must select appropriate TLM based on the content and instructional strategy.

25 Taking Decision about the media and methods: To carry out the teaching learning process effectively, appropriate decision must be made for selecting media and method for delivering instructions. Various types of instructional strategies are available, so teacher must have enough knowledge to select and use the strategy properly according to the syllabus and topics. Some of the important

instructional strategies like lecture strategy, demonstration strategy tutorial strategy innovation strategy description strategy, role playing, gaming, group discussion, question answer, discovery, problem solving

Strategies and strategy assignment etc. can be used for teaching and learning. Special instructions are needed for carrying out auto instruction of

self learning like program instruction carrying out with the help of teaching machines, computer assisted instruction, personalized system of instruction CSI learner construction LCI, etc.

Taking decision about the proper instructional environment: A suitable instructional environment must be chosen by the teacher based on the topic for carrying out the particular type of instruction. Helping in the task of evaluation : Evaluation is a very important part in

any type of instructional activity carried out by the teacher or learner in the shape of auto instruction to understand that the instructional objectives have been achieved or not. Some evaluation strategies are , teacher made test, standardized test, construction of the achievement test, evaluating the cognitive affective and psychomotor changes in people's behaviour through suitable test and techniques, self evaluation test Strategies and techniques.

So in this way instructional technology can help the teacher as well as the learners in the attainment of the stipulated instructional objectives. 1.4.3 Advantages and Needs of Instructional Technology n Advantages

of Instructional Technology Ø Advantages of Instructional Technology Ø Makes the instruction more interesting. Ø Delivery of instruction is more standardized. Ø Learning becomes more interactive by applying accepted learning techniques. Ø

Quantity

of learning is improved. Ø Instruction can be provided as and when required. Ø Help in development of positive attitude of students towards learning and to the learning process itself. Ø The role of instruction can be appreciably changed in positive direction.

26

n Needs of Instructional Technology The purpose of instructional technology is to make education more productive, individualistic, powerful and scientific which enhances the learning more immediate with more equal access. The use of instructional Technology can solve educational problems related to are given below as l Growing population l

Heterogeneity of learners l Divergent and even conflicting needs of the learners coming from different socio- cultural areas l Rapid development of new information l Knowledge explosion l Development of communication devices l

Extending curricular and social changes arising from modernization 1.4.4 Role of Educational Technology in the

Teaching-Learning Process 1. Educational Technology has brought revolution in the entire education system. Previously, the teachers used to be the sole interpreter of knowledge to the learners and the textbooks was the sole resource. But

now this conventional role has been changed and it has opened up the new areas of teacher functions such as management of resources and management of learning. Today, teachers have a range of media to assist and supplement

the instructional work. With the help of technology teachers can even specify the learning intentions, select the topic, identify the stimulus situation, determine media, manage teaching and finally conduct evaluation and modify the

instructions in the light of evaluation results. So the teachers have the opportunity to design meaningful learning experiences that embed technology. 2. Learning with technology has become essential in today's schools. Worldwide,

governments, education systems, researchers, school leaders, teachers and parents consider technology to be a critical part of a child's education. 3. Educational process can't proceed systematically without the help of educational

technology. Every aspect of educational system is fully enlightened with educational technology. 4. Educational

technology has provided a scientific base to the educational theory and practice. It has transformed a passive classroom to an active and interactive classroom, with audio-visuals, charts and models, smart classrooms and e-learning

27 room which has drastically motivated and increased the attention level of the students. 5. The teaching-learning climate of the educational institutions has been modernized.. The learners are being exposed to professionally designed programmes on video or computers under programme learning concept. 6. Educational technology helps the learners to learn at their own pace with repeated practice so teachers are relieved of the burden of routine repetition for exercise and revision purposes. It has helped and supplemented the teachers in their instructional programmes also through the structured lessons for remedial, enrichment or drill purposes. 7. Educational technology has provided well-integrated structured materials for teachers thus saving a lot of their time which in turn may be utilized for creative work and quality improvement. 8. Educational technology helps the teacher to use scientific methods for solving educational and administrative problems. It adds to the teaching competence of teachers and inculcates a scientific outlook and scientific temper in teachers and students. 9. Educational technology has made the teaching-learning process more effective and process oriented. Television, Radio, V.C.R, Computers and LCD projectors etc. have enriched and facilitated effective transmission of knowledge. 10. Educational technology has improved the process of teaching by giving it Teaching Aids and Programmed Instructional Material. 11. Feedback devices have modified teaching-learning behaviour so produced effective teachers in the teacher-training institutes. 12. Educational programmes on T.V, Radio and Internet are beneficial for Students who appear for higher or competitive examinations. 13. Examination process, evaluation, classroom-teaching and various other sectors of education are being modified with the help of ET and new researches are going on to make it more effective for learning. 14. Educational technology can help teachers to teach according to individual differences of learners and based on the learners need assistive technology can be introduced for smooth learning. 15. It helps in constant social interaction; digital content can be easily created and shared among large population. 16. Technology helps to find information by accessing the internet through cell phones and computers or chatting with friends on social networking sites.

28 17. Educational technology has provided scientific foundation to education through the theories of learning and intelligence and it allows for 24/7 access to information. 18.

Thus educational technology is required in each and every aspect of teaching learning process and serves all the purposes for modern education.

According to Davis and Hartley. 19. "Educational Technology in its wide sense as understood today, includes the development, application and evaluation of systems and techniques involving men, machines, media and instructional material as components, so as improve the process of human learning and attain the educational goals. -" 1.4.5 Recent Trends of Educational Technology and Instructional Technology Let us look at a table to understand the recent trends in technological development in education sector: Source: IGNOU E-gyankosh, Santosh Panda

29 From the above tables it is very clear that technology has a great impact on the entire education system. From face to face interaction or lecture method to online learning, things has been changed a lot. Now classrooms are well equipped with different types of technological devices from smart board to laptops, speaker, microphone, head phone, projectors, smart phones, e books, audio books, internet, Wikipedia, you tube, blogs, podcasts, moodle, CAI, and many more things to improve and personalize the learning experience. 1.5 Major approaches of Educational Technology Lumsdaine(1964) has suggested following approaches of Educational technology:- A. Hardware approach or first Educational technology B. Software approach or second Educational technology C. Systems approach or third Educational technology D. Individual and Mass Media Approach. 1.5.1 . Hardware Approach (Technology in Education) This approach implies the use of mechanical materials and equipments in education. The term was first introduced by James O. Finn & Others. This approach originated from

Physical Science and engineering and is based on the concept of service, i.e., using technology in education (Silverman 1968).

This approach is a by-product of the scientific and technological developments of the 20th century. In this approach the main feature is the use of audiovisual aids like charts, models, film-strips, slides, audio cassettes, and sophisticated equipments like film projectors, OHP, slide projector, radio, tape recorder, LCD projector, DLP Projector, CD players, DVD Players, TV, computer etc in teaching learning process.

Hardware approach mechanizes the process of teaching so that teachers would be able to deal with more students with less expenditure, less time and effort

in educating them. Human knowledge has three aspects I Preservation, I Transmission and I Development. With the invention of printing machines the preservation of knowledge

started. The knowledge is preserved with these machines in the form of books and kept in the libraries,
30

taperecorders and films.

The second aspect of human knowledge is its transmission. A teacher can impart knowledge himself to his pupils. Now days, transmission of the knowledge is supported by machine like mike, radio and television.

With these, thousands of pupils can

be benefitted at a time. The third aspect of human knowledge is its development. Teachers can study through online libraries and enrich themselves other than that they can do research work to develop new knowledge.

For this purpose, presently the researcher uses the electronic machines and computers to collect and analysis of data.

Hence, all the three aspects of knowledge allow the use of machines. In short, the teaching process has been mechanized. The mechanization of teaching process is termed as the Hardware Approach

and also called as technology of education. 1.5.2 Software Approach (Technology of Education) This approach implies the use of Psychological principles and learning theories in education. The term was first introduced by Skinner & Gagne and it originated from Behavioral Science.

Software

Approach is also termed as Instructional Technology or Teaching Technology or Behavioural Technology.

This approach

of educational technology

involves a systematic, scientific application of appropriate scientific research, both from the physical science, social sciences and particularly from psychology and sociology, in order to solve a problem. Here, it is important to understand that technology of education emphasizes on the techniques of teaching and learning derived from the principles, ideas, and practices drawn from various fields of knowledge such as; psychology, sociology, philosophy, management, cybernetics, etc. in order to optimize the teaching-learning process. Instead of using machines this approach uses the principles of teaching-learning for bringing desirable changes in the behaviors of the pupils. In software approach machines are only used for clarification of concept and principles. So this technology is related with the mental aspect of the task and it writes the educational objectives in the behavioural terms, selects suitable presentation strategies of the subject matter, uses reinforcement devices and evaluates the outcome of the learners. According to Silcherman (1968) it is also called as constructive educational technology. It consists of 6 steps: 1. Analysis of instructional problems. 2. Writing objectives in behavioural terms 3. Selecting suitable teaching strategies 4. Reinforcing the students on right responses

31 5. Selecting or constructing measuring instruments for evaluating instructional outcomes. 6. Decision making and improvement. From the above discussion it is very clear that both software and hardware approaches are so interlinked that they cannot be separated from each other. One without the other is incomplete. It is software approach which makes the hardware approach function well. 1.5.3 Systems Approach System: A system is any collection of interrelated parts that together constitute a larger whole. Many number of units working together for a particular goal. These component parts, or elements of the system are intimately linked with one another, either directly or indirectly, and any change in one or more elements may affect the overall performance of the system, either beneficially or adversely. The Term was first introduced by Davis & Hartley. Definition: System approach is an integrated, programmed complex of instructional media, hardware and personnel whose components are structured as a single unit with a schedule of time and sequential phasing.

32 It is a modern approach in educational administration and organization. It acts as a link between hardware and software approach. It is

also known as 'Management Technology'. It has brought to educational management a scientific approach for solving educational administrative problems.

As we know that teaching learning is a complex process and it needs systematic planning to achieve pre determined objectives. To streamline the teaching-learning process we use the systems approach which is concerned with systematic planning, designing, construction and evaluation of the education system. Systems approach is applied to develop, implement and evaluate the whole educational system, sub-system, and curriculum or, for designing an individual lesson. There are four elements of the systems approach: input, process, output, and analysis & feedback. Let us understand, how these elements function together to make the education system more productive. Parameters of system approach So we see that

the System Approach focuses first upon the learner and then course content, learning experiences and effective media and instructional strategies

and then the performance level of the students. Based on the performance level feedback will be collected from all including teachers, students and administrators .So if there is any problem within the system then it will be identified and rectified and also the parameters of the system approach can be modified for improving the overall teaching learning system.

Such a system incorporates within itself the capability of providing continuous self-correction and improvement. It is concerned with all elements of instruction including media, including hardware and software and evaluates various aspects of the education system, and sub-system. The main purpose of the systems analysis is to create a systematic, organized, effective and enabling learning environment for both teachers and students.

33 1.5.4 Individual and Mass Media Approach Due to information explosion and population explosion we need to use mass media which is a boon of science and technology to convey loads of information to larger section of people within short time span. For example newspaper, TV, radio, internet etc. As number of students are increasing day by day and world has become a global village, now a days this mass media technology is utilized for educational purposes also.

Mass media

have proved to help in classifying concepts, stimulating group and individual activities, developing a collective critical awareness, changing attitudes, imposing a new structure or organization on certain subjects and encouraging originality and creativeness.

Therefore, teachers need to be properly motivated and interested

for using such materials. Other than that training is also necessary for the teachers to use and maintain the materials. For a learning society like India which has a huge population of one billion, the media systems based on modern technology constitute a very potent tool for education and development. It has varied and numerous applications bearing on almost all aspects of individual and social life. In one sense, all these uses of information technology basically have their impact in educating people, giving them knowledge, skills, improving understanding and changing their attitudes. The media is used for both formal and non- formal education systems and also for individual and mass levels of learning. Technology is used for Distance Learning Mode courses and appears to be an avenue of promise for every country in the world. In India, IGNOU and CIET (Central Institute of Educational Technology) are launching distance education programmes throughout the country. In general, distance education employs a variety of delivery systems such as correspondence courses, radio, television, audio-visual materials, telephone lessons and teleconferencing. So it is seen that mass media approach is very effective role to play in adult education. In the formal school situations also we can use media to make the teaching learning process more interactive or interesting. The Delors Commission (P-173) also observed that the new technology has created a host of new tools for use in the classroom as under: -- Computers and Internet, - Cable and Satellite TV Education,

34 -- Multimedia equipments, -- Inter-active information exchange system including e-mail and on-line access to libraries and public data base. Ø Teachers can coach their students to use media effectively for the information (like helping students to find specific websites) and in this way, a new partnership can develop in the classroom. Ø If technology and media is used with the conventional mode of education it can enrich the formal system by filling instructional gaps, updating knowledge, and giving new learning experiences. Ø With the advent of computer and internet the information and knowledge is not limited within teacher and library only, the students can access to any information at home also and can learn on their own. Ø The role of media and educational technology has been clearly defined in NPE-86 as under: Ø "Modern communication techniques have the potential to bypass several stages and sequences in the process of development encountered in earlier decades. Both the constraints of time and distance become manageable. In order to avoid structural dualism, modern educational technology must reach out to most distant areas and most deprived

sections of beneficiaries."

Importance

of Mass Media: 1.

Mass Media provide information to the mass within a less time. 2. It takes a wide coverage of information regarding anything that is happening in any corner of the world. 3. It brings the entire world to the individual or to the classroom.

Children spend hours together sitting in front of

the

television and can visualize, hear and acquire knowledge about the world

so it is kind of multisensory learning also. 4.

These media easily reach groups, allow repeated use, give more reality, influence attitudes, show cause and effect relationships and ultimately motivate

the audience. 5. It sends information to remote places and helps in distant learning. 6.

It helps in modification of attitudes, inculcation of desirable values and acquaintance with cultural heritage. 7. Mass media acts as an agency of social change. 8. Mass media are useful for reinforcing group dynamics and interpersonal communication.

35 9. Mass media as means of communication make ideas clear to children and help them to acquire correct knowledge.

They help in simplifying and in giving vividness to explanation. 10. Mass Media make the instruction concrete and stimulate interest and excite curiosity in things.

So

education today, has a far greater responsibility than it had ever before. It has to meet the demands of a dynamic world which change its character every day. Contemporary education has to be more comprehensive and complete than it was ever before.

The role of the various agencies of education like home, society, community etc. has consequently increased, so has the role of the mass media like television, radio, cinema, newspaper increased.

According to educationists and researchers use of mass media like educational TV, radio, press, newspaper, films, documentaries, internet, educational apps, mobile, etc has made the quality of education improved and also made the learners and teachers modern and up to date. Individual approach: Using individual approach is a modern trend in education. If a student cannot understand a matter in classroom set up, they need individualized teaching and repeated practice but due to heavy workload teachers cannot help a student individually always. So with the help of technological equipment and media like Programmed instruction, programmed books, and programmed learning modules, teaching machines, computer assisted instruction and computer managed learning, video and audio recorded learning and instructional material, email, internet, teleconferencing,

online library etc these problems can be solved. The use of computers and multimedia systems make it possible to design individual learning paths along which each pupil can move at his/her own pace. The compact disc technology (CD) has a special role to play, for it can handle large amount of information complete with sound pictures and text. Interactive media allows pupils to ask questions and look up information themselves. It is observed that pupils who are under-achievers or experienced difficulties in conventional mode of education reveal their talents better and show more motivation and curiosity in informal mode. But development of these technologies cannot replace the textbook and the teacher. In child's education they have their own role to play. Text books are the cheapest media and easiest to handle, illustrating the teacher's lessons, allowing the pupils to 'revise lessons and to gain independence. Similarly, the development of these technologies does not diminish the role of teachers, but it is also true that in today's world teachers cannot be regarded as the only repository of knowledge that they have to pass on to the younger generation. Now the role of the teachers have been changed, now they are learning partner, guide, instructional designer and supervisor for self learning and how to seek, look up and appraise facts and information.

36 1.6 Differential Instruction, Universal Design of learning and Individualized Instruction 1.6.1 Differential Instruction As we know that 'one size doesn't fit all' (Willis and Mann 2000) so the one single curriculum, one instructional or evaluation strategy may not be suitable for all type of learner. Every child is unique and special and differs from one to another in size, shape, and social development. Students also learn differently. Teachers can no longer teach "The Lesson" and hope that everyone gets it. Based on this knowledge, differentiated instruction applies an approach to teaching and learning that gives students multiple options for taking in information and making sense of ideas. Differentiated instruction is a teaching theory based on the premise that instructional approaches should vary and be adapted in relation to individual and diverse students in classrooms (Tomlinson, 2001). Differentiated instruction recognizes the fact that we have a diverse student population and teachers must understand students' background knowledge, readiness, learning styles, language and interests. According to right to education Act (RTE) - 2009, the present day classroom should be inclusive in nature and welcoming and is pedagogically capable of educating the naturally diverse population of students who arrive at its door. Based on the Differentiated instruction principles teachers can create such classrooms. Differentiated instruction is a technique that teachers use to accommodate each student's learning style and instructional preferences. This strategy may involve teaching the same material to all students using a variety of instructional methods, or it may require the teacher to teach content at varying levels of difficulty based on the readiness, interests and ability of each student. The foundation of Differentiated instruction is based on Piaget's constructivist theory, Vygotsky's socio-cultural theory; Gardner's multiple intelligence theory, varied learning style. According to Piaget' teachers should facilitate the learning process by organizing learning activities and using variety of aid material according to the level of student's cognitive structure to enable him to construct knowledge through his experiences. According to Gardener teachers should provide educational opportunities in such a way that nurture the strong area of intelligences but also allow students to use all their intelligences.

37 Tomlinson (2005), a leading expert in this field, defines differentiated instruction as a philosophy of teaching that is based on the premise that students learn best when their teachers accommodate the differences in their readiness levels, interests and learning profiles. A chief objective of differentiated instruction is to take full advantage of every student's ability to learn (Tomlinson, 2001a, 2001c, 2004c, 2005). In addition, she points out that differentiating can be performed in a variety of ways, and if teachers are willing to use this philosophy in their classrooms, they opt for a more effective practice that responds to the needs of diverse learners (Tomlinson, 2000a, 2005). Tomlinson (2000) maintains that differentiation is not just an instructional strategy, nor is it a recipe for teaching, rather it is an innovative way of thinking about teaching and learning. To differentiate instruction is to acknowledge various student backgrounds, readiness levels, languages, interests and learning profiles (Hall, 2002). Differentiated instruction sees the learning experience as social and collaborative, the responsibility of what happens in the classroom is first to the teacher, but also to the learner (Tomlinson, 2004c). Building on this definition, Mulroy and Eddinger (2003) add that differentiated instruction emerged within the context of increasingly diverse student populations. Within the learning environment permitted by the differentiated instruction model, teachers, support staff and professionals collaborate to create an optimal learning experience for students (Mulroy and Eddinger, 2003). Also in this environment, each student is valued for his or her unique strengths, while being offered opportunities to demonstrate skills through a variety of assessment techniques (Mulroy and Eddinger, 2003; Tomlinson, 2001a; Tomlinson and Kalbfleisch, 1998; Tuttle, 2000). Differentiated instruction supports the classroom as a community, accommodating differences and sameness (Bosch, 2001; Brimijoin, Marquissee, and Tomlinson, 2003; Lawrence-Brown, 2004; Tomlinson, 2003). It allows for the creation of an environment in which all students can succeed and derive benefit (Lawrence-Brown, 2004; Tomlinson, 2003). Students differ in three important ways - readiness, interests and learning profiles - in a differentiated classroom, the teacher is obliged to attend to these differences in order to maximize the learning potential of each student in that classroom (Tomlinson, 2000b, 2001a). Differentiated instruction requires teachers to transform their practices from a program- based pedagogy to a student-based pedagogy. Teachers attempt to adapt pedagogical interventions to the needs of each student, acknowledging that each student differs in interests, learning profile, and level of functioning. Differentiated instruction may facilitate high levels of both student engagement and curricular achievement (Caron, 2003; Tomlinson, 2004).

38 Curriculum tells teachers what to teach, while differentiated instruction tells teachers how to teach it to a range of learners by employing a variety of teaching approaches. Students can develop their potential if they are provided with appropriate activities in an environment that is planned and organized to meet the needs of all students. The teacher can differentiate one or a number of the following elements in any classroom learning situation (Tomlinson, 2004):

- l The content (what the students are going to learn)
- l The processes (the activities)
- l The products (the accomplishment following a learning period)
- l The learning environment

Differentiation is a process through which teachers enhance learning by matching student characteristics to instruction and assessment. Differentiation allows all students to access the same classroom curriculum by providing entry points, learning tasks, and outcomes that are tailored to students' needs. In a differentiated classroom, variance occurs in the way in which students gain access to the content being taught, the process by which they acquire information, and the manner in which they demonstrate understanding (Hall, Strangman, & Meyer, 2003). Let us know the strategies of differentiating instruction:

- Content: What the teacher plans to teach and what the students need to learn. The teacher can plan range of activities:
- l Students level will be determined through formative assessment
- l Using reading materials at varying readability levels
- l Putting text materials on tape/CD
- l Using spelling/vocab lists at readiness level of students
- l Presenting ideas through auditory, visual, kinaesthetic, & tactile means
- l Using reading buddies
- l Flex grouping
- l Compacting
- l Meeting with small groups to reteach idea/skill, or to extend the thinking/skill

39

- l Multi-levelled questions
- l Modelling Process: How the students will access the information. Activities in which the students engage in order to make sense of or master the content
- Strategies:
- l Tiered activities through which all learners work with the same information, understanding, & skills, but proceed with different levels of support, challenge, or complexity.
- l Centres/Stations
- l Developing personal agendas
- l Manipulative
- l Varying the length of time a student may take to complete a task
- l Cubing
- l Learning logs or journals
- l Note-taking organizers
- l Graphic organizers
- l Highlighted materials
- l Jigsaw
- l Think, Pair, Share
- l Learning Menus
- l Web quests
- l Labs
- l Role Play / Simulations
- Product: How the student will demonstrate what s/he has learned.
- l Choice boards
- Podcast
- l Blog
- l Presentation

40

- l Quiz/Test
- l Using rubrics that match and extend students' varied skill levels.
- l Encouraging students to create their own product assignment as long as it contains required elements.
- l Enabling students to use contemporary media/technology as tools to demonstrate knowledge and understanding.

Let us see a graphical presentation of differential of instruction:

41 Conclusion Differential instruction

is an organized, but flexible way of adjusting teaching and learning methods to accommodate each child's learning needs, interests and preferences specifically children who have learning problems or special need in order to achieve his or her maximum growth as a learner and provide them best learning experiences.

1.6.2 Universal design of learning:

Learning in general is very person specific, as unique as a person thumb print. Universal design is an architectural concept that focuses on the design of the products, building or environments so that they can be used by all type of people. The term "universal design" was coined by architect and designer Ron Mace at the Center for Universal Design at North Carolina State University (

Burgstahler, 2008; Center for Applied Special Technology, 2011b). Mace and his colleagues defined UD as "

the design of products and environments

to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (Center for Applied Special Technology, 2011a). With ADA (Americans with Disabilities Act), 1990 Universal design became very popular among architects and designers who were trying to make public building and city streets accessible for all. Though it was basically for the people with disabilities but afterwards it was seen that this concept is very effective among other population also. So the chief characteristic of Universal Design is that it "proactively builds in features to accommodate the range of human diversity" (McGuire, Scott, & Shaw, 2006, p. 173).

- l Adaptation and modifications to the products, built environment and streets like audio books, closed captioning TV, trolley case, automatic door openers, curb cuts, entry ramps, universal-height drinking fountains, disable friendly toilet, lift with audio sounds, road signals with audio, low floor buss, signage, Wireless remote controlled power sockets and others-are beneficial to many people including pregnant woman, woman with kids in lap, sick and old people, not just those with disabilities. Indeed, people today routinely use door openers to enter a building

42 when their hands are full or kids in lap, pregnant women can use low floor bus, foreign language people can use signage for directions and children visiting the hospital can drink water from a fountain without assistance. Similarly, commuters in noisy airports and students in quiet libraries rely equally on TV closed captioning. Each of these conveniences was originally conceived as a disability accommodation. | Disabilities have less to do with individual deficits-what some people can't do that others can-and more to do with environmental barriers that obstruct people's ability to function effectively and participate fully in society (United Nations, 2006 - Preamble E). Universal Design helps all by removing unnecessary barriers. | The philosophy of UDL has been proved to be fruitful in the field of education also.

If the goal of UD is to remove barriers from the physical environment, the goal of UDL is the elimination of barriers from the learning environment. As David Rose, one of UDL's founders, has stated, "UDL puts the tag 'disabled' where it belongs-on the curriculum, not the learner. The curriculum is disabled when it does not meet the needs of diverse learners" (Council for Exceptional Children, 2011).

| A concise definition of Universal Design for Learning was provided by the Higher Education Opportunity Act of 2008, which stated: | The term UNIVERSAL DESIGN FOR LEARNING means a scientifically valid framework for guiding educational practice that:(A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and(B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient. |

Universal Design for Learning is a set of principles for curriculum development that give all individuals equal opportunities to learn. UDL

provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone--not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs.

The

origin of the term Universal Design for Learning (UDL) is generally attributed to David Rose, Anne Meyer, and colleagues at the Center for Applied Special Technology (CAST).

UDL is about providing options. In the words of David Gordon, a director at

43 the Center for Applied Special Technology (CAST), "Options are essential to learning, because no single way of presenting information, no single way of responding to information, and no single way of engaging students will work across the diversity of students that populate our classrooms. Alternatives reduce barriers to learning for students with disabilities while enhancing learning opportunities for everyone" (Council for Exceptional Children, 2011).

Why is UDL necessary? Individuals bring a huge variety of skills, needs, and interests to learning. Neuroscience reveals that these differences are as varied and unique as our DNA or fingerprints. Three primary brain networks come into play: Principles of UDL: I. Multiple means of representation - providing learners with various ways to acquire knowledge and information.

44 II.

Multiple means of expression - providing learners with alternatives to demonstrate what they know and what and how they think. III. Multiple means of engagement - providing learners with appropriate means of engaging and interacting with the learning environment. The provision is built into the planning and design of all aspects of the activity or unit - not as an add-on. The approach of Universal Design for Learning can be supported using inclusive technologies. How UDL can help all students to learn | Enriches learning environment | Caters to different learning styles | Motivates learners and increases productivity | Engages reluctant learners | Improves independence and self directed learning | Enhances self esteem | Provides indirect and unplanned learning opportunities How UDL assists teachers | Helps to make education practices more inclusive | UDL caters to diverse learners | Supports effective pedagogy | Improves the quality of teaching and learning | UDL makes planning more efficient | UDL is cost/time effective | Supports Curriculum Framework | Consistent with legislation | Disability Standards in Education 2005 | Education General Provisions Act 2006 Multiple means of representation to support all students

45 Visual support | Graphics | Movies | Animations | Text | Physical objects or movement Supports visual lestrum Disorder. Auditory support | Digital recordings | Wav or MP3 files | Text-to-speech Supports auditory learners as well as students with cognitive impairment, learning difficulties, Dyslexia, speech-language impairment, English as second language. | Signs - Makaton signs supports students with intellectual impairment | Auslan and signed English supports students with hearing impairment Captions | Video captions support students with a hearing impairment Multiple means of expression Communication modes - Speech, sign, AAC including speech generating devices, text- tospeech Writing modes - Pencil and paper - Computer Visual modes - Sculpture - Photos - Movies - Dance - Drama Auditory modes - Sounds - Music Multiple means of engagement Tools that assist students to actively engage with learning, both input and output. The most successful of these for UDL are those that can engage a diversity of students within the one device or system. Many of these devices will have hidden benefits HARDWARE - Various configurations of keyboards

46 | Range of pointing devices | Trackballs ? Joysticks ? Alternative mouse systems ? Glidepoint ? Touch screens ? IWBs - Digital Pens ? Smartpen ? Intellipen | Alternative Computer Systems | Micro laptops ? iPad SOFTWARE Configuration of system or software | Windows/Mac OS | Wordprocessor configuration | Writing templates or scaffolds Rate enhancement software | Supports students who may fatigue from the mechanics of writing | Supports students who struggle with reading or writing and may have poor motivation | Reduces errors in literacy processes | Increases accuracy, speed, productivity and motivation | WordTalk; Natural Reader; Co Writer; textHELP Graphic Organizers | for students with difficulties organizing information and getting started with writing Multi-media interactive | Contain tools and functions that enable a range of students to engage with the learning | Framework applications (Clicker 5, IntelliTools Classroom Suite, "Communicate" series) | 'Learning objects' from TLF An example of how ICT functionality and UDL can address learner differences using multiple means of representation: digitized text

47 | More flexible than printed materials | Readily manipulated | Enlarged text | Background/foreground colour highlighting | Recorded sounds or voice | Graphic support | Text-to-speech | Converted to MP3 | Print to Braille printer Source: CAST 1.6.3 Individualization of instruction: It is auniversally recognized and accepted effective approach to the teaching-learning

48 process.It is a teaching methodology that is to be used for a specific purpose and an identified client.It is also called "tailor-planned" mode of instruction.Sometimes termed as programmed instruction alsoif the teaching material follows a "programmed" style of presentation. As this is the era of inclusive education so individualization of instruction is a major trend in the modern educational practices and is the demand of the hour. Based on the psychology of individual differences instructional process also must be organized according to the needs, interests, learning speed and abilities of the learners.

To individualize the instructional process we need the help of hardware and software technology both. Some of the necessary materials and equipments which are used for individualized instructions are as follows: | Programmed instruction,

programmed books, and programmed learning modules. | Teaching machines, computer assisted instruction and computer managed learning. | Video and audio recorded learning and instructional material.

| Email, internet, teleconferencing and other online educational facilities. | For students with disabilities assistive aids, Special aid material, equipment and appliances can be used. | Special provisions and facilities are made for the creative and gifted students to nurture and develop their individual capacities according to their pace and interest. | Steps of individualized instruction planning: 1. Assessment of student's background, needs and interests 2. Selection of appropriate subject matter 3. Determining the teaching strategies to meet the needs and interests 4. Constant monitoring progress 5. Undertaking revisions/alternative wherever needed 6. Comprehensive evaluation, including qualitative and quantitative records.

49 Advantages: 1. Success-guaranteed as teaching is based on the interest, needs and abilities of the students and are carefully planned. 2. Teaching learning process will be joyful as students will not be bored with the activities. / Care in planning is important so that the procedure must not be too easy or difficult to accomplish. 3. The student progress is in accordance with his intellectual and social traits. 4. Strong retention of learning 5. Substitution of materials or choice of alternatives activities will be easy since the teacher is considering only one student. 6. Easy to adjust planned progsor and can easily pinpoint problems and guide in overcoming problems. / Problems and errors could easily be observed and instant remedy could be undertaken. 8. Student learns to be more responsible and is ready to suggest alternative activities to suit his needs. 9. Evaluation system will also be individualized to find out the actual individual achievement.

1.7 Implication of differential instruction, UDL and individualized instruction for inclusion: 1.7.1 Concept of Inclusion As we believe that every child can learn and "If a child can't learn the way we teach, maybe we should teach the way they learn"- Ignacio Estrada Education makes a person self reliant and independent, so education systems must be designed and organized in such a way that it can meet the varying needs of individual learners, and provide an appropriate education and fulfill the fundamental right to education of each child.

50 To attain the goal of universalization of elementary education, govt. of India has launched some innovative legislation and policies like IEDC, RTE, RPWD, signed in UNCRPD etc. The dream of education for all (EFA) cannot be achieved unless all children, including the large population of children with special needs, are provided educational services. Due to disability and varying needs children with special need experience multiple disadvantage in the way of education. Most of the time they are perceived as different and unable to cope with mainstream education and they are kept isolated at home or special schools. But the scenario is being changed with the emergence of philosophy of inclusion, concept of UDL, differential instruction and individualized instruction. UNESCO Salamanca Statement and Framework for Action (1994) proclaimed that, "Every child has a fundamental right to education and must be given the opportunity to achieve & maintain an acceptable level of learning. Every child has unique characteristics, interest, abilities and learning needs, educational system should be designed & educational programmes implemented to take into account the wide diversity of these characteristics and needs. Those with special educated needs must have access to regular schools which should accommodate them within a child-centered pedagogy, capable of meeting these needs." The 1994 UNESCO World Conference also realized this situation when it argued that a school should, ...accommodate all children regardless of their physical, intellectual, social, linguistic or other conditions. This should include disabled and gifted children, street and working children, children from remote or nomadic populations, children from linguistic, ethnic, or cultural minorities and children from other disadvantaged or marginalized area and groups. (UNESCO, 1994, Framework for Action on Special Needs Education, p.6) These inclusive schools, ... must recognize and respond to the diverse needs of their students, accommodating both different styles of learning and ensuring quality education to all through appropriate curricula, organizational arrangements, teaching strategies, resource use and partnerships with their communities. (UNESCO, 1994, Framework for Action on Special Needs Education, p.11-12)

51 Sebba and Ainscow (1996) have offered a definition of inclusion: Inclusion describes the process by which a school attempts to respond to all pupils as individuals by reconsidering its curricular organization and provision. Through this process, the school builds its capacity to accept all pupils from the local community who wish to attend and, in so doing, reduces the need to exclude pupils (p.9). 1.7.2 National and International Legislations Support Inclusive Education : Let us look at the International legislations in support of inclusion: Source: World Bank Group: Education Global Practice Toolkit for master trainers in Preparing Teachers for Inclusive Education for Children with Special Needs

52 Module 1 : Education There are various constitutional provisions in India that have promoted mainstreaming of children with special needs into regular schools. Article 21A of the Constitution guarantees education as a fundamental right to all children in the 6-14 age group, while

53 Section 26

of the Persons

with Disabilities Act, (Equal Opportunities, Protection of Rights and Full Participation) Act (1995)

articulates that free and compulsory education has to be provided to all children with disabilities up to the minimum age of 18 years. The Government of India's 12th Five-Year Plan considered exclusion the single most important challenge in universalizing elementary education. The Draft Persons with Disabilities Bill (2012) enshrines a strong commitment to inclusive education. Government policies and schemes such as Sarva Shiksha Abhiyan (SSA) and Right of Children to Free and Compulsory Education (RTE) Act (2009), have changed the education landscape significantly, resulting in a significant decrease in the number of out-of-school children in the last decade. This has also led to an increasing number of children with disability entering government and private schools. SSA's goal is to provide eight years of elementary schooling for all children, including those with special needs, in the 6-14 age groups. Children with disabilities in the 15-18 age groups are provided free education under two national schemes: Integrated Education for Disabled (IEDC) and Rashtriya Madhyamik Shiksha Abhiyan (RMSA). The 2001 census report says that fifty-one percent of persons with disabilities are illiterate, so India has to continue its efforts to provide Education for All (EFA). It is therefore essential that to mainstream the children with disabilities effectively into regular schools teachers must be trained in inclusive education, need to learn to apply the principles of UDL, and understand the importance of differential instruction.

1.7.3 Key principles of inclusive education:

- Ø IE is based on the belief that the right to education is a basic human right for all children.
- Ø IE ensures good teaching
- Ø IE is a strategy to implement and fulfil the obligation of RTE
- Ø Providing equal opportunities to all children, which do not mean similar things for all children.
- Ø It is based on the concept of providing equitable learning opportunities, keeping in mind the differences and difficulties of the child besides their diverse background and their needs.
- Ø Teaching children from diverse backgrounds requires a tremendous amount of flexibility in teaching practices and processes as well as in curriculum design and learning materials.
- Ø Ensuring equitable learning opportunities by making the education system accessible and responsive to all children, including disadvantaged children, i.e. Scheduled Castes/Scheduled Tribes (SC/ST), minority, children with disabilities, girls, urban deprived, and also ensuring their entitlements to achieve optimal learning outcomes.

54 Ø IE is a process of addressing and responding to diverse needs of learners by reducing exclusion within schools. Ø IE is an entry point to improve the quality of the education system in terms of culture, policy and practices (pedagogy, classroom management, teaching learning materials [TLMs] and the learning environment). Ø Inclusive teachers are good teachers who are flexible in their approach and believe that the source of difficulties in learning is largely environmental and can be addressed.

55 From the above discussion and by looking at the international and national legislation we can clearly understand that inclusion is need of the hour to accommodate all children under the umbrella of education. With the passing of the rights of the persons with disabilities act (RPWDA) 2016 ON 27TH DECEMBER, 2016, inclusive education has become more than just rhetoric. For example section 16 of chapter III of the RPWDA, is clearly stated about inclusive education, "The appropriate government and local authorities shall endeavor that all educational institutions funded or recognized by them provide inclusive education to the children with disabilities and towards that end shall (i) Admit them without discrimination and provide education and opportunities for sports and recreation activities equally with others; (ii) Make building, campus and various facilities accessible; (iii) Provide reasonable accommodation according to the individual's requirements; (iv) Provide necessary support individualized or otherwise in environments that maximize academic and social development consistent with the goal of full inclusion; (v) Ensure that the education to persons who are blind or deaf or both is imparted in the most appropriate languages and modes and means of communication; (vi) Detect specific learning disabilities in children at the earliest and take suitable pedagogical and other measures to overcome them; (vii) Monitor participation, progress in terms of attainment levels and completion of education in respect of every student with disability; (viii) Provide transportation facilities to the children with disabilities and also the attendant of the children with disabilities having high support needs. In preamble it is clearly defined that "Inclusive education" means a system of education wherein students with and without disability learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities; In UNCRPD, Article 24 Education stated that, (a) Persons with disabilities are not excluded from the general education system on the basis of disability, and that children with disabilities are not excluded from free and compulsory primary education, or from secondary education, on the basis of disability; (b) Persons with disabilities can access an inclusive, quality and free primary education and secondary education on an equal basis with others in the communities in which they live;

56 (c) Reasonable accommodation of the individual's requirements is provided; (d) Persons with disabilities receive the support required, within the general education system, to facilitate their effective education; (e) Effective individualized support measures are provided in environments that maximize academic and social development, consistent with the goal of full inclusion. 1.7.4 Educational practices Support Inclusive Education To make the dream of inclusion successful some strategies are being followed, Ø Principles of Effective Instruction Ø Universal Design for Learning (UDL) Ø Co-Teaching Ø Differentiated Instruction Ø Curricular Accommodations Ø Collaborative learning Ø Peer mediated teaching Ø Positive Behavior Supports

57 In the 1990 when UDL was introduced into the education domain as the momentum for inclusive education grew. The fundamental objective of inclusion was to prepare an appropriate curriculum to ensure all students can access and participate in the education system. Universal design was clearly relevant to full inclusion. Those who work in the application of UD to teaching and learning invented the term Universal design for learning. UDL emphasizes development of a curriculum that does not involve adaptation or retrofitting. In other words, it is not an add-on to the standard curriculum. Adjustment of curriculum and modified teachers instruction should be built from the beginning. UDL is the exchange of the Power base associated with the transfer of knowledge. UDL gives students control over the way in which they gain access to information, which encourages, their independence in learning and problem solving. It provides for equal access to all by removing barriers to knowledge and learning without diminishing the challenges. (Bauer & Kroeger, 2004) UDL involves the application of three primary principles: 1. Representation- It means using various ways of presenting essential concepts. As there is no single best way of presenting the curriculum that will satisfy the need of all students. For some students only lecture is enough but for some lesson notes are also needed along with the oral presentation. For some other students using graphics, drawings and photographs, even YouTube clips can also help. 2. Engagement - that is ensuring that learning activities must be designed in such a way so that they cater for student's skill levels, preferences and interests. So students must be provided such material which can capture their interests and motivate them in learning. 3. Expression - that is using alternative means of expression that allow students to demonstrate mastery of a topic, skill or acquired knowledge in a variety of way. Some students may write well and some may not, they may even find it difficult to write a simple letter. So providing a range of options that includes written, oral or multimedia presentations like dance, painting, project or even show and tell can help students to demonstrate their achievement of the curriculum goals. UDL also involves 7 teaching and learning features 1. Equitable use- the same technology or resources will be available to and usable by everyone, example most commercial digital mathematics programs have materials that cover a range of students capabilities

58 2. Flexible use - the same technology or resource is used for a number of purposes, example arithmetic or social or language 3. simple and intuitive application - example everyone knows how to look for a book in the library or use the web to search for information 4. Perceptible information - that the technology communicates essential information to the user regardless of the user's capabilities, example instruction and guidelines or manuals. 5. Tolerance for error - example the learning process includes recovery processes if error occurs. 6. Low physical effort - example the teaching process is accessible to students with sensory or mobility impairment 7. Size and space - example accommodates students with particular need such as making seating arrangement for a student with vision impairment at the front of the class. So UDL is all about tools and resources that are usable by all students in a classroom. Burgstahler (2001) distilled the initiatives achieved in design and architecture in to a set of features relating to classroom application. These are, Ø Inclusiveness - a classroom environment that respects and values diversity Ø Physical access - classroom resources and equipment that are accessible to all students. Ø Delivery methods - employment of varied instructional methods Ø Information access - use of for example captioned videos electronic copies of printed materials etc. Ø Interaction - different ways in which teacher and learner interact. Ø Feedback - effective and timely prompting and feedback and Ø Demonstration of knowledge - multiple ways for students to demonstrate their knowledge. UDL focuses on curriculum adaptation and ICT and promotes teaching practices that allow for equal access to all students. Differentiation is a core element of responsive teaching. The concept appears in the professional literature under several heading; curriculum differentiation differentiated

59 instruction and multi level instruction. Differentiation refers to flexible approach to teaching that address the different capabilities of individual student. Curriculum differentiation is the management of the, Ø Content - what is taught and learnt. (e.g.; by providing activity based task through to the conceptual and abstract) Ø process or methods for acquiring content - how knowledge is delivered(e.g.; accommodating preferred learning styles : visual auditory , tactile or kinesthetic) Ø method for assessment - how learning success is evaluated (using authentic task that involve real and relevant problems) Ø resources required - including material and human resources (e.g.; equipment, ICT teacher aids, volunteers, experts) The idea of differentiation is not new maker 1982 suggested ways in which the curriculum might be modified to take into account learner's characteristics, their skills and knowledge the pace of presentation, the complexity of the information and the depth of learning required. Conclusion: So with the implication of the above strategies inclusive education can be successful. Though there are some Barriers to access education and success inclusion which is physical as well as structural. But more than that, it is the curriculum, the pedagogy, the examination and the school's approach, which create barriers. So we need to take care of those barriers by applying the principles of UD(structural), UDL and differentiated instruction or individualized instruction to make the education accessible to all children. 1.8 Summary: So we have seen in this unit that

educational technology is concerned with the systematic application of science and technology in the field of education. It is helpful for both, the teacher and learner to set the learning objectives, strategies, procedures, materials and establish a good communication between them and make the teaching learning process more effective. The initiation of educational technology movement started with audiovisual aids (within 'technology in education') and behaviourism and programmed learning (within 'technology of education'). educational technology in India is being used for School 60 broadcast, TV Telecast lessons, Teacher preparation, Distance education, Correspondence courses, Development of audio- visual materials, Language teaching, Production of multipurpose kits or instructional aids, Computer literacy and studies in schools. The scope of educational technology is very wide and it is utilized in various areas of teaching and learning process like formulation of

educational goals and objectives, Curriculum Development, Developing Teaching-Learning materials and Resources, teacher training, Development of teaching - learning Strategies,Developing Multi- Sensory Aids, Develops Feedback Mechanism, Develops Interactive Instruction Services, Developing Information Resources, Develops Communication Devices etc. Instructional Technology is a subset of educational technology and

it is a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction.

It is helpful for both teacher and learner. Instructional Technology can make the instruction more interesting, more standardized, interactive, instant and need based, develops positive attitudes among students. Educational Technology has brought revolution in the entire education system in our country and also globally with the use of hardware approach, by using various technological aids, like projector, computer, smart phones and many other things; and software approach like using programmed instruction, CAI, CBI etc. With the help of educational technology teaching is not confined within the four wall of classrooms and source of information is not only the teacher, now learner can learn any time anywhere based on their needs and suitability with the help of online learning, online library, internet, blogs, Wikipedia, moodle and many more. There are three major approaches of Educational Technology namely Hardware Approach (Technology in education), Software Approach (Technology of Education) and System Approach. The use of hardware approach and software approach is very necessary to fulfill present age education needs. To reach large population easily, it is being used in distance mode courses, correspondence courses, online learning, and adult education very effectively. Educational Technology can make the teaching learning process effective and interesting by using multisensory approach, individualized education and reinforcement technique with the help of hardware and software technologies.

61 System Approach is a modern approach in educational administration and organization and it acts as a link between hardware and software approach. It is concerned with development, implement and evaluation of the whole educational system, sub-system, and curriculum by organizing human resource and physical resource in an effective and economic way to get the best from the education system. As we are living in the era of information explosion so role of mass media become very important in education sector. Mass media approach in education means to use educational TV, radio, press, newspaper, films, documentaries, internet, educational apps, mobile, etc to reach mass to provide education and also make the learners and teachers modern and up to date. Differentiated instruction is a teaching theory based on the premise that instructional approaches should vary and be adapted in relation to individual and diverse students in classrooms (Tomlinson, 2001). The teacher can differentiate instructional strategies based on the content (what the students are going to learn), the processes (the activities), the products (the accomplishment following a learning period) and the learning environment. The term "universal design" was coined by architect and designer Ron Mace at the Center for Universal Design at North Carolina State University (

Burgstahler, 2008; Center for Applied Special Technology, 2011b).The term UNIVERSAL DESIGN FOR LEARNING means a scientifically valid framework for guiding educational practice that: (A) provides flexibility in the ways information is presented,

in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (B) reduces

barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students,

including students with disabilities. Principles of UDL are 1.Multiple means of representation - providing learners with various ways to acquire knowledge and information. 2.

Multiple means of expression - providing learners with alternatives to demonstrate what they know

and what and how they think and 3. Multiple means of engagement - providing learners with appropriate means of engaging and interacting with the learning environment. 1.9 Check your Progress Ø Explain the meaning and concept of educational technology in detail. Ø Explain 'hardware' and 'software' approach to education and their contribution

towards effective teaching and learning.

62 Ø Differentiate between "technology of education" and "technology in education". Ø Describe in detail the scope of educational technology. Ø Discuss the recent trends of Educational Technology and Instructional Technology in teaching learning process. Ø What is UDL and how it has a wide applicability to make inclusion successful? Ø Mention the three primary principles and their uses in inclusive classroom. Ø Justify the need of differential instruction for children with special needs. 1.10 References: Ø Sharma, S.R., Educational Technology, New Delhi: Mohit Publications, 2003. Ø k.sampath, a.paneerselvam, s. santhanam, introduction to educational technology, sterling publisher, new delhi, 2004 Ø S.K Mangal, Uma Mangal, essential sof educational technology, PHI Learning private ltd, new delhi, 2016 Ø

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Unit 2 □ □ □ □ □ Information and Communication Technology (ICT) Structure 2.1 Introduction 2.2 Objectives 2.3 ICT - Meaning, Definition, Scope and Significance 2.3.1

Meaning and Definition of ICT 2.3.2 Components of an ICT system 2.3.3 The scope of ICT 2.3.4 Significance of ICT 2.3.5 Functional Approach of ICT Usage 2.3.6 ICT as Medium of Teaching and Learning 2.4 Psychological Bases for ICT among Teachers and Learners 2.4.1 Different psychological principles 2.4.2 Use of ICT in education from the point of view o flarning 2.4.3 Use of ICT in teacher education from the point of view of motivation 2.5

Development of ICT - Stages, Requirment and Process 2.5.1 Stages of ICT development 2.5.2 Characteristics of schools related to ICT development 2.5.3

Process

of ICT development 2.6 Use of ICT in Developing Collaborative Networks for Sharing and Learning such as -internet, E-mail, Tele-teaching,

Teleconferance 2.6.1 ICT in developing collaborative network: 2.6.2 Teleconferencing and its educational use: 2.6.3

Telecollaboration 2.6.4 Use of radio and TV broadcasting in education: 2.6.5 Internet 2.6.6 Electronic Mail

66 2.7

Use of ICT to Simplify Record Keeping: Information Management in Educational Administration in Special and Inclusive Setting 2.7.1 Role of ICT in record keeping and information management in school administration 2.7.2 Record Keeping 2.7.3 Use ofICT in Information management in Schools. 2.8 Let us sum up 2.9 Check your progress 2.10 References 2.1

Introduction Information and Communication Technology (ICT) is a generic term, which is being used for collecting, storing, editing and passing on information in various forms. Although there is no single, universal definition ofICT, the term is generally accepted to mean all devices, networking components, applications and systems that allow people and organizations (i.e., educational agencies, businesses, nonprofit agencies, governments and criminal enterprises) to interact in the digital world.

ICT is generally used to represent a broader, more comprehensive list of all components related to computer and digital technologies

than IT. The scope of ICT is not fixed, but is responsive to ongoing technological developments. ICT is leveraged for economic, societal and interpersonal transactions and interactions. ICT has drastically changed how people work, communicate, learn and live.

More than three decades ago, computers and related information technologies were introduced to educators for direct teaching and learning purposes.

Learning and teaching whether it is through actual classroom settings or through technological applications utilizes many psychological principles knowingly or unknowingly. ICT enables interactive and collaborative learning at several and best possible ways. ICT can help the school administrators to improve administrative tasks such as school record keeping system and school information management system.

67 2.2

Objectives After going through this unit, you will be able to • Understand the meaning, definition, scope and significance of

ICT • Understand

the

psychological bases for ICT among teachers and learners • Understand stages, requirement and process of development of ICT • Understand the process of using ICT in developing collaborative networks •

Understand the use of ICT to simplify record keeping 2.3 ICT - Meaning, Definition, Scope and Significance 2.3.1 Meaning and Definition of ICT The

integration of computers and communications offer unprecedented opportunities to the education system with its capacity to integrate and interact with each other over a wide geographic distance in a meaningful way to achieve the instructional objectives.

Increasingly rapid advances in ICT will have profound impact on way teachers teach and how learners learn in near future. The development of new broadband communication services, convergence of telecommunication with computers, recent developments in the field of communication protocol have fostered numerous proposals for the uses of ICT to support the teaching and learning environment.

The growth of these communication and computer systems, their ease of use, the power and diversity of information transfer allow teachers and students to have access to a world beyond the classroom.

It has the potential to transform the nature and process of the learning environment. Interactivity, flexibility and convenience have become the order of the day in the ICT supported environment.

Knowing how to use and integrate ICT in teaching and learning is of utmost importance for teachers in their role of creators of pedagogical environments. While literature provides some evidence of the effectiveness of using ICT in education, little is known about which learning strategies should be used for education and training. ICT development in education is a continuum approach along which an educational system or institution can be mapped depending on the stages of ICT development. These broad stages have been termed as Emerging, Applying, Infusing and Transforming stages of ICT development.

68

ICT stands

for information and communication technology and is defined as a "diverse set of technological tool and resources used to communicate, and to create, disseminate, store, and manage information."

ICT, or information and communication technology (or technologies), is the infrastructure and components that enable modern computing. 2.3.2 Components of an ICT system ICT encompasses both the internet-enabled sphere as well as the mobile one powered by wireless networks. It also includes antiquated technologies, such as landline telephones, radio and television broadcast -- all of which are still widely used today alongside cutting-edge ICT pieces such as artificial intelligence and robotics. ICT is sometimes used synonymously with IT (for

information technology); however, ICT is generally used to represent a broader, more comprehensive list of all components related to computer and digital technologies

than IT. The list of ICT components is exhaustive, and it continues to grow. Some components, such as computers and telephones, have existed for decades. Others, such as smart phones, digital TVs and robots, are more recent entries. ICT commonly means more than its list of components. It also encompasses the application of all those various components. It's here that the real potential, power and danger of ICT can be found.

2.3.3 The scope of ICT

The scope of ICT is not fixed, but is responsive to ongoing technological developments. This is evident in the emergence of advanced internet technology over the past few years and the resulting changes in the ways that students construct with others. Student develop capability in using ICT for tasks associated with information access and management, information creation and presentation, problem solving, decision making, communication, creative expression, and empirical reasoning. This includes conducting research, creating multimedia information products, analyzing data, designing solution to problems, controlling processes and devices, and supporting computation while working independently and in collaboration with others. Students develop knowledge, skills and dispositions around ICT and its use, and the ability to transfer these across environments and applications. They learn to use ICT with confidence, care and consideration, understanding its possibilities, limitations

69 and impact on individuals, groups

and communities. Information and Communication Technology is often used as an extended synonym or as an umbrella term for Information Technology (IT), but it is a most specific term

that

stresses

the role unified communications and the integration of telecommunications (telephone lines and wireless signals), computers

as well as necessary enterprise software, middleware,

storage, and

audio-visual systems, which enable users to access, store, transmit, and manipulate information.

The term ICT is also used to refer to the convergence of audio-visual and telephone networks with computer networks through a

single cabling or link system.

To some scholars,

ICT has no universal definition, as "

the concepts, methods and applications involved in ICT are constantly evolving on an almost daily basis."

The broadness of ICT

covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a

digital form,

e.g. personal computers, digital television, email, robots;"

therefore, one can say that

ICT is concerned with the storage, retrieval, manipulation, or receipt of digital data."

ICT delineates how these various forms of digital mediums interact with one another.

Information and Communication Technology can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teacher's professional development and more efficient education management, governance and administration. UNESCO helps a lot in promoting ICT in education.

The scopes of ICT in various education sectors are: 1. Information Technology in Educational Management 2. Lifelong Learning 3. Distance Learning 4. IT-Professional and Vocational Education in Information Technology 5. Advancing community linkages 6. Improving policy planning and management 7. Establishing and sustaining lifelong learning 8. Facilitating skill formation 9. Lively teaching learning process. 10. Those students can find information, they need proper instructions, they need scope for creativity, and expectations of the teacher bring forth performance.

70 11. Helping the student learn. 12. Enhance teaching. 2.3.4 Significance of ICT ICT is leveraged for economic, societal and interpersonal transactions and interactions. leT has drastically changed how people work, communicate, learn and live. Moreover, leT continues to revolutionize all parts of the human experience as first computers and now robots do many of the tasks once handled by humans. For example, computers once answered phones and directed calls to the appropriate individuals to respond; now robots not only can answer the calls, but they can often more quickly and efficiently handle callers' requests for services. Pedagogical Usages of ICT

Studies of teaching and learning in schools

around the world identify four broad stages in the way the teachers and learners use leT as a support to teaching and learning.

More than three decades ago, computers and related information technologies were introduced to educators for direct teaching and learning purposes. It started with presentation software to CAL/CBT/CAI, then moved to multimedia courseware and finally to learning management system using open and flexible learning. Supporting work performance In the initial phase, teachers use productivity tools such as word processor, visual presentation software, spreadsheet, database, email etc. to support their daily work performance. In this initial stage, there is usually an emphasis on basic operations of electronic office software. This stage of using productivity tools for teaching and learning is linked with the emerging stage in ICT development Enhancing teaching Following on and from using productivity software, comes the stage of learning how to use and develop computer assisted learning software and beginning to make use of such software in different disciplines. This stage involves the technique of integrating computer-based learning in the traditional instructional process, and is linked with the applying stage in the ICT development model. Various instructional packages were selected, developed and used to enhance traditional classroom teaching. Facilitating learning The next stage involves using various types of instructional software to facilitate student learning. The key point is that the teachers need to learn how to choose the most

71 appropriate tools for a particular task, and using these tools in combination to solve real life problems. This stage implies the ability to recognize situations where various multimedia, simulation and modeling software can be utilized for teaching and learning. This stage is linked with the infusing stage in the ICT development model. Creating innovative learning environments The fourth and last stage involves specializing in the use of network based resources to create meaningful environment with rich affordable for innovative learning models so that it occurs when one enters more deeply into the shared learning environment that creates and transforms the learning situation. This is a completely new way of approaching teaching and learning using technology. It helps to develop, deliver and manage open & flexible learning program. This stage is linked with the transforming stage in the ICT continuum model. 2.3.5

Functional Approach of leT Usage Several attempts have been made to classify the functions of ICT in education in the literature, However, the most comprehensive and well defined classification describes the following functions of the use of ICT in education: (a) ICT as Object (b) ICT as Assisting Tools (c) ICT as Management of Learning and (d) ICT as Medium of Teaching & Learning. ICT as Object It refers to learning about ICT. Mostly organized in a specific course. What is being learned depends on the type of education and the level of the students. ICT curriculum prepares students for the future occupation and social life. There are various types of short term, long term and modular courses being offered in this area to satisfy the ever growing demand of skill personnel in the software industry. ICT as an Assisting Tool ICT is used as a tool, for example while making assignments, collecting data and documentation, communicating and conducting research.

It is independent from subject content. Generic assisting tools may be general or specialised in their application. Some of the examples of generic tools have been described below: Word Processing and Publishing Tools-preparing, editing and producing written, tabular and graphical material; Freehand and Geometric Drawing Tools-devising and producing pictorial representations of events, ideas and art effects;

72 Database Tools-searching, storing, categorizing and arranging data and information; Statistical Analysis and Modeling Tools-deducing trends and patterns, organizing and synthesizing information; Multimedia and Authoring Tools-capturing, editing, modifying integrating text, graphics, audio & video information; Simulation Tools-devising and testing ideas and hypotheses, and projecting future consequences; Animation Tools-creating editing and modifying 2D and 3D animation. 2.3.6 ICT as Medium of

Teaching and Learning This refers to ICT as a tool for the purpose of teaching and learning itself.

More than three decades ago, computers and related information technologies were introduced to educators for direct teaching and learning purpose. It started with CAL/CBT/CAI, then moved to Multimedia courseware and finally to Web Based instruction & Computer Mediated Communication (CMC) system. Using CAI for drill and practice of basic skills can be highly effective according to a large body of data and a long history of use. Students usually learn more, and learn more rapidly, in courses that use computer assisted instruction (CAI). This has been shown to be the case across all subject areas, from preschool to higher education, and in both regular and special education classes. Effective instruction requires presenting information, guiding the learner, practice, and assessment of student learning. The use of a computer to provide any combination of these factors may be termed computer-assisted instruction. It should be noted that there is no requirement that the computer provides all of these elements. Rather, any combination of these can be appropriate computer intervention in the learning process. Interactivity, flexibility and learner control is the hallmark of these technologies. The application of educational technologies to instruction has progressed beyond the use of basic drill and practice software, and now includes the use of complex multimedia products and advanced networking technologies. Today, students use multimedia to learn interactively and work on class projects. They use the Internet to do research, engage in projects, and to communicate. The new technologies allow students to have more control over their own learning, to think analytically and critically, and to work collaboratively. An increasing body of evidence suggests positive results of the ICT integration with teaching and learning. The type, features, styles, usage and pedagogical base of these transformations from CAL to WBI has been described below.

Type: Computer Assisted Learning (CAL)
73 Features: Interactivity, Flexibility and Learner Centered Styles: Drill & Practice, Tutorials, Simulation and Instructional Games Usage: Self Paced Instruction Pedagogical Base: Primarily Behavioral Objectives Type: Multimedia Based Instructional Software Features: Interactivity & Multi model Instruction Styles: Drill & Practice, Tutorials and Simulation & Modeling Usage: Self-Paced Instruction Pedagogical Base: Primarily Behavioral Objectives & Constructivism Type: Web Based Instruction Features: Interactivity, Just in time & On demand Instruction Styles: Computer Supported Collaborative Learning Environment Usage: Asynchronous & Synchronous Virtual Class Room Pedagogical Base: Primarily Constructivism

2.4 Psychological Bases for ICT among Teachers and Learners

2.4.1 Different psychological principles

The fast budding influence of Information and Communication Technology (ICT) and e-learning in content development and content delivery can be seen in every sector of education. Learning and teaching whether it is through actual classroom settings or through technological applications utilizes many psychological principles knowingly or unknowingly. The most commonly used or heard Schools of Psychology are Behaviourism, Cognitivism and Constructivism. All these schools of psychology are developed based on theories formulated by many psychologists and are being effectively applied in actual classroom situations. However, the application of these psychological principles in e-Learning is not much thought of. e-Learning could be more efficient and effective by the contextual use of different psychological principles. An innovative application of computer in the pedagogy and learning process is e-learning. E-Learning may be network based, intranet based or internet based, which includes

74 text, video, audio, animation and virtual environments. The facility of Internet and Intranet enables e-learning that allows learning anytime and anywhere. E-Learning provides faster learning at reduced costs, increased access to learning and clear accountability for all participants in the learning process. The fast budding influence of Information and Communication Technology (ICT) and e-learning in content development and content delivery can be seen in every sector of education. The American Society for Training and Development (ASTD) defines e-learning as a broad set of applications and processes which include web-based learning, computer-based learning, virtual classrooms, and digital. The definition of e-learning varies depending on the organization and how it is used; but basically it involves electronic means of communication, education, and training. Learning and teaching whether it is through actual classroom settings or through technological applications utilizes many psychological principles knowingly or unknowingly. Some of the predictions about the future of education tend to focus not so much on the technology, but on the intersection between pedagogy and technology, and its effect on psychology, epistemology and teaching praxis. The most commonly used or heard Schools of Psychology are Behaviourism, Cognitivism and Constructivism. The early use of technology in educational settings reflected a behaviourist view of teaching and learning. Behaviourism discusses behaviours that can be observed and does not fully consider the thought processes that go on in the learner's mind. Cognitivism differs from behaviourism in that it deals with the internal mental processes of the mind and how these processes could be used to endorse effective learning. We know that 'Learning is relatively permanent changes of behavior through some experience'.

2.4.2 Use of ICT in education from the point of view of learning

ICT is used in education for supporting students' learning or for development of competences, in other words for helping to reach the goals of education. The quality of learning depends on how ICT is used in learning. According to Bransford, Brown, & Cocking (1999) meaningful learning engages students in tackling the topic to be learnt in such a way that they create meaningful and understandable knowledge structures on the basis of a goal for learning. Based on them, it is possible to present an outline of learning with a specific focus on ICT use in learning. Learning represents each individual learner's own personal knowledge construction process which presupposes each learner's active, goal-oriented and feedback-seeking role. The constituents of meaningful learning are the following: activity, intention, contextualization, construction, collaboration, interaction, reflection, and transfer. These serve as development and selection criteria when choosing teaching and learning activities emphasizing ICT use. Activity and intention mean that students take responsibility over their own learning. Thus they set, together with a teacher, their learning goals and proceed according to the plan to reach the goals they set. This process may be facilitated, for example, by guiding students to plan by themselves or in small cooperative groups. On the other hand, students neither master the logical structure of the subject nor recognise their own biased preconceptions, and therefore students goal setting needs to be supported and guided by the teachers. Thus, activities that support co-operative planning and evaluating learning are important for learning. Learning could also be enhanced by self-evaluating activities. Bransford and Donovan (2005) emphasize the role of self-evaluation in learning. They suggest that a teacher should provide support for students self-evaluating for example by giving them opportunities to test their ideas by building things or making investigations and seeing then whether their preliminary ideas were working. Feedback is important for learning. Reflection means that students examine their own learning and develop metacognitive skills to guide and regulate their learning. Metacognitive skills are necessary for planning and evaluating one's own work. These skills make also learning a self-regulatory process in which the student becomes less dependent of the teacher. For example, self-evaluating or evaluating in a small group, taking multiple-choice tests, doing exercises and consulting answer keys support developing reflective and, moreover, metacognitive skills. Collaboration and interaction mean that students actively take part in group activities and support each other by discussing and sharing knowledge. Learning new concepts presupposes a dialogue both between the teacher and the students and amongst the students (explaining, debating, questioning). In addition to face-to-face interaction ICT offers several possibilities to share ideas through newsgroups, email, a LMS, or through social media like Facebook. Construction means that students combine their earlier knowledge with the new topics to be learnt and thereby tailor information structures that they can comprehend. Therefore, the teacher should encourage students to bring up their previous views and beliefs and thereby construct new knowledge on the basis of this shared information. For

76 example, prior to starting reading or writing, students need to be guided to bring up their prior views on the subject to be dealt with. Respectively, before an investigation or other practical activity students should be encouraged to present his or her prediction or even supposition. Contextualization means that learning takes place in real life situations or in situations simulating real-life instances. This in turn presupposes that the learning setting allows for authentic and real-life learning experiences. For example, when using a search machine (Google), students should be encouraged to look information in different sources. This enables them to treat the concepts in various contexts and thereby deepen the meanings these concepts acquire. It pays off also to keep in mind that the quality of all Internet-based sources needs to be checked carefully to ensure that the facts are right (source criticism). From the point of view of interestingness, the context in which science ideas are learned, rather than the ideas themselves, has important influence on learning. For example, when writing it is crucial that students write to prospective readers other than their teacher. Learning is cumulative and, therefore, students are aided in noticing how a new concept or skill is related to other already familiar concepts or the network of concepts or skills. Learning of science process and of ICT skills are similar processes. In both areas there are low level and high level skills. For example, before a student learns to use a LMS he or she should learn to use word processing and a search machine. Consequently, students should be supported in learning new skills and in internalizing the new concepts and in building conceptual networks in the given field. The previous characteristics of learning activity may be realized through the use of ICT. For example, by employing the Internet in the inquiry-based learning, students have access to meaningful information of the topic. When looking up information in varied sources, students at the same time actively structure the flow of information they encounter into meaningful entities in order to be able to complete tasks. Similarly, this exploration of information in varied sources forces students to evaluate the reliability of both the information and the sources they use. Within an activity students could be encouraged to work together and also to systematically evaluate their activities. Several studies have indicated that information processing, inquiry-based learning, and exploring resources via networks, are beneficial for education (Linn, 2003). 2.4.3 Use of ICT in teacher education from the point of view of motivation ICT could be used in education for supporting the development of students' motivation.

77 There are many concepts that can be used to describe motivational aspects of teaching and learning. Here we base our analysis on Self Determination Theory (SDT) (Ryan & Deci, 2000) and Theory of Interest (Krapp, 2007). According to SDT, a student's way of thinking has an important role in the process of motivation. Motivated behaviour may be (i) self-determined or (ii) controlled and they involve different reasons for behaving. Self-determined or autonomous behaviour is behaviour which arises freely from one's self. Controlled behaviour, in contrast, means that the behaviour is controlled by some interpersonal or intrapsychic force, like a curriculum or a task. The motivation styles in SDT are: (i) amotivation, (ii) extrinsic motivation and (iii) intrinsic motivation. Intrinsic motivation has positive effects on learning, in particular, to the quality of learning. Intrinsically motivated behaviours are based on the need to feel competent and self-determined (Deci & Ryan, 2000). Extrinsically motivated behaviour is instrumental in nature. Such action is performed for the sake of some expected outcome or extrinsic reward or in order to comply with a demand. Central to SDT is the concept of basic psychological needs assumed to be innate and universal. These needs are the need for autonomy, the need for competence, and the need for relatedness (need to belong to a group). The fulfillment of need for competence is especially problematic in the case of ICT because the required studies are perceived as being difficult. This perceived lack of competence has an effect on interest and motivation. Furthermore, the interest of the student in a learning activity has an effect to motivation. Consequently, the features of a learning activity and behaviour of a teacher (trainer) could increase the motivation of a learner (student teacher). This is because self-determined learning occurs when a learning activity itself supports fulfillment of basic psychological needs or development of interest. A closer analysis on motivational aspects is based on SDT; ICT is used for motivating or for increasing students' interest for learning. How motivating learning with ICT is for students depends on how ICT is used in this context. Interest is a content-specific motivational variable (Krapp, 2007). Interest is approached from two major points of view. One is interest as a characteristic of a person (personal

78 interest) and the other is interest as a psychological state aroused by specific characteristics of the learning environment (situational interest). Personal interest is topic specific, persists over time, develops slowly and tends to have long-lasting effects on a person's knowledge and values (Hidi, 1990). Pre-existing knowledge, personal experiences and emotions are the basis of personal interest (Schiefele, 1991). Situational interest is spontaneous, fleeting, and shared among individuals. It is an emotional state that is evoked by something in the immediate environment and it may have only a short-term effect on an individual's knowledge and values. Situational interest is aroused as a function of the interestingness of the topic or an event and is also changeable and partially under the control of teachers (Schraw & Lehman, 2001). Although students themselves primarily produce their motivation, it can be enhanced and learned. In practice, a teacher can offer optimal challenges and rich sources of motivating stimulations through choosing the learning activities. Therefore, in addition to previously discussed features of self-determined and controlled behaviour of a learner, it is appropriate to analyse also features of a learning activity which could increase motivation of a learner. This is because self-determined learning occurs when learning activity itself is considered as interesting, enjoyable, or personally important by a learner. From the point of view of the SDT, the motivational features of a learning activity could be classified in five categories: I. autonomy-supporting activities/teacher, through • choosing student-centred learning methods like "open ended" inquiry and other tasks where students have some choices how to plan or study. • collaborative learning activities which support feeling of autonomy, • co-planning of the learning activities. II. Use of ICT where students have • choices, possibilities for planning and evaluating one's own activities, and • support to the feeling of effectiveness and importance of working. III. Support to students' feeling of competency, through • choosing inquiry and other tasks, which are possible for the student to solve; • choosing and using constructive evaluation methods, like self assessment, portfolio evaluation

79 • informal discussions, which help students to recognise that they are good at an activity or do the activity well, • giving support to the feeling that the activity has some value or use for the student. IV. Support to students' social relatedness, through • choosing tasks, collaborative learning activities, co-planning, and ICT use which help students to feel close to peers • giving support to the feeling that the students can trust each other and feel themselves close to each other, • supporting the formation of learning communities over social media and various forms of networking v. Support to interest and enjoyment, through • waking up curiosity by choosing surprise-evoking inquiry and other activities or tasks, • organising enjoyable, fun-evoking and interesting activities, like through choosing interesting web pages or simulations, • choosing activities which hold attention, • interesting content (new materials or new knowledge) and context (human being, occupations, technology, or history). 2.5 Development of ICT - Stages, Requirement and Process 2.5.1 Stages of ICT development Countries in the various region of the world are at different stages of ICT development, in terms of both infrastructure and application of ICT in teaching and learning. Within any such country, there may be uneven development from region to region, area to area, and even from institution to institution. In view of the above considerations, it is useful to have a model for ICT development for developing competency standards for teacher development. Such a model can be a representation of the essential characteristics of ICT development to provide a scaffold or a framework. It can also be useful to show the inter-relationship of various components within a system and thus helping to locate its position in the whole framework. Based on the UNESCO publication, a model has been presented that can be useful in

80 determining the stage of ICT development reached by a country, a district, or even an individual institution. As mentioned earlier, this model is derived from international and national studies of ICT development that have identified a series of broad stages that educational system and institutions typically proceed through, in the adoption and use of ICT. The model is presented here to provide a framework for stages of pedagogy technology integration. Studies of ICT development in both developed and developing countries

identify at least four broad approaches through which educational systems and individual institutions typically proceed in their adoption and use of ICT. Sometimes, the number of stages identified varies, though there is a general consensus that the introduction and use of ICT in education proceeds in broad stages that may be conceived as a continuum or series of steps. These steps, termed Emerging, Applying, Infusing, and Transforming, are elaborated in

Figure 1. Figure 1: Stages of ICT development

Emerging Stage: Schools at the beginning stages of ICT development demonstrate the emerging approach.

Such schools have just started on their journey in the ICT field with a skeleton computing infrastructure either donated or purchased by the school authority.

In this initial phase, administrators and teachers just start to explore the possibilities and consequences of using leT for school management and adding leT to the curriculum. Applying Stage:

Those

schools, in which a new understanding of the contribution of K'T to learning

81 has developed,

exemplify

the applying approach. In this secondary

phase, administrators and teachers use leT for tasks already carried out in school management and in the curriculum.

Schools at the applying approach phase adapt the curriculum in order to increase the use of ICT in various subject areas with specific tools and software such as drawing, designing, modelling and application specific tools.

Infusing Stage: At the third stage, the infusing approach involves integrating or embedding ICT across the curriculum, and is seen in those schools that now employ a range of computer-based technologies in laboratories, classrooms, and administrative offices. The curriculum begins to merge subject areas to reflect real-world applications.

In the infusing approach to ICT development, ICT infuses all aspects of teachers' professional lives in such ways as to improve student learning and the management of learning processes.

Transforming Stage: Schools that use ICT to rethink and renew school organization in creative ways are at the transforming approach. ICT becomes an integral though invisible part of daily personal productivity and professional practice. The

focus of the curriculum is now learner-centered that integrates subject areas in real-world applications. 2.5.2

Characteristics of schools related to ICT development Along with approaches to ICT development noted above, there are various characteristics of schools, or aspects of school leadership, that relate to a school's progress in ICT

development. Below are general descriptions of the more important of these characteristics of schools that have an

effect on ICT development within schools. Vision Vision refers to the aspirations and goals of both individuals within a school and the school system as a whole. As the school advances, the mission statements should become clearer and

provide a basis for decision-making. Mission statements should help individual members of the learning community

visualize a school's aspirations for the future and act in harmony. Philosophy of learning and pedagogy Ways in which

teachers and students interact and how the school is managed for learning are part of what is meant by a school's

philosophy of learning and pedagogy. These philosophies will necessarily characterize the ways in which ICT is

incorporated into a

82 school. A setting that is dominated by the teacher as the main provider of subject content is adopting a teacher-

centred philosophy. The teacher controls the use of ICT in such a setting as well. A learner centred philosophy, by

contrast, describes a setting where content comes from a variety of resources, and where projects are chosen and

designed by the students. ICT tools and resources are selected by students in ways that match the aims of a project best.

These contrasting approaches to pedagogy are sometimes referred to as instructivist and constructivist respectively.

Development plans and policies How a school's vision and teaching philosophies are carried out is translated into

development plans and policies. In the detailed steps of such plans and policies, goals and objectives are further defined

providing interim and long-term targets. Policies are set, a budget is allocated, facilities are determined, roles are defined,

tasks are delegated, and an evaluation plan is created to define the direction ICT development will take. Facilities and

resources The learning environment in which ICT is used requires certain facilities and resources. Facilities include basic

infrastructure such as electrical wiring, Internet access, lighting, air-conditioning, and space. Decisions on inclusion or

lack of ergonomic design and choice of furniture impact not only on use of ICT, but also on the health and well being of

users. Resources include various types of technological devices from computers with peripherals, video equipment, and

specialized tools like digital microscopes. Further resources include various types of software, as well as traditional tools

like books, videos, and audiotapes. Understanding the curriculum An understanding of the curriculum affects the

progression of ICT in the curriculum in following various stages of development. First, is an awareness stage in which

students become ICT literate with regard to what technology is available and how it might be used. Second, as students

learn basic skills, they begin to apply various ICT tools to their regular learning assignments and projects.

83 Third, as students become more capable and confident with ICT, they begin to integrate and overlap both subject areas and tools. Last, is the applied use of ICT in which students are now enabled to address larger, more complex, real-world professional issues. Professional development of school staff In parallel with the curriculum for students, there must be professional development of the staff within a school. The personal productivity and professional practice of teachers are enhanced with the use of ICT. First, is an awareness stage in which teachers and staff become ICT literate with regard to what technology is available and how it might be used. Second, as teachers and staff learn basic skills, they begin to apply various ICT tools to their regular tasks and projects Third, as teachers and staff become more capable and confident with ICT, they begin to integrate and overlap both subject areas and tools. Last, is a change in professional practice in which teachers are now enabled to design lessons to incorporate larger, more complex, real-world projects using ICT tools and resources. As ICT is introduced into school systems, there is a tendency to move from discrete skills training to reflective practice and integrative professional development. Budgetary allocation and provision for release time for teacher professional development seriously impact on the ability of a school system to incorporate ICT in a meaningful way. Community involvement Community involvement may include parents, families, businesses, industry, government agencies, private foundations, social, religious and professional organizations, as well as other educational institutions such as vocational schools and universities. Community involvement can come in the form of donations of equipment and resources, or may be in human resources provided for training and technical assistance. As a community contributes to a school, so the school can give back in many ways. For example, a school may decide to provide community members with evening access to computer labs, or have students offer training to parents. The use of ICT provides an opportunity for a school and its students to interact with both local and global communities. Interaction may range from building web sites for community organizations, to sharing projects with remote schools.

84 Assessment Assessment includes both assessments of students as well as overall evaluation of a school system, two aspects that are intricately interwoven. An improvement in the one should predicate an improvement in the other. Means of student assessment should reflect choices in learning pedagogy and an understanding of ICT in the curriculum. For example, in the emerging and applying stages of ICT, assessment may be linked to pencil and paper tests, whereas in the infusing and transforming stages project based portfolios may be more appropriate. Each part of a school system needs to be evaluated to determine its impact on learning. Assessment should inform practice and support the management of learning. Assessment should allow a system to determine whether outcomes have been met, and then reviewed and revised accordingly. Budget allocations, policies, and procedures for ICT should match vision, teaching philosophies, and curriculum choices.

2.5.3 Process of ICT development

Teaching and learning are best thought of, not as separate and independent activities, but rather as two sides of the same coin, interconnected and interrelated. Studies of teaching and learning in schools around the world identify four broad stages in the way that teachers and students learn about and gain confidence in the use of ICT.

Discovering ICT tools The first stage that teachers and learners go through in ICT development is of discovering ICT tools and their general functions and uses. In this discovery stage, there is usually an emphasis on ICT literacy and basic skills. This stage of discovering ICT tools is linked with the emerging approach in ICT development. Learning how to use ICT

tools Following on from the discovery of ICT tools comes the stage of learning how to use ICT tools, and beginning to make use of them in different disciplines This stage involves the use of general or particular applications of ICT, and is linked with the applying approach in ICT development.

Understanding how and when to use ICT tools The next stage is understanding how and when to use ICT tools to achieve a particular purpose, such as in completing a given project. This stage implies the ability to recognize situations where ICT will be helpful, choosing the most appropriate tools for a particular

85 task, and using these tools in combination to solve real problems. This stage is linked with the infusing and transforming approaches in ICT development. Specializing in the use of ICT tools The fourth and last stage involves specializing in the use of ICT tools such as occurs when one enters more deeply into the science that creates and supports ICT. In this stage students study ICT as a subject to become specialists. Such study concerns vocational or professional education rather than general education and is quite different from previous stages involving the use

of ICT tools. 2.6 Use of ICT in Developing Collaborative Networks for Sharing and Learning such as -internet, E-mail, Tele-teaching,

Teleconferance 2.6.1 ICT in developing collaborative network:

The potential of each technology varies according to how it is used.

Haddad and Draxler identify at least five levels of technology use in education:

presentation, demonstration, drill and practice, interaction, and collaboration.

Each of the different ICTs—print, audio/video cassettes, radio and TV broadcasts, computers or the Internet—may be used for presentation and demonstration, the most basic of the five levels.

Except for video technologies, drill and practice may likewise be performed using the whole range of technologies.

On the other hand, networked computers and the Internet are the ICTs that enable interactive and collaborative learning best;

their full potential as educational tools will remain unrealized if they are used merely for presentation or demonstration.

ICTs

stand for information and communication technologies and are defined, for the purposes

of this primer,

as

a "

diverse set of technological tools and resources used to communicate,

and to create, disseminate, store, and manage information." These technologies include computers,

the Internet, broadcasting technologies (radio and television), and

telephone

to be used and their modalities of use. 2.6.2

Teleconferencing and

its educational use:

Teleconferencing refers

to "interactive electronic communication among people located at two or more different places."

There are four types of teleconferencing based on the nature and extent of interactivity and the sophistication of the technology: 1) Audio conferencing;

86 2)

Audio-graphic conferencing, 3) Videoconferencing;

and 4) Web-based

conferencing.

Audio conferencing involves the live (real-time)

exchange of voice messages over a telephone network. When low-bandwidth text and still images such as graphs, diagrams or pictures can also be exchanged along with voice messages, then this type of conferencing is called audio graphic.

Non-moving visuals are added using a computer keyboard or by drawing/writing on a graphics tablet or whiteboard.

Videoconferencing allows the exchange not just of voice and

graphics but also of moving images.

Videoconferencing technology

does not use telephone lines but either a satellite link or television network (

broadcast/cable). Web-based conferencing, as the name implies, involves the transmission of text, and graphic, audio and visual media via the Internet;

it requires the use of a computer with a browser and communication can be both synchronous and asynchronous.

Teleconferencing is used in both formal and non- formal learning contexts

to

facilitate teacher-learner

and learner-

learner discussions, as well as to access experts and other resource persons remotely.

In open and distance learning, teleconferencing is a useful tool for providing direct instruction and learner support, minimizing learner isolation.

The audio-graphic teleconferencing network aims to provide continuing education and academic upgrading to nurses in parts of Tianjin municipality where access to nursing education has been extremely limited. Various higher education institutions using teleconferencing in their online learning programs include the Open University of the United Kingdom, Unitar (Universiti Tun Abdul Ruzak) in Malaysia, Open University of Hong Kong, and Indira Gandhi National Open University. 2.6.3 Telecollaboration Online learning involving students logging in to formal courses online is perhaps the most commonly thought of application of the Internet in education. However, it is by no means the only application. Web-based collaboration tools, such as email, message boards, real-time chat, and Web-based conferencing, connect learners to other learners, teachers, educators, scholars and researchers, scientists and artists, industry leaders and politicians-in short, to any individual with access to the Internet who can enrich the learning process. The organized use of Web resources and collaboration tools for curriculum appropriate purposes is called telecollaboration.

Judi Harris defines telecollaboration as "an

87 educational endeavor that involves people in different locations using Internet tools and resources to work together. Much educational telecollaboration is curriculum- based, teacher-designed, and teacher-coordinated. Most use e-mail to help participants communicate with each other. Many telecollaborative activities and projects have Web sites to support them." The best telecollaborative projects are those that are fully integrated into the curriculum and not just extra-curricular activities, those in which technology use enables activities that would not have been possible without it, and those that empower students to become active, collaborative, creative, integrative, and evaluative learners (see Table 1). There are currently hundreds of telecollaborative projects being implemented worldwide and many more that have either been completed or are in development. 2.6.4 Use

of

radio and TV broadcasting in education:

Radio and television have been used widely as educational tools since the 1920s

and

the 1950s, respectively.

There are three general approaches to the use of radio and TV broadcasting in education: ●

direct class teaching, where broadcast programming substitutes for teachers on a temporary basis; ●

school broadcasting, where broadcast programming provides complementary teaching and learning resources not otherwise available; and ●

general educational programming over community, national and international stations which provide general and informal educational

opportunities. 2.6.5

Internet

The

Internet has introduced improvements in technology, communication and online entertainment, but it is also incredibly useful for education purposes as well. Teachers use the Internet to supplement their lessons, and a number of prestigious universities have opened up free online lectures and courses to everyone. It has even allowed retired teachers to read to and educate children in poorer countries. Widespread use of the Internet has opened up a substantial amount of knowledge to a much broader range of people than ever before. The development of Internet technologies has raised the education level in all countries and it has changed the way students are being taught at schools. That's why it is very important for the present generation that they provide internet education for their young generations.

88 Internet applications respond to students and other people questions in real time. Students are seeing Google as a new Teacher and the Internet as a school. That's why it is important for teachers to use information technology in education. The Internet has been crucial in the evolution of our education system in various ways. Teachers can use the internet as a modern tool for education. Education department should provide the infrastructure that teachers and student can use to get benefits of technology in education. Students are always curious and creative by nature. They are smart enough to know how they can use the internet to search for almost anything. It doesn't matter if they are studying at a private school or government school. But at the same time, there is a difference in the ways they use the internet for education in schools. In private schools, teachers will teach about computer and internet skills to students. The students note the homework that needs to be done related to that computer class. And do you know how some students do this? They are forced to go to a cyber cafe with their parents to collect data that they have to include in their assignments. This is not good. If students are taking the help of cyber boy to collect the data for their homework I don't think these students learned anything in this process. But the one thing they do learn is that money can work wonders anywhere. The teaching process that schools are following is not good and they need to use the internet as a tool, not the source. The source is a student. Teachers need to explore the creativity in their student's minds. And then students can learn and solve problems using their own creativity and innovative thinking and not by the direct work of parents/ tuition. If necessary the parents can help with encouragement but they should not do the homework themselves. Completing the assignment given is not as important as the learning process that a child goes through while doing it. It is essential for parents to provide computer and internet facilities to their children. It is not that easy for parents to pick up modern technologies as fast as their children but it is very important that parents also know about the importance of computers literacy and internet education. In government school especially in India, the level of computer and internet infrastructure is very low. I know government school or school in villages provide computer education only after 9th or 10th class. Within that little time too, a government school student barely gets to learn much because there are 5- 10 students who are assigned a single computer. It is very difficult to learn this way. I agree that this is the best time to teach them about the advanced computer skills but this is not the way to do it. The lack of Information technology infrastructure in schools is a big question mark against

89 Government policies towards computer education. It feels bad to see on the news that computer teachers are on strike again. This happens once a year. The government must think, how computer teachers can teach with low-quality IT infrastructure in government schools and a small salary? 2.6.6 Electronic Mail Electronic mail is a method of exchanging messages via computer networks and the Internet; the addressee receives the message virtually instantly. Using e-mail requires creating mailbox with an e-mail service provider. The mailbox is protected with a username and password. Advantages: An e-mail message can be sent to many recipients at once; A message can have one or several file attachments; Users can access their e-mail account from any computer connected to the Internet; No paper needed; Very low direct and indirect costs; Messages can be received on mobile devices. Disadvantages: The advantages of e-mail are also used by spammers and computer viruses; Attached files can contain viruses. 2.7

Use of ICT to Simplify Record Keeping: Information Management in Educational Administration in Special and Inclusive Setting 2.7.1 Role of ICT in record keeping and information management in school administration ICT makes dynamic changes in society. It is influencing all aspects of life. The influences are felt more and more at schools. Because ICT provides both students and teachers with more opportunities in adapting learning, teaching and managing the individual needs, society is forcing schools to aptly respond to this innovation. It provides newer and more effective ways of mitigating some of the challenges being faced by the educational system of the country. These technologies distinguish themselves by their

90 rapid evolution and revolution, continuously changing the modes of engagement with them. A decade long infusion of computers, and more recently ICT, has demonstrated varying impacts on learning. In the current information age, educational institutions are expected to play a crucial role as the engine for knowledge generation and learning environment. In this regard ICT becomes the vital means to facilitate this task. ICT has become an essential part of our everyday life, accordingly this integration in school improvement is not only for the purpose of teaching and learning, but also for educational management use, it has become one of the most effective factors in the school improvement. ICT plays a vital role in improving the functional effectiveness of school system. ICT can help the school administrators to improve administrative tasks such as school record keeping system and school information management system. 2.7.2

Record Keeping School records are books, documents, files and CD ROM in which is embodied information on what goes on in school (e.g. scholastic, co-scholastic, non-scholastic activities and important events etc), the school plant as well as other relevant information focusing on the growth and development of the school. The school records are official transcripts or copies of proceedings of actions, events, other matters kept by the school administrator, school records could be viewed as authentic registers or instruments or documents of official accounts of transaction or occurrence which are preserved in the school's office. Therefore, every school must keep certain specified records. Importance of school records: School records keeping includes the fact that school records tell the history of the school and are useful historical sources. 1. Tell the history of the school and are useful historical sources. 2. Facilitate continuity in the administration and management of a school. 3. Facilitate and enhance the provision of effective guidance and counselling services for students in the social, academic career domains. 4. Provide information about student's special educational or other needs, students current level of performance, students medical history etc. 5.

Provide information needed on ex-students by higher and other related institutions and employers of labour for admission or placement.

91 6. Facilitate the supply of information to parents and guardians for the effective monitoring of the progress of their children/wards in schooling or performance. 7. Provide data needed for planning and decision making by school heads, ministries of education and related educational authorities. 8. Provide a basis for the objective assessment of the state of teaching and learning in a school, including staff and student performance by supervisors and inspectors. 9. Provide information for the school community, the general public employers as well as educational and social science researchers for the advancement of knowledge. 10. Enable school heads to collate information on pupils and staff for decision making by higher authorities, the law courts security agencies and other related government agencies when occasion demands. 11. Provide a mechanism such as the school timetable for the productive management of time and coordination of school work and activities. 12. Serve as data bank on which both the school head and staff and even students can draw on. Some Important School Records • Admission and Withdrawal Register: This is a permanent record book into which is entered information regarding the entry and exit, including the details of the education and progress of each pupil that ever passes through the school. • Attendance Register: An attendance register is a book in which the presence or absence of students in a school is recorded on a daily basis. It is a statutory record that must be kept by every school. This record is kept on individual class basis. The class teacher is the custodian of this record. • Log Book: The log book is a historical record of events that have significant effects on the schools' activities. • The Visitors Book: The book is meant for recording the visits of important personalities, including officials and from the ministries of education or other related government agencies or any other school related visitors. • Staff and Students' Personal Files: It is necessary that the school should have as much information on every teacher and student as possible without violating their privacy.

92 • Cumulative Record Folder: Students' cumulative record folder is a storehouse of information on students' cognitive, affective and psycho-motor development. • Students' Report Sheet/Card' 1. It keeps data on students' academic performance. 2. It assists in monitoring students' academic progress. 3. It is a compliment to cumulative record folders. • Lesson Notes/Plan 1. It gives information on what a teacher plans to teach the students at a period of time. 2. It clearly shows the teachers' level of preparedness and their level of competence. 3. It challenges teachers for the task ahead. • Scheme and Record of Work Book: It reflects estimate of academic work which teachers expect to accomplish in each subject based on number of lessons they will have during each term. Pertinently it shows the ability of the teacher to organize the year's work and his/her resourcefulness and enthusiasm regarding the progress of the pupils. • Staff Time Book and Movement Book 1. They provide information on when staff report and or close at work. 2. They promote regular attendance and punctuality 3. They help checking truancy and gross indiscipline in staff. • Transfer and Leaving Certificate: Transfer and leaving certificate is the formal exit of the student after completion of study or leaving during the course of study in a school. • Library records: The library will have many records like stock register, issue register etc. Many of the routine function of the library can be automated using library management software. • Stock register: it is the record of all equipments and materials available in the school including the laboratories ●●●●● Cash Register 1. It is a record of financial transactions in schools.

93 2. It gives information about income and expenditures. 3. It promotes accountability and prevents corrupt practices. • Potential

of ICT in Record Keeping The usefulness of keeping school records with Information and Communication Technologies (ICT) is for the following reasons: ●●●● Administrative Efficiency:

One major setback in achieving the educational objective of the secondary education is inefficiency of the principal in keeping some

records. With the introduction of information and communication technologies such as computers, digital libraries, e-mail, internet and so on where information are stored and disseminated, principals can do better in keeping records, and become effective and efficient in performing their prescribed roles

as administrators. ● Availability of Information:

Information and Communication Technologies will help maintain adequate and accurate records in our schools and make it available with ease. ●

Easy Retrieval: It also leads to easy accessibility and dissemination of information on school records, will become available for national planning, financial budgeting, effective implementation of the educational programs and policies. School record keeping

is all about information collection, storage, retrieval, use, transmission, manipulation and dissemination for the purpose of enriching communication, decision-making and problem solving ability in the school system. It is therefore necessary that this process be as accurate and accessible as possible. Using ICT in keeping school records will help to facilitate and enhance the administration of the school towards achieving the goals of the secondary education. 2.7.3

Use of ICT in Information Management in Schools. E-mail: Schools can create and send out a classroom newsletter to keep parents up to date by e-mail. They can collect the e-mail addresses in the beginning of the school year or give parents the opportunity to sign in for the newsletter on the school website. Individual teachers can send e-mails when there are problems in the classroom or for giving parents good news about the learning process of their children. E-mails can be sent individually or in group. It is very easy to make groups of addresses in the most

94 common e-mail programs. Parents can read and respond to e-mails whenever they have time. E-mails are also available in the LMS and students contributions in terms of chats and forum postings get e-mailed automatically by the system. Website or Blog: On the school website all information of the school such as contact information, expectations, school rules, about the school and the teachers, how to use the internet at home, etc can be showed. The website can also have a calendar with useful information about school trips, parental evenings, and a map with pictures of activities with learners, etc. A school or class can make its own website on hired web space or can use free hosting web sites.

Many schools are using free blogging services from Google and word press to provide information to parents, students and public in general. Online Survey: Technology currently permits to get quick feedback from parents through online survey. Tools like Google form and survey monkey can be easily set up to get the information from parents and community members. These tools not only collect the information but perform the basic analysis and the outputs are

provided automatically for quick decision making. Virtual Learning Environments: A virtual learning environment (VLE) is a software system designed to support teaching and learning in an educational setting. A VLE will normally work over the Internet and provide a collection of tools such as those for assessment (particularly of types that can be marked automatically, such as multiple choice) or self-evaluation, communication through discussion boards, uploading of content, return of students' work, peer assessment, administration of student groups, collecting and organizing student grades, questionnaires, tracking tools, etc. New features in these systems include wikis, blogs, RSS and 3D virtual learning spaces. It can be seen that the VLE or the Learner Management Systems (LMS) have its own inbuilt communication modules to interact with the learners which in turn can be monitored by parents at home. MOODLE is one of the popular open source LMS. You can review the features of MOODLE from its website at www.moodle.org Media Sharing: currently it is possible to share various kinds of media online. Most popular one is sharing of videos through online video sharing sites like You Tube. Schools can use this to communicate with parents by sharing school programme related videos, videos for training parents on child rearing practices, helping students manage stress, time etc. School related audio programme could be podcasted using online podcasting sites. Presentations by teachers and others could be shared with parents through slide sharing sites. Images can be shared using flicker.

95 Social Networks. It is possible to use social networks like Facebook, Twitter or MSN to communicate with parents. It is possible to make groups in Facebook and share information with the parents. Parents can communicate with each other of the class of their children. They can share pictures, important information, etc. Facebook is not so difficult to work with and a lot of parents already have a Facebook account. An interesting website to teach parents to use Facebook is <http://facebookforparents.org/> Online Groups and Forums: Communicating with parents are made easy using forum and e-mail groups like Google groups and Yahoo groups. The school can create specific group of parents using Google or Yahoo services to communicate each other and among parents. It is also possible to share files among the group members. SMS and Instant Messaging: School can send SMS to the parents when the child is not at school. So the parents will immediately know if their child is playing truant. When the school has to send an urgent message for parents, school can send a collective SMS, warn parents or an individual SMS to contact a specific parent. Now days instant messaging service like WhatsApp is very popular among teachers, students, and parents. The simplicity of this tool makes it easy for sending information to parents. Specific WhatsApp group could also be formed for taking up discussion on a specific issue.

2.8 Let us sum up • The integration of computers and communications offer unprecedented opportunities to the education system with its capacity to integrate and interact with each other over a wide geographic distance in a meaningful way to achieve the instructional objectives. •

The development of new broadband communication services, convergence of telecommunication with computers, recent developments in the field of communication protocol have fostered numerous proposals for the uses of IeT to support the teaching and learning environment.

The growth of these communication and computer systems, their ease of use, the power and diversity of information transfer allow teachers and students to have access to a world beyond the classroom. • ICT development in education is a continuum approach along which an educational system or institution can be mapped depending on the stages of ICT development. These broad stages have been termed as Emerging, Applying, Infusing and Transforming stages of ICT development. •

ICT stands

for information and communication technology and is defined as a

96 "diverse set of technological tool and resources used to communicate, and to create, disseminate, store, and manage information." •

ICT encompasses both the internet-enabled sphere as well as the mobile one powered by wireless networks. It also includes antiquated technologies, such as landline telephones, radio and television broadcast - all of which are still widely used today alongside cutting-edge ICT pieces such as artificial intelligence and robotics. • ICT commonly means more than its list of components. It also encompasses the application of all those various components. It's here that the real potential, power and danger of ICT can be found. • The scope of ICT is not fixed, but is responsive to ongoing technological developments. This is evident in the emergence of advanced internet technology over the past few years and the resulting changes in the ways that students construct with others. • Student develop capability in using ICT for tasks associated with information access and management, information creation and presentation, problem solving, decision making, communication, creative expression, and empirical reasoning. This includes conducting research, creating multimedia information products, analyzing data, designing solution to problems, controlling processes and devices, and supporting computation while working independently and in collaboration with others. The scopes of ICT in various education sectors are: 13. Information Technology in Educational Management 14. Lifelong Learning 15. Distance Learning 16. IT-Professional and Vocational Education in Information Technology 17. Advancing community linkages 18. Improving policy planning and management 19. Establishing and sustaining lifelong learning 20. Facilitating skill formation 21. Lively teaching learning process. 22. Those students can find information, they need proper instructions, they need scope for creativity, and expectations of the teacher bring forth performance.

97 23. Helping the student learn. 24. Enhance teaching. • ICT is leveraged for economic, societal and interpersonal transactions and interactions. ICT has drastically changed how people work, communicate, learn and live. • Studies of teaching and learning in schools

around the world identify four broad stages in the way the teachers and learners use ICT as a support to teaching and learning -

supporting work performance, enhancing teaching, facilitating learning and creating innovative learning environments. • Several attempts have been made to classify the functions of ICT in education in the literature, However, the most comprehensive and well defined classification describes the following functions of the use of ICT in education: (a) ICT as Object (b) ICT as Assisting Tools (c) ICT as Management of Learning and (d) ICT as Medium of Teaching & Learning. • An increasing body of evidence suggests positive results of the ICT integration with teaching and learning. The type, features, styles, usage and pedagogical base of these transformations from CAL to WBI has been described below. Type: Computer Assisted Learning (CAL) Features: Interactivity, Flexibility and Learner Centered Styles: Drill & Practice, Tutorials, Simulation and Instructional Games Usage: Self Paced Instruction Pedagogical Base: Primarily Behavioral Objectives Type: Multimedia Based Instructional Software Features: Interactivity & Multi model Instruction Styles: Drill & Practice, Tutorials and Simulation & Modeling Usage: Self-Paced Instruction Pedagogical Base: Primarily Behavioral Objectives & Constructivism Type: Web Based Instruction Features: Interactivity, Just in time & On demand Instruction Styles: Computer Supported Collaborative Learning Environment

98 Usage: Asynchronous & Synchronous Virtual Class Room Pedagogical Base: Primarily Constructivism • Learning and teaching whether it is through actual classroom settings or through technological applications utilizes many psychological principles knowingly or unknowingly. The most commonly used or heard Schools of Psychology are Behaviourism, Cognitivism and Constructivism. • ICT is used in education for supporting students' learning or for development of competences, in other words for helping to reach the goals of education. The quality of learning depends on how ICT is used in learning. • ICT could be used in education for supporting the development of students' motivation. • There are many concepts that can be used to describe motivational aspects of teaching and learning. • According to SDT, a student's way of thinking has an important role in the process of motivation. • Based on the UNESCO publication, a model has been presented that can be useful in determining the stage of ICT development reached by a country, a district, or even an individual institution. • Studies of ICT development in both developed and developing countries

identify at least four broad approaches through which educational systems and individual institutions typically proceed in their adoption and use of ICT. Sometimes, the number of stages identified varies, though there is a general consensus that the introduction and use of ICT in education proceeds in broad stages that may be conceived as a continuum or series of steps. These steps, termed Emerging, Applying, Infusing, and Transforming. •

The potential of each technology varies according to how it is used.

Haddad and Draxler identify at least five levels of technology use in education:

presentation, demonstration, drill and practice, interaction, and collaboration. • Each of the different ICTs-print, audio/video cassettes, radio and TV broadcasts, computers or the Internet-may be used for presentation and demonstration, the most basic of the five levels.

Except for video technologies, drill and practice may likewise be performed using the whole range of technologies. • Teleconferencing refers

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99 located at two or more different places."

There are four types of teleconferencing based on the nature and extent of interactivity and the sophistication of the technology: • 1) Audio conferencing; • 2)

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Online learning involving students logging in to formal courses online is perhaps the most commonly thought of application of the Internet

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Radio and television have been used widely as educational tools

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The Internet has introduced improvements in technology, communication and online entertainment, but it

is also incredibly useful for education purposes as well. • Electronic mail is a method of exchanging messages via computer networks and the Internet; the addressee receives the message virtually instantly. • ICT has become an essential part of our everyday life, accordingly this integration in school improvement is not only for the purpose of teaching and learning, but also for educational management use, it has become one of the most effective factors in the school improvement. ICT plays a vital role in improving the functional effectiveness of school system. ICT can help the school administrators to improve administrative tasks such as school record keeping system and school information management system.

2.9 Check your progress Define ICT What are the components of an ICT system? What are the scopes of ICT in various education sectors? What are the use of ICT in education from the point of view of learning? Explain ICT in developing collaborative network.

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Unit - 3 □ Use of Multimedia in Education Structure

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of Multimedia in Education 3.6 Recent Trends in Multimedia 3.7 Implications of Multimedia in Teaching and Learning 3.8 Lets Sum Up 3.9 Check Your Progress 3.10

References 3.1 Introduction There has been a rapid growth in recent years in the uses of digital technologies in education, which mirrors the increasing importance of the use of these technologies in the world in general. In mainstream education in many parts of the world, the uses of digital technologies have been constantly increasing and we find ourselves in situations in which all teachers are being expected to demonstrate their ability to use such technologies as part of their teaching toolkit. With the advancement of technology in this world, we can see that the world that we live in is changing rapidly and the field of education are one of the field that are growing to be much better. The old day education where the learning environments are passive is long gone. We can see that the use of multimedia in education has grown a lot in this recent years and is looking to expand ever further in the future. The traditional education also known as conventional education is a long-established customs found in school that society has traditionally deemed appropriate. This type of education is more to teacher-centered that focused on rote learning and memorization. In the traditional learning, students are passive absorbers of information and authority. They are less active in class and lack in problem solving skills. Furthermore, the traditional ways of learning are much more linear with factual accumulation and skill mastery while the new approach with the help of multimedia are non-linear, with one idea linked to another, allowing the learner to choose the path that they want to learn.

104 The traditional approach of learning also lack in resource. Knowledge can only be absorbed through lecture and textbook. By using multimedia, there will be much more resource that can be attained especially through the use of the internet. The traditional approach of learning is also less creative. The students are more passive as they lack in material resource needed in order to express their creativity. Such loop hole can make children to be less passionate to learn. This is why multimedia use in education is vital in education. Multimedia is vital in our life. This is because it is packed with various elements such as text, graphic, sound, video and animation. All of this element can be seen in our surrounding. It is also used in various fields such as in education, training, business, games, science and technology. This is a proof that multimedia is important. In fact, multimedia is changing the ways of learning itself. Instead of just limiting with a linear presentation such as reading text from a book, multimedia makes many improvements in learning by bringing various elements in order to make it more dynamic. "Multimedia is a synthesis: a hybrid offering the advantages of the user-driven book with the wonders of electronic technology" -Robert Winter. A primary application of the interactive multimedia for instruction is in an instructional situation where the learner is given control so that he/she may review the material at his or her own pace and in keeping with his/her own individual interests, needs, and cognitive processes. The basic objective of interactive multimedia material is not so much to replace the teacher as to change the teacher's role entirely. As such, multimedia must be extremely well designed and sophisticated enough to mimic the best teacher, by combining in its design the various elements of the cognitive processes and the best quality of the technology. With today's multimedia courseware, once a programme has been designed and built in with the appropriate responses, it should be flexible and permit change and alteration. Multimedia is a melody sung in harmony with multi-channel and multi-modal bits of knowledge and creation. Multimedia facilitates mastering basic skills of a student by means of drill and practice. It helps in problem solving by means of learning by doing, understanding abstract concepts, provide enhanced

access for teachers and students in remote locations, facilitate individualized and cooperative learning, helps in management and administration of classroom activities and learning content, and simulate real life problem handling environments. Multimedia Technology is used and experimented by various educational institutions of all levels all over the world in their own designed modes.

105 3.2

Objectives After going through this unit you will be able to ●

define multimedia and

discuss its meaning, nature, scope and approach. ● explain the different types of projected and non-projected aids along with their merits and demerits. ● discuss about the different

advantages and limitations of multimedia in education. ● discuss the recent trends in multimedia. ● Explain the implications of multimedia in teaching and learning. 3.3

Multimedia : Meaning, Nature, Scope, Definition and Approaches

Information which is stored in different forms could be combined and used in different combinations.

Multimedia can be recorded and played, displayed, dynamic, interacted with or accessed by information processing devices, such as computerized and electronic devices. Multimedia devices are electronic media devices used to store and experience multimedia content.

This process has given rise to the term 'Multi-media'.

This combination of different media for communication has influenced and changed all aspects of our life, including the teacher and the learner. Multimedia has become an inevitable part of any presentation. We have seen that it has found a variety of applications right from entertainment to education. The evolution of internet has also increased the demand for multimedia content. Multimedia is a term used to describe how multiple means of media like text, audio, graphics, animation, video, and interactivity are used to communicate information. It is also often used to describe any computer media. This helps us to understand information at a faster rate.

3.3.1 Meaning of Multimedia

Multimedia is defined in many ways.

Most of the definitions agree on the characteristic that multimedia contains texts, graphics, animations, video and sound in an unified way and the content can be structured and presented differently.

Let us explore some of the definitions given below. "

Multimedia is the

exciting combination of computer hardware and software that allows you to integrate video, animation, audio, graphics, and text resources to develop effective presentations on an affordable desktop computer" (

Fenrich, 1997).

106 "

Multimedia is characterized by the presence of text, pictures, sound, animation and video; some or all of which are organized into

some coherent program" (Phillips, 1997).

From these definitions we see that Multimedia is a concept which sees the use of text, graphic art, sound, animation, and video in different combinations. This integration of Media into one whole and that which gives the user more benefits than any one of the media used individually is Multimedia. Interactive Multimedia: The Encyclopedia Britannica Online defines "Interactive Multimedia" as, any computer-delivered electronic system that allows the user to control, combine, and manipulate different types of media, such as text, sound, video, computer graphics, and animation. Interactive multimedia integrates computer, memory storage, digital (binary) data, telephone, television, and other information technologies. Their most common applications include training programs, video games, electronic encyclopedias, and travel guides. Interactive multimedia shift the user's role from observer to participant and are considered the next generation of electronic information systems.

Multimedia learning as learning from words and pictures (Mayer 2005), o The words can be printed (e.g., on-screen text) or spoken (e.g., narration). o The pictures can be static (e.g., illustrations, graphs, charts, photos, or maps) or dynamic (e.g., animation, video, or interactive illustrations). Multimedia instruction is intended to foster learning by presenting words and pictures. Figure : Visual Representation of the Cognitive Theory of Multimedia Learning (sources:

http://www.ied.edu.hk/apfs/lt/v12_issue2/rias/image1.jpg)

107 3.3.2 Basic Assumptions and Principles Richard E. Mayer discusses twelve principles that shape the design and organization of multimedia presentations. Some examples are included: Coherence Principle - People learn better when extraneous words, pictures and sounds are excluded rather than included.

Signaling Principle - People learn better when cues that highlight the organization of the essential material are added.

Spatial Contiguity Principle - People

learn better when corresponding words and pictures are presented near rather than far from each other

on the page or screen. Segmenting Principle - People learn better from a multimedia lesson is presented in user-paced segments rather than as a continuous unit. Pre-training Principle - People learn better from a multimedia lesson when

they know the names and characteristics of the main concepts. Modality Principle - People learn better from graphics and narrations than from animation and on-screen text. Multimedia Principle - People learn better from words and

pictures than from words alone. Personalization Principle - People learn better from multimedia lessons when words are

in conversational style rather than formal style

3.3.3 Definitions and Meaning of Multimedia

Multimedia is a burning topic in education because it represents the latest technology and introduces into the classroom whole new ways of thinking about curriculum, interactions with students and even the nature of learning itself. He elaborates that the meaning of multimedia has changed from meaning nothing to everything. Multimedia can mean any kind of file or document, either a text or spreadsheet that have audio or video effects or "an interactive information cafe". Whatever it is not, it certainly is the most promising technology in education. - WeidongXhang (2003) Packiam (1986)

had

referred
to the use of appropriate and carefully selected varieties of learning experiences which
when presented to the learner through selected teaching strategies will reinforce and strengthen one another
in such a way that the learner
will achieve predetermined objectives in an effective way.

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Education is defined as a means of providing systematic training and instruction and training is provided by instruction, discipline on drill. In terms of having training and instruction, Multimedia is a powerful tool which can provide individual and interactive instructions as well as motivation for practice in an entertainment environment. Multimedia also provides students with different learning styles, the opportunity to learn, share, communicate and grow using all their faculties.

3.3.4

Nature of Multimedia Multi - Many Media - Techniques /methods. Multimedia approach uses a number of media, devices, techniques, in the teaching learning process. Multimedia approach has come out of researches and experiments in educational technology that have been undertaken in order to improve the

process

of teaching learning.

Multimedia approach aims at providing meaningful learning experiences via a mix of media in order to achieve predetermined objectives. The choice of the media has to be done carefully so that one does not hamper or reduce the effect of the other i.e. each media must complement the
after. The media have to be used sequentially and judiciously. Only necessary ones are to be used. Then it would be possible to make optimum use of them in a most economical manner. In multimedia approach, several media and techniques are used as powerful means of communication. ●

Multimedia

approach uses a number of media, devices, techniques in the teaching learning process. ● Multimedia approach can convey vast information and provide many sources from which student can access the information. ● Multimedia approach will improve the teaching learning process. ● Multimedia approach is not restricted to a single type of learning style. It can provide the support of a wide range of activities. ●

Multimedia approach aims at providing meaningful learning experience via a mix of media in order to achieve predetermined objectives. ●

Multimedia approach provides the opportunity to gain mastery of competencies and skills. ●

The choice of the media has to be done carefully so that one does not hamper or reduce the effect of the other. That is each media must complement the other.

109 ● Multimedia approach will enable the learner to get access to information in dynamic environment. 3.3.5

Educational

Implications of Multimedia ● Multimedia enables students to represent information using several different media. Hypermedia links allow students to organize information in meaningful ways. ● Multimedia can take into account

different learning styles. Some students learn by interpreting text, while others require more graphical or aural representations. ● Multimedia allows for self-pacing and discovery, students can take the time they need and choose the path of learning making learning meaningful and pleasurable. ● Multimedia helps in development of higher order thinking skills. Interactive multimedia encourages student. ● Multimedia provided the students the flexibility of anywhere, 'any time' learning. ● Multimedia helps in developing group and interpersonal skills. Better communication between students via e-mail, chat sessions etc., can encourage collaborative learning and enhance student-teacher interaction. ● Multimedia helps students to learn the

content in a given discipline. It helps students to think effectively, practice problem solving and decision making. 3.3.6 Why Use Multimedia in the Classroom?

Multimedia activities encourage students to work in groups, express their knowledge in multiple ways, solve problems, revise their own work, and construct knowledge.

The advantages of integrating multimedia in the classroom are many. Through participation in multimedia activities, students can learn:

- Real-world skills related to technology

- The value of teamwork
- Effective collaboration techniques
- The impact and importance of different media

- The challenges of communicating to different audiences
- How to present information in compelling ways

- Techniques for synthesizing and analyzing complex content
- The importance of research, planning, and organization skills

- 110 • The significance of presentation and speaking skills
- How to accept and provide constructive feedback
- How to express their ideas creatively

There are, however, some constraints to using multimedia in the classroom, including:

- Technological resources, both hardware and software
- Technological skills, for both the students and teacher
- Time required to plan, design, develop, and evaluate multimedia activities

3.3.7 Role of Teacher in Multimedia Approach

Teacher has to adopt a number of methods and techniques.

-

Teacher has to aware of the different available media and their availability.

- Teacher should be physically competent to use and demonstrate the use of the different media.
-

Teacher should be skillful enough to make a judicious choice of media and competent enough to mix them sequentially and in an orderly manner.

- Teacher's role is that of a facilitator or manager of activities.
- Teacher has to lead his student for independent, individualized learning.
-

Prerequisites for developing a Multimedia Instructional device 3.3.8

Elements of Multimedia The different building blocks

of Multimedia are Text, Images and graphics, Audio, Video, and Animation.

Any multimedia application consists any or all of them.

Let us learn about each one

- Text - ASCII/Unicode, HTML, Postscript, PDF
- Audio - Sound, music, speech, structured audio (e.g. MIDI)
-

- Still Image - Facsimile, photo, scanned image, photographs, drawings, maps and slides
- Video (Moving Images) - Movie, a sequence of pictures
- Graphics - Computer produced image
- Animation - A sequence of graphics images

111 1.

Text: Text and symbols are very important for communication in any medium. Using text in online training has many advantages: text files are small so they perform well at low bandwidth, the user can search for specific words or phrases, and text can be easily updated. You can create text directly within an authoring application or import it from external text files. Anti-aliasing enables you to create attractive text that blends into the background color without any jagged edges. Authorware, Director, and Flash all support anti-aliased text. Using anti-aliased text helps avoid having to create display text as a graphics file, which would make your overall course size much larger than if you simply entered text directly into the authoring tool. 2.

Images and Graphics: Images play a very important role in a multimedia. It is expressed in the form of still picture, painting or a photograph taken through a digital camera. The points at which an image is sampled are known as picture elements, commonly abbreviated as pixels. The pixel values of intensity images are called grayscale levels. There are different kinds of image formats like the Captured Image Format and the format when images are stored. The captured image Format is known by two main factors that is spatial resolution which is specified as pixels x pixels (eg. 640x480) and color encoding, which is specified by bits per pixel. Both factors depend on hardware and software for input/output of images. The Stored Image Format is when we store an image; we are storing a two- dimensional array of values, in which each value represents the data associated with a pixel in the image.

These images can be edited with the help of few of the software like general drawing programs, JASC Paint Shop Pro, Corel Photo Paint, Macromedia Fireworks ,Art Rage: free (NZ) paint program simulating, Corel Draw, and Open Office / Libre Office Draw, GIMP, and Mypaint.

Graphics Formats: Most Web browsers can display GIF and JPEG graphics files. Web browsers that are version 4.0 or later can use the JPEG format for continuous-tone images, such as photographs and images that use color gradients. The PNG format was

112 developed as a patent-free replacement for the GIF format. PNGs can use an alpha channel to define transparency in a graphic. Import PNG files into any of the Macromedia tools as an alternative to GIF files, especially if you need 24-bit graphics or graphics with transparency. Use this format in Web-native content only when delivering to newer browsers; some older browsers do not support the PNG format also display PNG graphics files.

The two most popular graphic formats for online training and Web pages in general are GIFs and JPEGs. Both are bitmap files that are relatively small in size. The two formats compress images differently, each excelling at compressing different types of graphics. Using software such as Macromedia Fireworks, you can compare the file size of your graphics with various optimization settings to help you pick the best file format. Use the GIF format for line art and graphics that have large areas of a single color. Graphics saved in the GIF format can have one transparent color where JPEG graphics cannot. There are applications like format factory which helps us in converting graphics from one format to other. 3.

Audio: Audio can enhance learning concepts and reinforce ideas presented as text or graphics on the screen. Using audio may be essential to the teaching of topics such as a foreign language or music appreciation. There are three types of audio assets that are commonly used in e-learning: • Music • Narration (voice-overs) • Sound effects Music demands a higher-quality and a wider sound-frequency range than narration and therefore produces larger files. Narrations generally have a smaller sound frequency range so it can be compressed more than music and still retain good sound quality. Sound effects are generally short so they don't have a large impact on the overall file size of an online course.

Audio Formats: The WAV and AIFF audio formats, popular on Microsoft Windows and Macintosh systems respectively, usually create files that are too large to use in an online course. Use one of the compressed formats with the goal of balancing small file size with acceptable quality audio. You have different options depending upon which authoring software

you use. Both Shockwave Audio (SWA) used by Authorware and Director, and MP3, which is used by Flash are popular compressed formats useful for all three types of audio used in e-learning.

The open source audio editing software like

113 audacity is very popular tool for audio editing. 4. Video: Although video requires lots of bandwidth to download, it is very useful for conveying certain information. Using video in e-learning helps realistically demonstrate equipment and processes among other things. For instance, an e-learning course in botany might show a video of a sprouting seed. A course about the features of an airplane might show a video of a crewmember properly closing and securing a door for takeoff. The intricate level of detail visible in video is also ideal for illustrating subtle, nonverbal information.

For example, to teach sales skills you could use a video to demonstrate an interaction between a salesperson and a customer, then have the learners analyze the body language of the people involved in the transaction.

Video Formats: There are three standard digital video formats: Quick Time, Video for Windows, and MPEG. Video files tend to be large so they really aren't appropriate for delivery on modem connections. You may choose to include video in your e-learning course if you are delivering it over an intranet or to users with relatively high bandwidth connections.

There are many open source video editing tool and open shot is one such popular tool. 5. Animation: Animation illustrates concepts with movement, shows processes, or draws attention to a region or elements of a screen. Since animations usually involve graphics, they are highly dependent upon the size and file type of the graphics that are being animated.

Animation Formats: There are many ways you can create animations. Authorware, Dreamweaver, Director and Flash can all create animations. An animation created within an authoring program is usually smaller and more efficient than an animation created in another tool and then imported in your authoring program. This is particularly true when an animation is based on shapes created with the software's drawing tools rather than with imported bitmaps. For example, Flash excels at creating vector graphics and animations. Although Flash can animate bitmap graphics, animations made predominately with vector graphics in Flash are considerably smaller than animations created with bitmap graphics.

Simple 2D animations can be created using open source tools like pencil and more advance tools like blender. 3.3.9

Types of Multimedia

Multimedia may be broadly divided into Linear and Non-linear

Multimedia.

In

Linear Multimedia the active content progresses without any navigational control

114 for the viewer. The viewer interacts with the multimedia application in which the content is sequentially arranged. The viewer does not control the progress of the content. In other words, the viewer is a passive receiver of the multimedia content most of the time. For example a movie uses a combination of audio, graphics and animations, but the viewer has no control over the sequence of events. Non-linear Multimedia uses interactivity to control progress as with a video game or self-paced computer based training. It allows one to use the content according to ones wants. It is a two way communication. This communication can be controlled by using buttons, links and hypertext. Hypermedia is an example of non-linear content. It connects to different media elements such as audio and video. Multimedia presentations which are live or recorded are also Non-linear.

A recorded presentation may allow interactivity via a navigation system. A live multimedia presentation may allow interactivity via an interaction with the presenter or performer. 3.4

Types of

Instructional Aids: Projected and

Non-projected Aids, Projector, Radio, Tape Recorder, Television, Films, Computer, White Board, Smart Board, E-Flash, Cards, Educational Toys 3.4.1

Instructional Aids The word instructional aid refers to any material or device used to assist the instructor in: Preparation of the lesson(s) Presentation (teaching) of the lesson(s) Facilitates trainees' learning 3.4.2 Importance of Instructional Aids Instructional aids assist to reinforce and supplement the instructor's communication during the presentation of the lesson. This is done by: - clarifying the concept or idea - making the communication channel more explicit - helping the learners to develop a good conceptual understanding of the content or skill taught. For example an idea which would be difficult (abstract) can easily be simplified when an instructional aid is used to present it. Therefore learners are able to relate an idea to their common reality or environment with the use of aids.

115 3.4.3 Types of instructional aids There are many types of instructional aids. Each instructional aid, however, may have inherent advantages and disadvantages (or limitations). Essentially types of instructional aids are determined by: The instructor/teacher. The instructor's ability either to create (improvise) and use aids or select from the readily made and suitably available aids is crucial. This squarely depends on the instructor's prowess, ability or experience. Objective of the lesson. By virtue of the objective(s) of a lesson, the use of certain instructional aids may be more desirable or otherwise. For example if a lesson involves the demonstration of a particular skill, then the use of demonstrational aids becomes inevitable. Nature of subject matter. The subject matter or content to be taught will underline the type of aids (if any) to be used. For example, if the material is considered comparatively difficult or abstract, then instructional aids have to be carefully selected and used. Generally, instructional aids can be grouped in four main categories: (a) Visual aids These appeal to sight. They include the blackboard, posters, charts, displays, models, pictures etc. (b) Auditory aids These type of instructional aids appeal to learners sense of hearing. They include radio and many types of audio recording. (c) Audio-Visual Aids Audio Visual aids appeal to both hearing and seeing. They include sound motion pictures, slides on sound and television. (d) Stimulation devices These are the actual representation of the real objects or process, but reduced in size. They include devices built to stimulate the action or function of the real device. Their purpose is to develop the 'feel' of the actual functioning of the real objects. 3.4.4 Characteristics of good instructional aids Instructional aids are essential to effective instruction. The instructor should know

116 how to prepare and use instructional aids and should recognize their value in fostering good instruction. The greatest value of instructional aids lies in: • Their appeal to trainees senses and perceptions • Their ability to attract and hold trainees attention and interest. • The ability in developing understanding of the material to be learned • Helps the trainees to learn faster and save instructional time • Helps trainees to understand the relationships between different concepts or ideas. A good instructional aid should promote certain desirable results. It should stimulate interest, command attention, be easily understood and promote a positive reaction on the part of the trainee. An instructional aid should be complete, have some explanation in the form of a label, and finally be as simple as possible. 3.4.5 Objectives of Instructional Aids 1. To enhance teachers skills which help to make teaching-learning process effective 2. Make learners active in the classroom 3. Communicate them according to their capabilities 4. Develop lesson plan and build interest 5. To make students good observer 6. Develop easy and understandable learning material 7. Follow child cornered learning process 8. Involve intimation in objectives 9. To create interest in different groups 10. To make teaching process more effective 3.4.6 Advantages of Instructional aids 1. Its helps to make learning process more effective and conceptual. 2. It helps to grab the attention of students 3. It builds interest and motivation teaching students learning process 4. It enhance the energy level of teaching and students 5. It is even better for over burden classrooms 6. It provides students a realistic approach and experience

117 3.4.7 Limitations in Instructional aids 1. Technical Problems 2. Students Distractions 3. Expensive 4. Time consuming 5. Need Space 6. Convenience 3.4.8 Audio Visual Aids Audio visual material must be seen in their relationship to teaching as a whole and to the learning process as a whole, until the teacher understands the relationship between audio visual material and teaching learning process. Audio visual materials are produced, distributed and used as planned components of educational programs. It helps the process of learning that is motivation, classification and stimulation. A.V. aids are multisensory materials which motivate and stimulate the individual. It makes dynamic learning experience more concrete realistic and clarity. It provides significant gains in thinking and reasoning. Audio visual aids are sensitive tools used in teaching and as avenues for learning. These are planned educational materials that appeal to the senses of the people and quicken learning facilities for clear understanding. Definitions: 1. According to Kinder S. James: Audio visual aids are any device which can be used to make the learning experience more concrete, more realistic and more dynamic. 2. According to Burton: audio visual aids are those sensory objects or images which initiate or stimulate and reinforce learning. 3.

According to Carter.V.Good: audio visual aids are those aids which help in completing the triangular process of learning that is motivation, classification and stimulation. 4. According to good's dictionary of education: audio visual aids are anything by means of which learning process may be encouraged or carried on through the sense of hearing or sense of sight. 5. According to Edger Dale: audio visual aids are those devices by the use of which communication of ideas between persons and groups in various teaching and

118 training situations is helped. These are also termed as multi-sensory materials. 6. According to McKean and Roberts: audio visual aids are supplementary devices by which the teacher, through the utilization of more than one sensory channel is able to clarify, establish and correlate concepts, interpretations and appreciations. 7. According to KP. Neeraja: an audio visual aid is an instructional device in which the message can be heard as well as seen. Purpose of A-V aids: • To supplement and enrich teachers own teaching to make teaching-learning more concrete. • To serve an instructional role in itself. • To create interest among the group. • To make teaching as an effective process. Advantages of AV aids: 1. A.V.Aids helps in effective perceptual and conceptual learning. 2. A.V.Aids helpful in capturing and sustaining attention of students. 3. A.V.Aids arouses interest and motivates students to learn. 4. A.V.Aids is helpful in new learning. 5. A.V.Aids helps in saving energy and time of both the teachers and students. 6. A.V.Aids provides near realistic experience. 7. A.V.Aids can meet individual demands. 8. A.V.Aids is useful in for education of masses. 3.4.9 Classification of A.V. Aids: Various classifications are given for Audio visual aids according to the type of projection by various authors. A) Classification of A.V.Aids I) Audio aids Audio materials are those which can be heard. Ex: - radio, tape recorder, walkman, Headphones. II) Visual aids: these are helpful to visualize the things. Ex: - graphic aids, 3d-aids, display boards, and print material.

119 III) Audio visual aids: these aids can be heard and seen simultaneously. Ex: - projected aids, TV, films. B) Classification of A.V.Aids I) Simple A.V.Aids: It includes graphic aids, display boards, 3d-aids, print material...etc. II) Sophisticated A.V.Aids: includes audio-visual aids. 3.4.10 Principles to be Followed for the Effective Use of A.V. Aids: Audio visual materials should function as an integral part of the educational program. A.V. aids should be centralized, under specialized direction and leadership in educational programs. An advisory committee consisting of representative from all areas of curriculum should be appointed to assist in selection and coordination of A.V. materials. An education program should be flexible. A.V. material should be carefully located to eliminate duplication, easy accessibility and convenient use. A.V. material should be available whenever and wherever they needed for effective utilization as an integral part of curriculum Budget appropriations should be made regularly for A.V. education programs. Periodic evaluation to be done to assess the function of, utilization and expenditure of the program. 3.4.11 Projected Audio Visual Aids: OVER HEAD PROJECTOR: The over head projector is the most used in all a.v. aids. It projects transparencies with brilliant screen images suitable for use in a lighted room. The teacher can write or draw diagrams on the transparency while he teaches; these are projected simultaneously on the screen by the OHP. During presentation: Keep the screen above the heads of the participants. Keep the screen in full view of participants

120 Make sure you are not blocking any ones view when presenting. Darken the room appropriately by blocking out sunshine and dimming nearby. Turn the screen off between slides if you are going to talk for more than two. Talk to the audience, not to the screen Purposes: To develop concepts and sequences in a subject matter area. To make marginal notes on the transparencies for the use of the teacher that can carry without exposing them to the class. To test students performances, while other classmates observe. To show relationships by means of transparent overlays in contrasting color. To give the illusion of motion in the transparency. Advantages: It permits the teacher to stand in front of the class while using the projector, thus enabling her to point out features appearing on the screen by pointing to the materials at the projector it self and at the same time, to observe the students reactions to her discussion. Gains attention of the student OVER HEAD TRANSPERENCIES: Transparencies are popular instructional medium. They are simple to prepare and easy to prepare and easy to operate with the overhead projector which is light weight. A 10*10 inches sheet with printed, written or drawn material is placed on the platform of the projector and a large image is projected on a screen behind you. The projector is used from near to the front of the room with the teacher standing or sitting beside, facing the student. Guidelines for making effective transparencies: ● Have one main idea an each transparency. ● Include only related figures and diagrams. ● Use simple lettering style in writing. ● Use diagrams in proposition to its lettering. ● Keep the message clear and simple.

121 ● Emphasize the key messages. ● Use color and lettering with discretion. Advantages: ● Permits face to face interaction with the students. ● Can be used in daylight conditions. ● Can present information in systemic developmental sequences. ● Requires limited planning and can be prepared in variety of inexpensive methods. ● Easily available. THE OPAQUE PROJECTOR Opaque projector is the only projector on which you can project a variety of materials ex: - book pages, objects, coins, postcards, or any other similar flat material that is non- transparent The opaque projector will project and simultaneously enlarge, directly from the originals, printed matter, all kinds of written or pictorial matter in any sequence derived by the teacher. It requires a dark room, as projector is large and not reality movables. Advantages: ● Stimulates attention and arouses interest. ● Can project a wide range of materials like stamps, coins, specimen, when one copy is available. ● Can be used for enlarging drawings, pictures and maps. ● Does not require any written or typed materials, hand-written material can be used. ● Helps students to retain knowledge for longer period. ● Review instructional problems. ● Test knowledge and ability. ● Simple operation. Disadvantages: ● Costly equipment. ● Needs to use it with care. ● Needs a dark room for projection

122 SLIDE PROJECTOR A slide is a small piece of transparent material on which a single pictorial image or scene or graphic image has been photographed or reproduced otherwise. Slides are a form of projected media that are easy to prepare. They are still pictures on positive film which you can process and mount individually yourself or send to a film laboratory. The standard size of the slides is 2" X 2" any 35mm camera will make satisfactory slides. Types of slides 1. Photographic slides: 2" X 2" 3" X 4" a) Black and white b) Colored 2. Handmade slides: can be made with a) Acetate sheet b) Cellophane c) Etched glass d) Plain glass e) Lumarith Slides can be made from photographs and pictures by teachers and pupils taking photographs and snapshots when they go on fieldtrips for historical, geographical, literacy or scientific excursions. The arrangement of slides in proper sequence, according to the topic discussed, is an important aspect of teaching with them. Advantages: 1. Requires only filming, processing and mounting by self or laboratory. 2. Results in colorful, realistic, reproduction original subject. 3. Preparation with any 35mm camera for most uses. 4. Easy to revise and up-date. 5. Easily handled, stored and re-arranged for various uses. 6. Can be combined with tape narration or can control time for discussion.

123 7. May be adapted to group or individual use FILMSTRIPS Film strips are sequence of transparent still pictures with individual frames on 35mm film. A tap recorded narration can be synchronized with film strip. Each strip contains from 12 to 18 or more pictures. It is a fixed sequence of related stills on a roll of 35mm film or 8mm film. PRINCIPLES 1. Preview filmstrips before using them and selected carefully to meet the needs of the topic to be taught. 2. Show again any part of the filmstrip needing more specific study. 3. Use filmstrip to stimulate emotions, build attitudes and to point up problems. 4. It should be introduced appropriately and its relationship to the topic of the study brought out. 5. Use a pointer to direct attention, to specific details on the screen. TYPES OF FILMSTRIP: 1) Discussion filmstrip: it is continuous strip of film consisting of individual frames arranged in sequence usually with explanatory titles. 2) Sound slide film: it is similar to filmstrip but instead of explanatory titles or spoken discussion recorded explanation is audible, which is synchronized with the pictures. ADVANTAGES OF FILM STRIPS: 1) Are compact, easily handled and always in proper sequence. 2) Can be supplemented with recordings. 3) Are inexpensive when quantity reproduction is required. 4) Are useful for group or individual study at projection rate are controlled by instructor or user. 5) Are projected with simple light weight equipment. RADIO Radio is a device with which the whole mass can be contacted at a time, efficiently and economically. Now-a-days, which increase in rural electrification, the number of radio sets in India is increasing greatly. Moreover, people are purchasing battery sets

124 and they have realized that it is a good thing to have one in the house. Radio sets have been provided in the common meeting places by the C.D. Organization. Radio is a good source of communication of idea. It gives news-bulletins, special programmes for rural people, housewives and children. It is a good source of disseminating information for health workers, farmers etc. In case of audio-aids, the message has to be simple so that the people can understand and act. The broadcaster has to get and hold the attention of the audience, otherwise the message is lost. The All India Radio stations publish a Journal 'Akashvani' which gives the meters and frequency in Kilo cycles on medium and short waves. The radio receiving set receives only one selected programme at a time, and conveys the same through its speaker. The station is selected by a tuner of the receiving set, which tunes the set to the frequency of the station. The movement of the tuner over the dial of the radio set is controlled by a knob. The entire broadcast frequency of the tuner is divided into a number of bands, each band including a small range of frequencies or wave-lengths. A band selector switch or knob is incorporated in the Cabinet of the radio. There is also an on and off switch and volume control are incorporated in a single knob. A radio can be operated by dry battery wet battery or electricity. For rural areas with no electricity, dry battery sets are generally used. Uses of Radio Radio is a popular, pleasing and a fast medium. However, it cannot be used to convey heavy, detailed knowledge. It uses are for: * Announcements-meetings, demonstrations etc. * Intimation or information- regarding availability of material, prices, places etc. * Warnings-relating to weather, outbreaks of diseases. * News reviews-about farmers etc. * Interviews. * Questions & Answers. * Short talks. * Play, skits, etc. * Features and Documentaries. Advantages of utilizing Radio i) In-expensiveness - Radio instructions costs 1/5 or 1/6 that of T.V. instructions,

125 hence this is quite a suitable audio aid for reaching the masses, especially in the interior of villages, where means of communication and facilities are very few. ii) Easy availability - There has been a lot of production of radio sets, with the result that their cost has been considerably reduced and therefore, radio is available these days with almost all families, even in the rural areas. iii) A radio leaps barrier of time and space - A historical event can be reproduction on a radio set as well as a live broadcast can be transmitted from one corner of the world to another. iv) Upto-date and Immediate - All the latest data as well as the current information can be transmitted and that too immediately. v) Emotional Impact - A radio can bring a dramatic feeling in the group. It has the warmth of a drama, can create personal feeling of actor's presence and inspite emotions. vi) Can bring realism - Voices of various experts can be brought right into the classroom. vii) It can reach more people more quickly than any other means of communication. viii) It can reach illiterates also. ix) It inspires to form some action. x) It is portable. Disadvantages i) It is a one way communication and audience reaction is not known. ii) It requires concentrated attention of the listeners as only aural sense is used. iii) Time-the learners have to adjust their time to the particular programme timing. iv) Prehearsing is not possible. v) Radio set should be in a working condition. vi) Frequently loses out in competition with entertainment. TAPE RECORDERS Tape recorders have become very common now-a-days and their use in education is gradually increasing. Tape recording, especially cassette tape recordings may be

126 prepared for group or individual learning. Advantages * Pre-rehearsing is possible. * Information can be stored & used repeatedly. * No problem of time. * Communicator can present programme made by him. * It can facilitate editing also, i.e. shortening, eliminating or adding of materials from different sources. Disadvantages * Many or may not be up-to-date. * More expensive. * One way communication. Features to look for in a tape-recorder i) Simplicity: It should be easy to operate. ii) Portable: The recording equipment should be as light as possible. iii) Cost: the amount of money available should be carefully considered before buying the equipment. However, expensive equipment generally is durable and as a result is may prove cheaper in the long run. iv) Speed: The higher the speed used, the better will be the quality. v) Size of the Tape Reels: Different machine will use different sizes. vi) Frequency Range: In fact one of the two important points to be considered in making the selection is sound frequency range of the equipment and the programmes you plan to record. For high fidelity recording, the frequency range of the equipment should be similar to the frequency range of the sounds in the programme. TELEVISION Michael J. Apter says, "Television is the most powerful medium of mass communication which has ever existed and it has revolutionized our lives in many ways." Television is already being used to spread health and nutrition messages.

127 Television shows the actual picture, figure or diagram, along with the hearing sound. So, it has an advantage over radio, where the audience is only listening. The movements of the pictures hold the attention of the audience. Most of the homes in cities have a T.V. set. Now-a-days with increase in electrification, they are available in villages also. Uses of Television Radio is a popular, pleasing and fast medium. However, it cannot to be used convey heavy, detailed knowledge. Its uses are for:- * Announcements - meetings, demonstrations etc.; * Intimation or information - regarding availability of materials, prices, places, etc.; * Warnings - relating to weather, outbreaks of diseases; * News reviews - about farmers etc.; * Interviews; * Questions & Answers; * Short talks; * Plays, skits, ballads etc.; * Features and Documents. Advantages i) T.V. can be used to broaden and enrich the experience of the audience. ii) It can create a genuine interest in a subject or topic which then gives the teacher something on which he can build. For example one can really see the result of malnutrition due to lack of food etc. iii) If a scientific experiment is mentioned, then it can be shown. iv) T.V., if it is not used for a disproportionate amount of time, provides a welcome element of variety from the normal routine of group teaching etc. v) It overcomes the barrier of time and space and to some extent of the language due to its visual effects. Evaluating the T.V.Programme Edger Dale suggests a simple method evaluating education television programmes by the following questions: i) Whether the purpose of the presentation made clear to both audience and teacher?

128 Did the audience have something to watch for? ii) Was the audience prepared for the telecast by reading etc? iii) Did the audience understand the material? iv) Did the receiver/audience find the presentation interesting? v) Was the programme well organized? vi) Was opportunity given to become involved, to participate? vii) Were the key points emphasized by means of repetition and review? viii) Did the telecast add certain experiences not easily available in the usual classroom situation or day-to-day life? 3.4.12 Non-Projected Aids CHALK BOARD DEFINITION A chalkboard or blackboard is a reusable writing surface on which text or drawings are made with chalk or other erasable markers. Blackboards were originally made of smooth, thin sheets of black or dark grey slate stone. Modern versions are often green or brown and are thus sometimes called a green board or brown board instead. A blackboard can simply be a piece of board painted with matte dark paint (usually black or dark green). A more modern variation consists of a coiled sheet of plastic drawn across two parallel rollers, which can be scrolled to create additional writing space while saving what has been written. The highest grade chalkboards are made of rougher version porcelain enameled steel (black, green, blue or sometimes other colours). Porcelain is very hard wearing and chalkboards made of porcelain usually last 10-20 years in intensive use. Blackboards have disadvantages: • They produce a fair amount of dust, depending on the quality of chalk used. • Some people find this uncomfortable or may be allergic to it, and there has been speculation about links between chalk dust and respiratory problems. • The dust also precludes the use of chalk in areas shared with dust-sensitive equipment such as computers. However, these alternative methods of displaying information have drawbacks of their own.

129 • The scratching of fingernails on a blackboard is a sound that is well-known for being extremely irritating. Blackboards are also used in many establishments (typically public houses) as a form of advertising often for upcoming events and menus - as well as to keep the score in darts matches. FLANNEL BOARD Sometimes called a flannel graph. This teaching tool is called by different names: Visual Board, Frick Board, Slap Board, Felt Board, Coherograph, Video graph Flannelgraph is a storytelling system that uses a board covered with flannel fabric, usually resting on an easel. It is very similar to Fuzzy felt, although its primary use is as a storytelling medium, rather than as a toy How to use The principle involved is the interlocking of fibers of two rough or bairy surfaces, so that the pieces pressed on to a background which is hard and vertical will stay. It can be illustrated on a larger scale by pressing two tooth brushes or hair brushes together, so the bristle inter-look. In case of flannel graph similar principle of friction helps an object to cling to the surface of the board. The flannel board is usually painted to depict a background scene appropriate to the story being told. Paper cutouts of characters and objects in the story are then placed on the board, and moved around, as the story unfolds. These cutouts are backed, either with flannel, or with some other substance that adheres lightly to the flannel background, such as coarse sandpaper. Advantages 1) Permits numerous and varied arrangements of visual materials. 2) Permits the use of either chart or small pieces of material Materials can be packed and transported complete notes. 3) Permits the development of a complete story. 4) Promotes conscientious planning, which must precede the development of the material in the first place. 5) Challenges one to develop symbols to portray such things as abstractions. 6) Easier to construct materials for flannel board than to make slides or movies.

130 Disadvantages: 1) Transportation and storing of boards and materials is a problem. Suitable tables to support boards must be available. 2) Time and cost of making material for presentation present a problem. 3) Cost of boards themselves can't be overlooked. 4) Presentation is limited a new idea involves a lapse of time before the new material can be added 5) Might tend to deter one from using other more effective methods and techniques when it is evident that other methods might be more appropriate. 6) To tell a complete story it often takes either too much board space or smaller designs and materials some of which cannot be seen well. BULLETIN BOARD DEFINITION It is a soft board which will hold pins or tags almost suitable. Simple device placed either indoor or outdoor. Items generally displayed are photographs, publications, posters, newspaper cut outs. Advantages Explains important events Reports special activities Disadvantages Not effective for illiterate group. Takes lot of preplanning and preparation A bulletin board (pinboard, pin board or notice board in British English) is a place where people can leave public messages, for example, to advertise things to buy or sell, announce events or provide information. Dormitory corridors, well-trafficked hallways, lobbies, and freestanding kiosks often have cork boards attached to facilitate the posting of notices. At some universities, lampposts, bollards, trees, and walls often become impromptu poster sites in areas where official boards are sparse in number. PEG BOARD It is a type of board which contains small holes to fix certain letters into the holes

131 which is used especially in the offices to display certain items, name of the personal or faculty member. **MAGNETIC BOARDS** It is a framed iron sheet carrying porcelain coating in some dark color generally black or green. It can be used to display pictures, cutouts and light objects with disc magnets or magnetic holders. Advantages Movement of visual material is easy. **SMART BOARDS** SMART boards put simply, are a sophisticated replacement of the traditional overhead projector. Over the years, this cutting-edge technology has proved popular for students of all ages. The interactive board turns a typical classroom into a fun learning environment. It enriches classrooms in several ways by providing hands on collaboration and creating the perfect learning setting. There are several advantages of bringing in a SMART interactive whiteboard into a classroom setting. Here are the top 8 advantages of this state-of-the-art technology in the education industry. Reasons why SMART Boards are an essential component in the modern day classroom: 1. Provides Flexibility: Interactive whiteboards allow many different forms of media - including photos, illustrations, maps, graphs, games, and video, to be displayed. These tools not only enrich the classroom experience but also help to expand the nature of content that can be used in learning. In addition, SMART Boards makes learning to be more dynamic owing to the different forms of presenting information. 2. Enhanced teaching/learning experience: SMART Boards provide new ways for teachers to teach, and student to learn. These tools support a wide variety of learning styles. For instance, visual learners can watch as their tutors use the whiteboards to project visual elements, whereas audio learners can listen and have discussions. On the other hand, the Boards come with touchscreen capabilities that allow tactile learners to touch and interact with the board. 3. Interact and share: The interactive nature of SMART boards offers learners an opportunity to share and participate in the instructional process. Interactivity

132 provides a platform for students to demonstrate their grasp of the subject through touching, drawing, and writing. Every learner has an opportunity to participate or contribute to the presentation and/or discussion via notebooks and tablets. In addition, the boards provide for rapid assessment whereby learners can receive immediate feedback. Teachers and students are able to identify individual strengths and weaknesses in various subject areas and isolate areas/topics that need more focus or review. 4. Low-Maintenance: SMART Boards are neat and easy to use. There are no hassles cleaning or maintaining whiteboards. The data on the screen can be modified using a specialized highlighting tool or pen. There is no need for using unhygienic chalk or marker pens. 5. Access to online information & tools: SMART boards allow learners to easily access a rich database of online resources. Teachers can use the wide variety of online information sources such as knowledge databases, online video and news items to reinforce their lessons. Learners can also quickly access the wide range of powerful tools and resources to conduct research and supplement their usual study material. 6. Going Green: Interactive boards are also environmentally friendly. They offer teachers an entirely different way of presenting information to students, which eliminates the need for writing, printing or photocopying. Which, contribute to eliminate waste and pollution, from over-utilization of paper and ink. 7. Technology Integration: SMART boards allows for integration of various technologies in order to improve the learning experience. For instance, it is possible to attach tools such as microscopes, document cameras, cameras or video cameras to a whiteboard to aid in instruction. It is also possible to integrate the interactive learning tools with a wide range of software applications. 8. Communication: Interactive whiteboards allow for connectivity in different locations; making ideal collaboration and distance learning environments. When using SMART boards, student show to increase student-to-student collaboration and increase overall participation in the lesson. Overall, incorporating SMART Boards to the classroom environment is likely to change the way teachers impart knowledge to students and at the same time simplify

133 the learning process for students. Students will find it easy to engage with lessons and gain a better understanding of the overall lesson. COMPUTER AS A TOOL IN MODERN TEACHING Computers have become of the most important learning aids of the modern times. Today's education is considered incomplete without computers. This is the basic machine on which all other electronic medias of learning depend. These can be bought in various forms like desktops, lap tops, notebooks and simply e-readers. Computers are used to play the computer based educational games which can now be played also through television screens. The computers have been playing an important tool for teaching from the last few years of the 20th century and since then it has brought about a revolution in the methods of teaching which our future teachers will be using. The computers make use of multimedia programme which include attractive colours, clear graphics, wonderful sounds, the fascinating animations and enjoyable videos discharging to the students the various elements of their subjects of study. Some critics of computers as a teaching aid may point out that the conventional methods of teaching in the hands of an enthusiastic, creative and industrious teacher could also do the job as well if not better than a computer. To such critics, I would say that the computers are not there to undermine the role of the efficient teachers. The computers are only a tool in the hands of a teacher to make the teacher's job easy and fast and make the teacher more efficient. A computer or any other teaching tool cannot work at its own; it definitely needs mediation from an enterprising teacher. No one would feel like to do away with the blackboard where it is necessary to use a blackboard or any other conventional tool. The computer has brought about a tremendous change the way the world looks at the teaching aids. With the advent of internet technology, the use of a computer as part of today's educational aids has become inevitable. Just think of a simple situation where you want to teach a student the word 'trumpet' used for the sound produced by an elephant and expect the student to describe the sound which the elephant makes. Obviously, you cannot bring the elephant to the classroom other than showing its picture. Even if you take the class to the zoo park where is the guarantee that the students can listen to the sound of an elephant trumpeting. But you can play the recorded sound of the elephant through a computer and can also show its picture or even live video of an elephant. For this purpose I have loaded the sound files of all animals, birds and insects to enable 134 the children to hear the sounds of these living beings through computer in their classrooms. We can make the young students practice their language lessons including regional languages through computers. I have practically done it for my computer virtually turning the computer lab as a language lab. You can see the image above where the students of a primary class are seriously engaged in learning Hindi through computers. Computers bring to the students a world of entertainment along with learning by providing computer based educational games for learning various subjects through computers. Many websites on the internet provide these games free for the students and parents and a few also charge nominally for the educational games made available to their members. INTERACTIVE ELECTRONIC WHITE BOARD AS A TOOL IN MODERN TEACHING

- o Interactive electronic white boards of today also known as smart boards are the latest tools in the methods of modern teaching. These need a computer, an overhead projector and preloaded educational software.
- o These are very costly equipment and require a lot of investment and can be afforded by only by schools who charge a very high rate of fees from the students. For this reason, these have not become very popular with ordinary schools. It is not only the heavy initial investment if purchased outright which has to be kept in mind but also the day to day costs of running the equipment which should be thought of by the end users. These costs are the high power bills and the replacement of lamps of the projectors which should be given attention to while buying this costly equipment.
- o Some companies supplying the white boards like the Edu comp, Smart Boards etc. make offers to the institutions to pay on monthly basis for the equipment and also appoint the support staff for running the system. They charge the institutions monthly charges ranging from Rs.50 to Rs.100 per student dependent upon the school strength. Here also these companies do not apprise the schools about the hidden costs in the form of higher power bills and replacement of projector lamps which the schools have to incur.
- o Of course, the electronic white board has many user friendly offering a lot of interaction to its user. It is a colourful tool in the hands of the teachers. Its inter-

135 activity features are beyond description. But the biggest disadvantage of the electronic white board is that it has to be fixed on the wall and does not leave the place for use of your ordinary blackboard to be used in case of emergencies like the power failure. It is more so if the classroom does not happen to be very big. The projector and the computer has to be always on if you want to use the electronic board. FLASH CARDS Definition: • Flash cards are a set of pictured paper cards of varying sizes that are flashed one by one in a logical sequence." • Flash cards can be self-made or commercially prepared and are made up of chart or drawing paper, paper using colors or ink on them for drawings." Purposes: 1. To teach the students. 2. To give health education. 3. Useful for small group. 4. Used in group discussions. Principles: • The messages can be brief, simple line drawing or photographs, cartoons and the content will be written in few lines at the back of the each card. • 10" X 12" or 22" X 28" is commonly used size. • 10-12 cards for one talk can be used. It should not be less than 3 and more than 20. • Prepare a picture for each idea which will give visual impact to the idea. • The height of writing on the flash card is to be approximately 5cm for better visualization. Using the flashcards: For class room instruction, the flash cards is to be properly used. The following steps are used while displaying flash cards.

136 1. Give brief introduction about the lesson to students. 2. Give instructions to students about their actions while you flash the cards. 3. Flash the card in front of the class by holding it high with both your hands so that all the students can see it. 4. Let the student respond as per instructions already given. 5. Review the lesson by selectively using flash cards. Advantages: • Flash cards can be used to introduce and present topics. • It can be used to apply information already gained by students to new situations • It can be used to review a topic. • Can be used for drill and practice in elementary classes • To develop the cognitive abilities of recognition and recall of students. • It can work as a useful supplementary aid and can be effectively used with other material. Disadvantages: • Cannot be used for a large group • Prone to get spoiled soon • Preparation is time consuming. E-FLASHCARDS An extensive selection of images listed according to theme that helps learners to understand basic vocabulary. These images may be printed out or used with an interactive digital whiteboard. The audio option also tells students how each word is pronounced. EDUCATIONAL TOYS Toys are usually used in small classes for teaching the children the names of various fruits, vegetables, animals, birds, insects etc. Toy models of these objects are easily available in the market. o Children in lower classes are also given some objects like marbles and beads to learn numbers. o Toy clocks and watches are used in schools to teach children the concept of time.

137 3.5 Advantages, Limitations and Challenges of Using Multimedia in Education By incorporating multimedia in their instruction, teachers can capture attention, engage learners, explain difficult concepts, inspire creativity, and have fun. However, there are many tools available and many ways to use those tools. "

Multimedia is characterized by the presence of text, pictures, sound, animation and video; some or all of which are organized into

some coherent program" (Phillips, 1997). 3.5.1

The Advantages of using Multimedia in Education 1.

Deeper understanding According to research, a benefit of multimedia learning is that it takes advantage of the brain's ability to make connections between verbal and visual representations of content, leading to a deeper understanding, which in turn supports the transfer of learning to other situations. All of this is important in today's 21st century classrooms, as we are preparing students for a future where higher-level thinking; problem solving and collaborative skills will be required. 2. Improved problem solving A large percentage of the human brain dedicates itself to visual processing. Thus, using images, video and animations alongside a text stimulates the brain. Student attention and retention increase. Under these circumstances, in a multimedia learning environment, students can identify and solve problems more easily compared to the scenario where teaching is made possible only by textbooks. 3. Increased positive emotions According to psychologist Barbara Fredrickson, experiencing positive emotions makes people see more possibilities in their lives. Using multimedia during instructions impacts student's mood during the learning process. With a positive attitude they learn better and tend to be more proactive. 4. Access to a vast variety of information With computers, tablets, smartphones and the internet, students are today better equipped than ever to search and find the information they need.

A study revealed that 95% of students who have access to internet, use it to search for online information. Sharing the information and participating in class discussions is done in a more confident way when access to information is as easy as today.

138 5. World exploration There is no surprise here. With the help of multimedia children can explore and learn about places they would never been to. In a geography class, students can explore different cities of the world, the tallest mountains and the most dangerous jungles. In a science class, space and planets exploration is now possible. In a biology class, the dissection of rare animals and different habitats exploration are like a walk in a park for students benefiting of a multimedia learning environment. Altogether, multimedia learning environments have a direct effect on learning and even on growing as a person. An effect that differs and can't be achieved as easy whilst using traditional education materials. Therefore, it is no wonder the edutech business is increasing and schools desire more and more to create multimedia learning environments for their students.

Multimedia is very helpful and fruitful in education due to its characteristics of interactivity, flexibility, and the integration of different media that can support learning, take into account individual differences among learners and increase their motivation. The provision of interaction is the biggest advantage of the digital media in comparison with other media. It refers to the process of providing information and response. Interactivity allows control over the presented content to a certain extent: learners can change parameters, observe their results or respond to choice options. They can also control the speed of applications and the amount of repetition to meet their individual needs. Furthermore, the ability to provide feedback tailored to the needs of students distinguishes the interactive multimedia from any other media without a human presence. However, many aspects need to be taken into account when using multimedia in education. Even though multimedia is offered worldwide, access to learning materials and computing equipment differs from country to country. The use of multimedia by students needs to be supported by very skilled teachers. They must guide students through the learning process and provide them with appropriate and effective learning strategies. Like the use of textbooks, the use of educational multimedia fosters teaching strategies, where the teacher's role is not just that of information provider but the one of guide, supporter and facilitator. Multimedia offers a variety of media usually combined in a meaningful manner. This gives an opportunity to use the computer for the presentation of ideas in different ways, including by means of:

139 • Images, including scanned photographs, drawings, maps and slides;
• Sounds, e.g. recordings of voice, noise and music; • Video, including complex procedures and 'talking heads'; • Animation and simulations; • Discussions among learners (social networks, online discussions, blogs, etc.). Often, presentations supported by attractive images or animations are visually more appealing than static texts, and they can support the appearance of emotions to complement the information presented. Multimedia can appeal to many types of learning preferences - some students profit more from learning by reading, some by hearing and some by watching, etc. In addition, the use of multimedia allows for different ways of working - students can decide on their own how to explore the materials as well as how to use interactive and collaborative tools. Moreover, students can adjust their own learning processes according to their abilities and preferences. They can work according to their interests, repeat material as much as they want reducing embarrassment concerning their learning outcomes. The use of multimedia can thus be tailored to the students' differences in interests, social and cultural backgrounds, learning preferences and rates, etc. Individual learning can promote active, self-directed learning. In addition, multimedia applications can be used to facilitate group work. Small groups of students can work through multimedia applications together - in order to learn from each other as well as to improve their dialogue skills. The interactive opportunities of multimedia lead to high flexibility, which can be very helpful for students with special needs: • Dyslectic students can use synthetic speech in order to become familiar with the content of digital texts. • Autistic children show an increase of phonologic awareness and word reading by using multimedia (

Heimann et al. 1995). •

Students with severe speech and physical impairments gain from learning with multimedia, because the computer is flexible enough to meet individual needs - they can repeat as oft en they want, can hear it loud, etc. (

Steelman, 1993). •

For deaf students, the visual presentation of content improves their motivation to learn (

Voltena et al., 1995).

The computer can noticeably improve student access to information. Such delivery platforms as the World Wide Web provide 24-hour access to information. Moreover, it is relatively easy to update web-based educational materials, i.e. to change design, content, instruction methods, etc.

140 3.5.2

Limitations of Using Multimedia Multimedia requires high-end computer systems. Sound, images, animation, and especially video, constitute large amounts of data, which slow down, or may not even fit in a low-end computer. Unlike simple text files created in word processing, multimedia packages require good quality computers. A major disadvantage of writing multimedia courseware is that it may not be accessible to a large section of its intended users if they do not have access to multimedia-capable machines. For this reason, courseware developers should think very carefully about the type of multimedia elements that need to be incorporated into applications and include only those that have significant value. Multimedia has other weaknesses too. While proponents of this new technology are very enthusiastic about its potential, they often leave the financial and technical issues unattended. Developments in multimedia are very high and the process of developing effective multimedia takes time. Further, if the prerequisites for using multimedia include computers with related software, the user must possess a minimum level of computer literacy in order to exploit the capabilities of this medium for learning. And finally, of the educator who is unfamiliar with the production and design of multimedia courseware or packages can be equally complicating. The critical question, then, is: How do we overcome some of the identified barriers and begin the process of multimedia implementation alongside the instructor, textbook, and blackboard? It is the barriers rather than the technologies which we must address before multimedia, or for that matter, any media technology becomes as accepted as the printed text or guidebook. Following are a few limitations of using Multimedia

- Information overload. Because it is so easy to use, it can contain too much information at once.
- It takes time to compile. Even though it is flexible, it takes time to put the original draft together.
- It can be expensive. Multimedia makes use of a wide range of resources, which can cost a large amount of money.
- Too much makes it unpractical. Large files like video and audio has an effect of the time it takes for a presentation to load. Adding too much can mean that we have to use a larger computer to store the files.
- In case we want to upload it onto the Internet, there are a few factors to keep in mind, for example bandwidth and the user's abilities.

3.5.3 Some Disadvantages of Multimedia in Education

Self-regulated learning: Some learners are not able to handle the freedom provided by hypertext-based multimedia.

141 Distraction: Often, confused presentations of the material can cause distraction due to conflicting messages. Non-linear structured multimedia allows the user to follow the supplied links, which can distract from the topic to be learned. The massive amount of information provided by multimedia applications may distract our attention during learning. The human short-term memory is limited; usually it can hold around 7 pieces of information. When several media presented at the same time, the learner can only concentrate on some of them and ignore others. This could result in ignoring important information. Human beings cannot use all channels available simultaneously, and this can prevent us from realizing the full potential of multimedia. Low interactivity: Even though the interactivity between the learner and multimedia applications is increasing, it is still considered restricted compared to the elaborated human-human interactivity. No selective feedback: Feedback is generally very limited within computer-assisted learning packages. Generally, computers can't substitute for person-to-person teaching, only enhance it. Often, the feedback provided is limited to right/wrong, and it does not support in learning strategies or further content explanations. Multimedia applications cannot identify individual needs or problems of the learner, so they cannot respond like people. Simulations are often not enough: It may be important for students to have true hands-on experience. For example, for studying insects in biology it is necessary to go out in nature, to see insects living in their natural environments. Lack of skills - pupils and teachers: Students, particularly mature-age students, may not be ICT literate. Also teachers may lack some personal skills, which are needed to teach effectively with multimedia. Difficult to do: Creating audio, video and graphical materials can be more challenging than creating ordinary texts. Time consuming: Using multimedia can be time consuming. Especially the production of multimedia takes much time. Access: Not all students have appropriate access to proper hardware and the Internet. This may limit the scope of teaching. Social in/exclusion: Not all members of a society can be involved in the use of

142 multimedia technology due to lack of access to the Internet or lack of hardware to make full use of the educational material on the web. Equipment problems: Hardware and software needs to be configured in a way that their usage is as simple as straight forwarded as possible. Bandwidth issue: Limited bandwidth means slow performance for sound, graphics and video, interrupting streaming and causing long waits for download that can affect the ease of learning. Multimedia is portable: Paper-based notes can be read everywhere, on the bus, at the beach, etc., but web-based materials or multimedia materials require specific hardware devices. Computer screens aren't paper: The content on screens may not be as easy to read as the content on paper. If there are large chunks of information that need to be read from top to bottom, it is probably best to view such a document on paper. Books and journal articles may still be better to read in paper. End users often prefer to use technology to search for information, but when it comes to reading, they tend to read from print-outs. In summary, multimedia products can be used to represent and process various types of knowledge. They can be used as means of representation and communication of knowledge. The use of these products can foster students' construction of their own knowledge. They can construct knowledge and develop skills related to various subjects by accessing or producing digital representations of knowledge. In particular, they can develop literacy and other core competencies. For example, they can develop motivation for learning activities, communication abilities, social competencies as well as learning competencies, values and ethics.

3.6 Recent Trends in Multimedia

The technological advancements have made society take a leap towards success. Every technological reform is a small step towards advancement. Every new invention in technology is a step towards progress of mankind. Centuries ago, hardly anyone would have even dreamt of working on a computer. Generations of the yester years would have hardly imagined being able to communicate with people on the other side of the globe. But there were some intelligent minds to dared to dream of such revolutionary discoveries and they made the impossible possible.

143 Since several years ago, education experts had been proposing a new style of education involving using multimedia, which differs radically from the traditional ways. Changing the education systems as a new ways is towards a new paradigm for teach (Rosenberg, 2001).

The development of multimedia technologies for learning offers new ways in which learning can take place in education areas. In last decades, there has been a growing interest in the creation and use of multimedia technologies throughout the education world. There have been many experiments and innovations in the field of education and training regarding knowledge delivery (Tally, 2002). From face to face to virtual education, different technologies have played great roles at different times.

In the last decades, due to the advent of multimedia technologies has got new meaning (Del, 1998; Moreno, 2000). Development, access, and transfer of text, sound, and video data gave given a unique face to education centers, in the form of multimedia learning. The development of multimedia systems can be very rewarding. So interest and investment in this technology are increasing and multimedia technologies are the need of the day (Bransford, 1990; Mayer, 1990).

Multimedia Technologies as an Educational Tool throughout the 1980s and 1990s, the concept of multimedia took on a new meaning, as the capabilities of satellites, computers, audio and video converged to create new media with enormous potential. Combined with the advances in hardware and software, these technologies were able to provide enhanced learning facility and with attention to the specific needs of individual users (Fenrich, 1997; Meyer, 2001; Mayer, 2003). Multimedia is a term frequently heard and discussed among educational technologists today. Now multimedia technologies these called "new media," "hypermedia," "integrated media," or more commonly "multimedia" have been defined in a number of ways. Actually the term "multimedia" covers a lot of territory. "Multimedia", in its broadest sense, means graphics, music, sound effects, voice, video, and animation, in any combination, in the same program or presentation (Blumenfeld, 1991. Fensham,, 1990).

It can be defined as an integration of multiple media elements (audio, video, graphics, text, animation, etc.) into one synergetic and symbiotic whole that results in more benefits for the end user than any one of the media elements can provide individually. Multimedia can be defined generically as any combination of two or more media such as sound, images, text, animation, and video. For educational technology purposes,

144 multimedia refers to computer-based systems that use associative linkages to allow users to navigate and retrieve information stored in a combination of text, sounds, graphics, video, movies, music, lighting and other media as for education (Meyer, 2001; www.wps.prenhall.com; Sandholtz, 1997; Vanbuel, 2006). When the term is used with computer technology, multimedia refers to a variety of applications that combine media and that use CD-ROM, video, audio, DVD, and other media equipment. As it seen multimedia is the combined use of media, such as images, video, audio, CD/DVD-ROMs, the internet and interactive applications such as applets and flash for education and entertainment (Chang, 2004; Finn, 2002).

Multimedia hardware requirements include a basic computer system with the standard input devices, central processor, and output devices, CD-ROMs or DVDs, sound boards or cards, speakers, video boards, highspeed central processors, extensive secondary storage or hard disk (Lieshout, 2001; Millar, 2005). Multimedia's basic technologies include

text, maps, graphic images, electronic presentations, animation, videoconferencing, digital audio and video, web learning environment, videoconferencing systems (Lieshout and etc, 2001; Phillips, 1997; Behrens, 1996, 1997; Bijmens 2004, 2005; Cleveland, 1998).

Multimedia combines five basic types of media into the learning environment; text, video, sound, graphics and animation, thus providing a powerful new tool for education (Duke, 1993). These are to demonstrate abstract concepts, to accommodate students with a variety of learning styles, to engage students, to enable active learning, by incorporating multimedia into learning, activities, students can manipulate, create and interact with material rather than just absorb representations created by others (Kearsley, 1998; Person, 2003).

Multimedia technologies have a lot of advantages such as;

widely available, reusable, multimedia, and decrease pressure on lecturer, better individual student engagement, globality (Repman, 1993; West, 2006). These are fun and interesting, provide a pre question, and make description a narration, no need to include an image or video of the narrator, unless there's some demonstration. Do not include explanation in both text and narration styles, Give students chance to pause the video/audio and ask questions, Make the multimedia interactive, Provide pre training on key components, concepts in the multimedia to enhance students' understanding of the multimedia resource,

Presenting more materials may result in less understanding (Mayer, Heiser, and Lonn, 2001; Mayer, Dow and Mayer, 2003; Wallace, 2006).

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E-LEARNING E-Learning is the use of technology to enable people to learn anytime and anywhere.

E-Learning can include training, the delivery of just-in-time information and guidance from experts.

It is a new education concept by using the Internet technology, it delivers the digital content, provides a learner-oriented environment for the teachers and students. The e-learning promotes the construction of life-long learning opinions and learning society. Delivery of the digital content is the main characters of e-learning. E-Learning is an important consideration in education for several reasons: 1. Implemented correctly, it can reduce some of the costs associated with education 2. It allows schools to educate people they could not previously (e.g. people that work for a living, people geographically dispersed, etc.) 3. Many students communicate better in a web based environment than in the traditional classroom. Studies have shown that students who would not raise a hand in class will be very active in posting to discussion boards for example. E-Learning is a challenge for educational institutions because the technology involved can be difficult to manage and use. A lot of training or practice is required to get proficient in e-Learning solutions. For example, Flash based applications need to target customers that have a large learning audience to justify the expense. Virtual classrooms are often a more cost efficient solution in many cases. E-Learning is an active and growing industry. It may take a hit with the economy being like it is but it will reemerge very strong. 3.7 Implications of Multimedia in Teaching and Learning Education encounters, in modern times, challenges in all aspects of social, economic & cultural life; the most important of which are over-population, over-knowledge, education philosophy development & the change of teacher's role, the spread of illiteracy, lack of the staff & the technological development & mass media (Aloraini, 2005, p. 30- 32). This drove the teaching staff to use the modern teaching technologies to face some of the main problems, which education & its productivity encounter, by increasing the learning level which may be achieved through providing equivalent opportunities for all people whenever & wherever they are, while taking into account the individual differences between learners (Wilkinson, 1986, p. 13 & Abd El-Halim Said, 1997, p. 19). To improve the educational productivity, some of the teaching staff sought to mainstream technology within education, developing traditional techniques & using new educational methods (Al-A'ny, 2000).

146 Mainstreaming the technological media within what is called "Multimedia" is the pattern which led to infinite applications of computer technologies. The concept of this technology came into being with the appearance of sound cards, then compact disks, then came the use of digital camera, then the video which made computer an essential educational tool. Nowadays, multimedia expanded to become a field on its own. Interaction is the main element in multimedia technology as most of its applications are characterized by interaction. Consequently, multimedia programs may provide a more effective & more influential experiment than using each technology separately. Multimedia is one of the best educational techniques because it addresses more than one sense simultaneously, as it addresses the senses of sight & hearing. Multimedia programs provide different stimuli in their presentations which include a number of elements some of which are (Aloraini, 2005, p. 55-75): Texts Spoken words Sound & music, Graphics, Animations and Still pictures Some of the potential advantages of multimedia programs are: 1. They make the reading process a dynamic one instead of the written presentation of the texts printed in the book (Zaitoun, 2002, p. 259). 2. Presenting different drawings & pictures supports the clarification of ideas & communication of information. 3. Moving easily from a presented subject to another provides a good chance for questions & discussions. 4. Using different presentations like video clips along with maps or other kinds of presentations help to get the information closer to reality. Adding music makes the idea clearer and it attracts the attention of the learners (Aloraini, 2005, p. 73). 5. They rise the attention & interaction between students & the educational subject (Qandeel, 1998, p. 1625). 6. They comprise the elements of amusement & suspense (Qandeel, 1998, p. 1625).

147 7. They are graded according to the learner's abilities from easy to difficult ones (Qandeel, 1998, p. 1625). 8. They provide teachers with a new educational style & encourage curiosity (Holsinger, 1995, p. 9). 9. They help teachers & learners look into topics from a broader perspective as each topic comprises enormous information (Holsinger, 1995, p. 9). 10. They guide learners to peer learning (Alfar, 2009, p. 123). 11. They are concerned with providing simultaneous feedback (Qandeel, 1998, p. 1625). 12. They help learners remember & transfer their knowledge (Alfar, 2009, p. 123). 13. They support the user's work & innovation, which makes the possession of a computer a necessity for both the student & the teacher. Teaching and learning are two complementary aspects of education. Within learning, there are two key elements: content, which forms the "what" of learning; and skills, which describe the application of content to specific tasks, or the "how." These two elements are mirrored in teaching by the curriculum and syllabus (the "what") and the teaching methodology (the "how"). Multimedia technology affects both aspects of teaching and learning. It does this in three ways: in how it presents information; in how students interact both with the medium and through the medium with the teacher and other learners; and in how knowledge is structured within multimedia. Multimedia can represent knowledge in more ways than text or speech can. Multimedia combines text, audio, visual, graphic, and dynamic elements, such as animation and video. This presents learners and teachers with unique learning resources that can be used in a wide variety of ways to stimulate various forms of learning. The most significant feature of the multiple forms of media is that they allow for the presentation of knowledge in numerous ways. Thus students can learn about abstract principles through text and can see the application of those principles through an animation or a video example. This presents the opportunity for deeper levels of understanding, particularly if the presentational qualities are fully and deliberately exploited to achieve this purpose and are combined with the potential for learner interaction. Well-designed applications of multimedia then can do two things: they can enable learners to come to understandings more quickly than through more conventional classroom or textual media; and perhaps more significant, they can change how we come to know or to understand and hence what we know and understand. In other words, a learner may have an image or a mental "construction" that is far richer than an abstract verbal understanding. From an educational perspective, it is essential that learners can move confidently between concrete and abstract understandings and not become locked into one or the other. This does not happen by accident. Multimedia needs to be carefully designed to facilitate the development of this kind of thinking. Thus the role of the teacher is by no means diminished; indeed, such design requires highly skilled teachers working in teams with multimedia producers.

3.8 Let Us Sum Up 1. Multimedia is the encompass of all media used in electronics, particularly with computers. The use of computers to present text, graphics, video, animation, and sound in an integrated way. Long touted as the future revolution in computing, multimedia applications were, until the mid-90s, uncommon due to the expensive hardware required. With increases in performance and decreases in price, however, multimedia is now commonplace. Nearly all Personal Computers are capable of displaying video, though the resolution available depends on the power of the computer's video adapter and microprocessor. 2. Technology does not necessarily drive education. That role belongs to the learning needs of students. With multimedia, the process of learning can become more goal oriented, more participatory, flexible in time and space, unaffected by distances and tailored to individual learning styles, and increase collaboration between teachers and students. Multimedia enables learning to become fun and friendly, without fear of inadequacies or failure. 3. Interactive Multimedia is the means to interface with these media typically with a computer keyboard, mouse, touch screen, on screen buttons, and text entry allowing a user to make decisions as to what takes place next. 4. Specific uses of multimedia include: Drill and practice to master basic skills the development of writing skill problem solving understanding abstract mathematics and science concepts simulation in science and mathematics manipulation of data acquisition of computer skills for general purposes, and for business and vocational training access and communication to understand populations and students access for teachers and students in remote locations individualized and cooperative learning management and administration of classroom activities. 5. Role of Teacher in Multimedia Approach ● Teacher has to adopt a number of methods and techniques.

149 ● Teacher has to aware of the different available media and their availability. ● Teacher should be physically competent to use and demonstrate the use of the different media. ●

Teacher should be skillful enough to make a judicious choice of media and competent enough to mix them sequentially and in an orderly manner. • Teacher's role is that of a facilitator or manager of activities. • Teacher has to lead his student for independent, individualized learning. 6.

Advantages of the multimedia Approach • Multimedia approach enables the student to represent information using several different media. • Can arouse the curiosity among the learner and provide them vivid impressions. • Multimedia can take into account

different learning styles - some pupil learn by interpreting text, while others require more graphical representations. • Can develop a positive attitude among the learners towards the teaching-learning process. • Multimedia Approach allows for self-pacing • Technique of simulation can be effectively applied through the multimedia approach. • Helps in development of higher order thinking skills. • Multimedia approach provides the student the flexibility of 'anywhere', 'any time' learning. • Helps in developing group and interpersonal skills. • Effective remediation programmes can be implemented through the multimedia approach. • Multimedia approach can bridge language barriers since audio is not the only means of communication. 7. Disadvantages of the multimedia Approach • Requires highly sophisticated infrastructure facilities, which may lead to heavy financial burden. • Expertise and skill are required to operate the multimedia devices, which will lead to the problem of non-availability of human resources. • Not feasible in the all topics of study.

150 8. With a multimedia approach, the student could also access Web sites on the Internet to get more information. The student could then add film clips on these animals in their natural habitat (all may be from the same CD-ROM) and blend them into a report. Then by adding titles and credits, the student now has a new and original way of communicating his/her own individual perspective. 9. With multimedia simulation technique can be effectively applied. By using simulation, student can grasp a better understanding about the step and producer to make or do a certain project. This can improve their understanding and also help improving their skills. 10. Multimedia possessed a lot of advantages to make learning interesting. With the help of its elements, it can invoke creativity in both teacher and students so that they can apply it in order to teach or learn. Learning also becomes much easier with the help of multimedia. Multimedia can help improve our educational system. 3.9 Check Your Progress 1. Define Multimedia. Briefly discuss the advantages of multimedia learning over traditional learning. 2. Comment on the recent trends in Multimedia teaching and learning process. 3. How had multimedia changed the educational scenario? Explain. 4. Give a comparative study on the advantages of smart board over blackboard. 3.10 References 1. Bates, A. (1995) Technology, Open learning and distance education. London: Routledge. 2.

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Unit 4 □ Technology Based Instruction Structure 4.1 Introduction 4.2 Objectives 4.3 Enhancing Technology Friendly Practices among Teachers 4.3.1

Technology and Teaching Practice 4.3.2 Role of Technology in School Management to enhance learning. 4.3.3 An Overview of Teacher Managerial functions in the classroom. 4.3.4 Benefits of Technology in the Classroom 4.3.5 Teacher Technology Competencies 4.3.6 Importance of ICT Competencies for Teachers. 4.3.7 Basic Technology Competencies. 4.3.8 Strategies for preparing teachers to use technology 4.4

Computer-Assisted & Computer Managed Instructions, Cybernetics, E- learning, Use of Net Search and Websites 4.4.1

Computer Assisted Instruction 4.4.2

Computer

Managed Learning 4.4.3 Cybernetics 4.4.4 E-Learning 4.4.5 Importance of Internet and Web searches in the Modern Education 4.5

Disability

Friendly Technology - Punarjani, and e-learning Framework developed by C-DAC 4.5.1

Punarjani 4.5.2

E-Learning Framework by C-DAC 4.6 Developing Technology Integrated Lessons 4.7 Implications of Technology based instruction in Inclusion 4.8

Let us sum up 4.9 Check your progress 4.10 References for further readings.

153 4.1 Introduction The

effective Use of Technology in Education has changed the face of education and it has created more educational opportunities. Both teachers and students have benefited from various educational technologies, teachers have learned how to integrate technology in their classrooms and students are getting more interested in learning with technology. The use of technology in education has removed educational boundaries, both students and teachers can collaborate in real time using advanced educational technologies. Technology has helped in the growth of mobile learning and long distance learning. The use of internet technology has enabled teachers to reach students across borders and also students from developing countries have used internet technology to subscribe for advanced educational courses. Many universities and colleges have embraced online education by creating virtual classrooms. Online education is flexible and affordable, students can attend classrooms during their free time, and they can also have a chance to interact with other students virtually. Recent advancements in educational technologies have yielded positive results in our education sector. This new educational technology is supporting both teaching and learning processes, technology has digitized classrooms through digital learning tools like, computers, iPads, smartphones, smart digital white boards; it has expanded course offerings, it has increased student's engagement and motivation towards learning. The teaching strategies based on educational technology can be described as ethical practices that facilitate the students' learning and boost their capacity, productivity, and performance. Technology integration in education inspires positive changes in teaching methods on an international level. Benefits of Technology in a Special Educational Classroom 1. Most students are drawn to technology and special education teachers often find that these students are then more motivated to work because they get to use a technology device in the classroom. 2. Teachers can work with more students at one time more effectively, such as using a phonetic ear so that more students can hear or a clicker response system to engage all of the students at once. 3. Technology is an equalizer and parents even report that when their children with challenges or disabilities uses technology that they are seen as more capable by peers.

154 4. Children learn valuable technology skills that can translate into marketable skills. 5. Children with physical disabilities have more opportunities for engaged learned with modified assistive technology such as touch screens and assistive wands. 6. Students who spend time in mainstream classes and special education classrooms can use technology to bridge the expectations and demands of each, such as by using a device to record lectures for playback later. 7. Technology can help build confidence in children. They are finding more success academically and they are also feeling more like their classmates who utilize technology every day, too. Even though there are many other tools that are valuable to special education teachers, technology can be counted as a beneficial resource that can turn special education classrooms into launch-pads for learning - and life. 4.2

Objectives After going through this unit you will be able to ●

discuss how to enhancing Technology Friendly Practices among Teachers. ●

discuss about the importance of

Computer-Assisted & Computer Managed Instructions, Cybernetics, E- learning, Use of Net Search and Websites ●

discuss about

Disability Friendly Technology - Punarjani, and e-learning Framework developed by C-DAC 4.4

Developing Technology Integrated Lessons - Individual and Group ● discuss the implications of Technology based instruction in Inclusion 4.3

Enhancing Technology Friendly Practices Among Teachers 4.3.1 Technology and Teaching Practice Thomas Edison once said, "Books will soon be obsolete in the public schools...our school system will be completely changed inside of ten years." Amazingly enough, however, one of our nation's most important inventors was proven quite wrong. The education system has a remarkable resistance to innovation and the classroom experience has changed very little in the 100 years since Edison's prediction. Advances in information technology have revolutionized how people communicate and learn in nearly every aspect of modern life except for education. The short school 155 day and the break in the summer were meant to allow children to work on family farms. Schools have an enduring industrial mentality placing students in arbitrary groups based on their age regardless of their competencies. Technology has failed to transform our schools because the education governance system insulates them from the disruptions that technology creates in other organizations. The government regulates schools perhaps more than any other organization. Rules govern where students study, how they will learn, and who will teach them. To overcome these obstacles, we must persuade teachers that technology will empower them and help their students learn. There are five strategies for successful teacher adoption of education technology and that these principles will help fulfill the potential that Edison saw a century ago: Schools must use technology that empowers teachers. Teachers rightly reject education technologies that divert their attention from instruction. The best education technologies enable teachers to do more with fewer resources. Communication platforms like Twitter and Facebook enable dynamic communication with students. Teacher-empowering technologies include mobile apps that grade written student work and provide lesson plan databases. School systems need to aggressively track what works for their teachers and put all other unworkable technologies aside. Teachers should treat the adoption of technology as part of lesson planning. Teachers can incorporate technology directly into their practice and insulate their students from the deleterious effects of policy churn. Systematic adoption of technology at the classroom levels limits the damage of shifting policy maker priorities. Teachers should not fear open-source technologies. Many mistakenly believe that education technologies are expensive and complicated to use. Open-source technologies are stable, secure, and compatible with other platforms. Organizations both small and large use open source devices every day. Many businesses use open-source servers for their efficiency and costs savings. They often have large communities that provide high quality customer support. Best of all, open-source technologies often cost less than proprietary products. Use online education portfolios to evaluate students. Educators have known about the benefits of paper based portfolios for generations. Portfolios allow students to express creativity for difficult to assess subjects. Teachers can choose from a variety of online portfolio providers tailored to the needs of their classroom. They also serve as a platform for students to demonstrate growth. Online portfolios have many advantages over paper based options because they cost less and allow for more robust outreach. Online

156 portfolios are also amenable to a wider variety of formats including video, music or other interactive features. Teachers should embrace the Common Core State Standards. Common standards make teaching simpler. Teachers have to write lessons that comply with district, state, and national standards (e.g. NCTM or NCTE). Having a single set of standards eliminates redundancy and conflicting guidelines. Furthermore universal adoption of common standards will support future technological innovations that aid teachers. From a technical perspective, standards facilitate the development of new technologies. Innovators can focus on developing tools that better serve students rather than solving technical challenges of interoperability created by multiple sets of standards. Undoubtedly weak financial support inhibits the adoption of education technology. Despite this obstacle, teachers working together have tremendous potential to reform education. Every day teachers face choices about how to implement the curriculum and instruct students. Those moments are opportunities for teachers to engage in education reform that has a real impact on students. Teachers should use education technologies that are inexpensive, easy to use, and improve student learning.

4.3.2 Role of Technology in School Management to Enhance Learning: India has one of the largest networks of schools in the world. During the last five decades the system has grown manifold in size both in terms of institutions and enrolment. Some say, that the nature of Indian education system shifted from an elite system to a system of mass education. For instance, the number of primary schools was around 200,000 in 1950, which is at present more than 600,000. If one were to take into consideration the number of alternate schools that have sprung up in recent years, and include the upper primary and secondary schools, the network consists of more than a million schools. Traditionally, school education acquired immense importance in the post-Independence period and with the consequent expansion of the system, the role of the school teacher also underwent a significant transformation. An important consequence of the expanding system of schools, with ever increasing enrolment and acquiring of mass character, has been the increase in complexity of school management.

The changing pace of technology development like ICT and knowledge revolution has made the job of the teacher more demanding. They are required and should be encouraged to assume the new roles and responsibilities for ICT to improve the quality of education and access to education by learners

in an informal and non-formal education setting. (Govinda, 2002) The system demands new knowledge and skills from the teacher and head teachers. It also demands greater capability at the school level to respond to the emerging diversity in the student population and among those entering the teaching

157 profession. In effect, changes in the characteristics of the system have made the role of the school teacher even more critical than what it was earlier. Has the State, which is the main provider of education in the country, responded to the changed reality? Has the teacher become more empowered? Have adequate efforts been made to equip the teacher to face the emerging challenges? What is the current reality with respect to status, roles and functions of the teacher and the head teachers in India? And how can we come out from this challenge? These are few issues which need attention especially now when the country is moving towards becoming a knowledge center and quality education has become determinate in such process. 4.3.3 An Overview of Teacher Managerial Function in the Class Room Historically, most of teachers restricted their role to teaching. The different government organizations and departments provided a guide line for the role and responsibility of the teacher. The teacher plays multiple roles in the school. The role of teacher is assessed in terms of his/her attendance in the class, completion of the course and interpersonal relation in the school.

Till now, hardly any indicator is developed to assess the performance of teacher on the basis of learning achievement of the student. The critical managerial functions of a teacher in elementary education are similar to those in other sectors. These are: (i) Administration. Administration refers to the direction, control, management and organization of human and material resources for educational growth and development. (ii) Personnel management. Planning and managing human resources is personnel management. It includes recruitment, transfer and redeployment; promotional opportunities and performance appraisal systems, grievance redressal mechanisms and professional development issues. (iii) Planning. Planning is a systematic exercise of determining a future course of action in accordance with identified objectives, needs, priorities and existing/likely capacities, within a given time frame, reflecting cost-effective choices. (iv) Financial management. Financial management refers to mobilization, deployment and efficient use of financial resources as per stated objectives and strategies. (v) Supervision, monitoring and support. Monitoring and facilitation of teaching- learning processes, and other school development activities, for enhancing their

158 quality through suitable tools, methods and mechanisms. The focus is on school, because this is the unit where primary learning takes place, and any effort to improve the quality of processes should ultimately be reflected here. 4.3.4 Benefits of Technology in the Classroom As we sail through the 21st century, technology in the classroom is becoming more and more predominant. Tablets are replacing our textbooks, and we can research just about anything that we want to on our smartphones. Social media has become commonplace, and the way we use technology has completely transformed the way we live or lives. Educators, too, have seen firsthand the benefits of technology in the classroom. Educators also recognize the importance of developing these technological skills in students so they will be prepared to enter the workforce once they complete their schooling. The impact that technology has had on today's schools has been quite significant. This widespread adoption of technology has completely changed how teachers teach and students learn. Teachers are learning how to teach with emerging technologies (tablets, iPads, Smart Boards, digital cameras, computers), while students are using advanced technology to shape how they learn. Here are a few benefits of using technology in the classroom. Technology in the Classroom Makes Learning More Fun Students prefer technology because they believe that it makes learning more interesting and fun. They especially like laptops and tablets. Subjects that students deem challenging or boring can become more interesting with virtual lessons, through a video, or when using a tablet. Technology Prepares Students for the Future Using technology in the classroom would help prepare them for the digital future. These 21st-century skills are essential in order to be successful in this day and age. Jobs that may not have had a digital component in the past, may have one now. Education isn't just about memorizing facts and vocabulary words, it's about solving complex problems and being to collaborate with others in the workforce. Ed-tech in the classroom prepares students for their future and sets them up for this increasing digital economy.

159 Improved Retention Rate Technology helps them retain information better. Technology indeed helps students remember what they learn. Technology Helps Students Learn at Their Own Pace Today's technology enables students to learn at their own pace. For example, almost all apps allow for individualized instruction. Students can learn according to their abilities and needs. This form of teaching is also great for the teacher because it gives him/her the time to work individually with students who may be struggling. Technology Connects with Students Technology occupies an important place within students' lives. When they are not in school, just about everything that they do is connected in some way to technology. By integrating technology into the classroom, teachers are changing the way they used to teach and providing students with the tools that will take them into the 21st century. Technology changes by the minute, and as educators we need to keep up with the times in order to best prepare our students for this ever-changing world that we live in. While we just saw how integrating technology into the classroom has its benefits, it's important to note that traditional learning processes are just as essential. 4.3.5 Teacher Technology

Competencies Teachers need to improve knowledge and skills to enhance, improve and explore their teaching practices. Many of the studies on competencies of teachers focus on the teaching role of teachers in the classroom rather than teachers' competencies. Competencies are defined as "the set of knowledge, skills, and experience necessary for future, which manifests in activities" (Katane et.al. Gupta defines competencies as "

knowledge, skills, attitudes, values, motivations and beliefs people need in order to be successful in a job." ICT competencies are based on using tools and technical equipment for the reaching, disturbing and transferring the knowledge. They include any technology that helps to produce, manipulate, store, communicate, and/or disseminate information. It means that the ICT competency is very important to improve the communication in the learning and teaching process. The ICT Competencies are a set of technology standards that define

160 proficiency in using computer technology in the classroom. The competencies consist of computer-related skills grouped into four general domains: (1) Basic Technology Operation, (2) Personal and Professional Use of Technology Tools, (3) Social, Ethical, and Human Issues, and (4) Application of Technology in Instruction. 4.3.6

Importance of ICT Competency for Teachers Teaching is a complex activity. Competent teachers apply broad, deep, and integrated sets of knowledge and skills as they plan for, implement, and revise instruction. Technology proficiency (including technical skills and instructional applications) is but one dimension of teacher competence. The acquisition of technology knowledge and skills must be connected with the development of a broader array of competencies. Early attempts to develop technology standards for teachers were isolated from the broader teacher competencies and were focused primarily on technology skills. Consequently these competencies were largely ignored by teacher-training institutions. Typically, colleges of education simply required a single media course to satisfy accreditation requirements; often, colleges were reluctant to insert yet another course into an already overloaded curriculum. The International Society for Technology in Education (ISTE) has actively addressed the technology isolation problem and has recently released a set of revised teacher technology standards. Developed through a rigorous process of expert and lay-person input, the NETS-T Project (National Educational Technology Standards for Teachers) explicitly describes what competent teachers should know and should be able to do with technology in the context of broader teacher competencies. The NETS-T standards are categorized as follows: 1. Technology operations and concepts, 2. Planning and designing learning environments and experiences, 3. Teaching, learning, and the curriculum, 4. Assessment and evaluation 5. Productivity and professional practice, 6. Social, ethical, legal, and human issues.

161 4.3.7

Basic Technology Competencies Fundamental skills come first - like managing electronic files, using computerized databases and spreadsheets, sending and receiving e-mail messages, and creating documents with graphics. These skills are prerequisites for more advanced skills, such as accessing online resources, creating desktop publishing documents, developing multimedia presentations, selecting and customizing instructional software to fit students' needs, streamlining recordkeeping and other administrative procedures with electronic tools, and observing the correct protocols in sharing intellectual property. The competencies are organized into five aspects: productivity, communication, research, media and presentation. 1. Productivity • Produce and manage learning documents. This includes composing standard educational publications such as parent newsletters and handouts for students and class lists; teaching students how to prepare their own documents on a computer. • Analyze quantitative data. This includes administrative work such as putting student test scores into a spreadsheet and analyzing them, as well as preparing curriculum materials with digital tables and graphs of curriculum content. • Organize information graphically. He or she can use specialized graphic organizer programs, as well as general tools such as word processors or presentation programs, to create digital representations of educational information. 2. Research • Use effective online search strategies. In their professional preparation, as well as in their classroom assignments, the teacher chooses the most appropriate research tools and databases, and applies the most effective search techniques, to produce useful and safe online resources in the classroom. • Evaluate and compare online information and sources. Once located, the teacher knows the difference between authoritative and untrustworthy sources, how to 4 ascertain authorship, and how to find sources with different points of view. And can teach these skills to students. • Save and cite online information and sources. The teacher knows a variety of methods for bookmarking and saving valuable online resources so that may easily be found later and employed in learning materials.

162 3. Communication • Communicate using digital tools. These include email, instant messaging, mobile colleagues, and knowing how to organize and manage these tools in the classroom. • Collaborate online for learning. Takes advantage of the tools listed above plus blogs, wikis, chats, audio and videoconferencing to bring outside resources into the classroom and to encourage academic collaboration among students. • Publish learning resources online. From a simple teacher's web site to a complex curriculum wiki to the online posting of student projects, to podcasting, the teacher has mastered an array of tools and techniques for publishing learning materials online. 4. Media • Differentiate instruction with digital media. This includes an awareness of assistive technologies for disabled students as well as the ability to use a computer to prepare and present academic ideas in a variety of forms for better learning by all students. • Capture and edit images, audio, and video. The teacher can use digital still and video cameras, edit their output on a computer, and produce learning materials that range from simple slide shows to the archiving of student presentations and performances. • Produce digital multimedia educational experiences. The teacher can combine media from a wide array of sources into a useful presentation of academic content, and can teach this skill to students. 5. Presentation • Create effective digital presentations. Using common tools for preparing slide shows, videos, and podcasts, the teacher can create presentations that follow the principles of communication, and can apply these design principles to the evaluation of students' digital work. • Deliver digital multimedia presentations. Using common devices such as computers, projectors, and screens, the teacher can set up classroom presentations and arrange for students to do the same. • Employ new media devices for learning. From large Smart Boards to tiny iPods to science probes, the teacher can incorporate a variety of digital devices into the instruction in the classroom.

163 Those are the skills that just about every teacher needs, no matter the subject or grade. Beyond these are the more specific technical skills required of a high school math teacher or a teacher of visually-impaired students, competencies that would be embedded into specialized courses and programs. 4.3.8 Strategies for Preparing Teachers to Use Technologies Given the importance of well-trained teachers for technologies to be effective in enhancing learning, what might education policy makers do to support and encourage appropriate strategies for training teachers? No single approach to professional development will meet the learning needs of all teachers seeking to develop skills and knowledge in the integration and application of technology. Teachers' progress through a series of five predictable stages as their expertise in technology adoption and integration evolves. It is likely that within a school, and certainly within a district, teachers will exhibit varying levels of expertise and therefore a variety of different professional-development opportunities will be required. In contrast, learning that occurs outside the confines of programs provided by institutions is considered informal learning. Informal learning, sometimes referred to as self-directed learning, typically occurs in the learner's "natural setting" and is initiated and conducted independently (Merriam & Caffarella, 1999). Policy makers may want to consider both kinds of approaches. A brief overview of the kinds of possible training strategies is as follows: Encouraging Teachers to Acquire Necessary Skills: For many teachers, having access to technologies is not viewed initially as a benefit. Teachers may consider technologies yet another demand on their time, a set of tools they did not ask for and do not know how to use. Some teachers feel they are already doing a good job in the classroom and wonder how technologies will contribute to improvements. Still other teachers, of course, welcome the technologies and are eager to learn how to use them. Policies that either mandate or provide opportunities will cost money, but without the establishment of policy that mandates or provides professional-development opportunities (or, ideally, both), teachers are unlikely to acquire the skills they need to use the technologies available to them, thus negating the potential benefits of the investment that has been made in infrastructure. Providing sustained support for Teachers' use of Technologies: It is very important for teachers to acquire knowledge and skills in how to use technologies. But once teachers

164 begin to acquire such skills and begin to use technologies, there is a need to provide means of continuing support to teacher use of technologies. That is, initial training of teachers is not likely to guarantee that the technology infrastructure will continue to be used. Evaluating Teacher Use of Technologies: The issue for education policy makers here concerns the extent to which a teacher uses technologies effectively, which can or should be an important criterion in evaluating a teacher's performance. This is a complicated issue for policy makers. This general issue is complex in part because of divided opinion on how important technology use is to the future well-being of individual citizens in a given entity, or to the entity as a whole. There are many writers who make the argument that neither an individual nor a state or nation can hope to survive or prosper unless they are very familiar with technologies. Others dispute this claim and worry about the survival of traditional cultural values in a technological age. Given this deeply-rooted controversy, establishing policy according to which teacher performance will be judged is of critical importance.

Teachers are central to the effectiveness of technology infrastructures that serve education. How teachers acquire the skills they need to use technologies and how the technology is actually used and to what ends, are critical policy domains that must be carefully explored. Hopefully, issues of this nature will be considered as decisions are made about technology and as educators make decisions about the future shape of their schools. 4.4

Computer Assisted and

Computer Managed Instructions, Cybernetics, E- Learning, Use of Net Search and Websites 4.4.1 Computer Assisted Instruction (

CAI)

A self-learning technique, usually off line/

online, involving interaction of the student with programmed instructional materials. Computer Assisted Instruction (CAI) is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place. CAI uses a combination of text, graphics, sound and video in enhancing the learning process.

The computer has many purposes in the

class room,

and it can be utilized to help a student in all areas of the curriculum. CAI

refers to the use of the computer as a tool to facilitate and improve instruction. CAI programs use tutorials, drill and practice, simulation, and problem solving approaches to present topics and they test the students' understandings.

165 Typical

CAI Provides 1. Text or

multimedia content 2. Multiple-choice questions 3. Problems 4. Immediate feedback 5. Notes on incorrect responses 6.

Summarizes students' performance 7. Exercises for practice 8. Worksheets and tests.

Types of Computer Assisted Instruction 1. Drill-and-practice Drill and practice provides opportunities or students

to repeatedly practice the skills that have previously been presented and that further practice is necessary for mastery. 2.

Tutorial Tutorial activity includes both the presentation of information and its extension into different forms of work, including drill practice, games and simulation. 3.

Games

Games software often creates

a contest to achieve the highest score and either beat others or beat the computer. 4. Simulation Simulation software can provide an approximation of reality that does not require the expense of real life or its risks. 5.

Discovery Discovery approach provides

a large database of information specific to a course or content area and challenges the learner to analyze, compare, infer and evaluate based on their explorations of the data. 6. Problem solving This approach helps children develop specific problem solving skills and strategies.

Advantages of Computer Assisted Instruction *One to one interaction

166 *Greater motivator *Freedom to experiment with different options *Instantaneous response/immediate feedback to the answers elicited *Self-pacing allow students

to proceed at their own pace *Helps teacher can devote more time to individual students *Privacy helps the shy and slow learner to learn *Individual attention *

Learn more and more rapidly *

Multimedia helps to understand difficult concepts through multi-sensory approach *Self-directed learning-students can decide when, where, and what to learn. Limitations of Computer Assisted Instruction *May feel overwhelmed by the

information and resources available *Over use of multimedia may divert the attention from the content *Learning becomes too mechanical *Non availability of good CAI packages *Lack of infrastructure. 4.4.2

Computer Managed

Learning Computer Managed Learning (CML) is not to be confused with Computer Assisted Instruction (CAI), Computer Based Instruction (CBI), or Computer Based Learning (CBL). It is however, often referred to as Computer Managed Instruction (CMI). When discussing computers and education, if one remembers that learning and instruction generally refer to the same thing, a good deal of the confusion between different terms is often eliminated. CMI has both a broad and narrow meaning. In the broader sense, CMI refers to the following definition; CMI in its most sophisticated levels provides the following instructional functions; (1) Assesses the learners present level of knowledge (2) diagnoses weakness in the students learning (3) prescribes learning activities to remediate the identified weaknesses, and (4) continuously monitors progress of the learner

167 CML can save time, money, and bureaucratic headaches, special educators are likely to continue developing and using microcomputer management tools for;

- Storing demographic and educational information on students and their needs
- Recording, monitoring, and reporting students' progress
- Listing incomplete information on student records
- Recording contacts with parents and supporting agencies/personnel
- Recording, monitoring and reporting student due process status
- Generating reports on referrals, meeting, evaluation, placement, programming and review for each student.
- Locating, describing, and recommending appropriate materials based on individual student need
- Generating IEP objectives from a large data base and
- Issuing reminders for when reports are due.

4.4.3 Cybernetics: Cybernetics is not a new invention but its potential for application has not exhausted even after nearly seventy years of its origin. It started with idea of automation and control in the electrical and mechanical systems, but later on extended to biological, social systems and learning systems.

Cybernetics means 'to steer', 'to navigate' or 'to govern' for taking the system to desired goal. Here in classroom teaching-learning process is a system and the goal is success of the learner and learning process. Classroom cybernetics is constituted by Constructivism, Conversation theory and a feedback system. Constructivism resulted in five E's namely- Engage, Explore, Explain, Elaborate and Evaluate.

Conversation theory necessitates interaction between teacher and learner. Feedback is another essential element of cybernetics which is an instrument for controlling the system to maintain equilibrium, move forward or even reverse it. The aims of Cybernetics divided into three classes as follows:-

1. To construct an effective theory, with or without actual hardware models, such that the various aspects of human and other sorts of behaviour can be simulated.
2. To produce models and theories of human behaviour which present these functions of human beings and other systems in the same manner in which they are performed by human beings or other such systems as are considered. In other words, it is not enough merely to produce the same end result; we want to produce the same end result by similar or even identical means.

168 3. Finally, to produce, or simulate, the whole of human or animal behaviour by models which in their construction are identical with human beings or animals. That is, they should in the end be chemico-colloidal systems, or protoplasmic systems.

4.4.4 E-Learning Use of computers and new technologies has become a crucial part of learning as well as teaching. E-learning today has been a key factor in various industries and teaching is one among them; especially teaching language. E-learning has redefined some strategies and concepts of teaching that have enabled the teaching community to perform better. E-Learning is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online. There are many terms used to describe learning that is delivered online, via the internet, ranging from Distance Education, to computerized electronic learning, online learning, internet learning and many others. We define eLearning as courses that are specifically delivered via the internet to somewhere other than the classroom where the professor is teaching. It is not a course delivered via a DVD or CD-ROM, video tape or over a television channel. It is interactive in that you can also communicate with your teachers, professors or other students in your class. Sometimes it is delivered live, where you can "electronically" raise your hand and interact in real time and sometimes it is a lecture that has been prerecorded. What is e-learning? Is it important in education?

When it comes to online learning in education, the model has been pretty straightforward - up until the early 2000s education was in a classroom of students with a teacher who led the process. Physical presence was a no-brainer, and any other type of learning was questionable at best. Then the internet happened, and the rest is history.

E-learning is a rapidly growing industry, the effects of which we can trace back to the 1980s and even well before that (in the form of distance learning and televised courses) - these will be discussed later in this ebook.

Now that affordable e-learning solutions exist for both computers and internet, it only takes a good e-learning tool for education to be facilitated from virtually anywhere. Technology has advanced so much that the geographical gap is bridged with the use of tools that make you feel as if you are inside the classroom. E-learning offers the ability to share material in all kinds of formats such as videos, slideshows, word documents

169 and PDFs. Conducting webinars (live online classes) and communicating with professors via chat and message forums is also an option available to users.

There is a plethora of different e-learning systems (otherwise known as Learning Management Systems, or LMSs for short) and methods, which allow for courses to be delivered.

With the right tool various processes can be automated such as a course with set materials and automatically marked tests. E-learning is an affordable (and often free) solution which provides the learners with the ability to fit learning around their lifestyles, effectively allowing even the busiest person to further a career and gain new qualifications. Some of the most important developments in education have happened since the launch of the internet. These days' learners are well versed in the use of smartphones, text messaging and using the internet so participating in and running an online course has become a simple affair. Message boards, social media and various other means of online communication allow learners to keep in touch and discuss course related matters, whilst providing for a sense of community. In the fast-paced world of e-learning the available technologies to make a course new and exciting are always changing, and course content can and should be updated quickly to give students the very latest information. This is especially important if the e-learning training is being given to employees in a sector where keeping up-to-date on industry developments is of the utmost importance. This is one of the reasons why many businesses are now offering training via e-learning - other reasons includes low costs and the ability for employees to study in their own time and place. Overall, traditional learning is expensive, takes a long time and the results can vary. The importance of E-learning is now a given fact and it can offer an alternative that is much faster, cheaper and potentially better.

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The history of e-learning The term "e-learning" has only been in existence since 1999, when the word was first utilized at a CBT systems seminar. Other words also began to spring up in search of an accurate description such as "online learning" and "virtual learning". However, the principles behind e-learning have been well documented throughout history, and there is even evidence which suggests that early forms of e-learning existed as far back as the 19th century. An e-learning history timeline Long before the internet was launched, distance courses were being offered to provide students with education on particular subjects or skills. In the 1840's Isaac Pitman taught his pupils shorthand via correspondence. This form of symbolic writing was designed to improve writing speed and was popular amongst secretaries, journalists, and other individuals who did a great deal of note taking or writing. Pitman, who was a qualified teacher, was sent completed assignments by mail and he would then send his students more work to be finished using the same system. In 1924, the first testing machine was invented. This device allowed students to tests themselves. Then, in 1954, BF Skinner, a Harvard Professor, invented the "teaching machine", which enabled schools to administer programmed instruction to their students. It wasn't until 1960 however that the first computer based training program was introduced to the world. This computer based training program (or CBT program) was known as PLATO- Programmed Logic for Automated Teaching Operations. It was originally designed for students attending the University of Illinois, but ended up being used in schools throughout the area. The first online learning systems were really only set up to deliver information to students but as we entered the 70s online learning started to become more interactive. In Britain the Open University was keen to take advantage of e-learning. Their system of education has always been primarily focused on learning at a distance. In the past, course materials were delivered by post and correspondence with tutors was via mail. With the internet the Open University began to offer a wider range of interactive educational experiences as well as faster correspondence with students via email etc. Online learning today With the introduction of the computer and internet in the late 20th century, e-learning tools and delivery methods expanded. The first MAC in the 1980's enabled individuals to have computers in their homes, making it easier for them to learn about particular subjects and develop certain skill sets. Then, in the following decade, virtual learning

171 environments began to truly thrive, with people gaining access to a wealth of online information and e-learning opportunities. By the early 90s several schools had been set up that delivered courses online only, making the most of the internet and bringing education to people who wouldn't previously have been able to attend a college due to geographical or time constraints. Technological advancements also helped educational establishments reduce the costs of distance learning, a saving that would also be passed on to the students - helping bring education to a wider audience. In the 2000's, businesses began using e-learning to train their employees. New and experienced workers alike now had the opportunity to improve upon their industry knowledge base and expand their skill sets. At home individuals were granted access to programs that offered them the ability to earn online degrees and enrich their lives through expanded knowledge.

The benefits and drawbacks of online learning Whether you're a high-school teacher looking to engage your students in a more interactive way, or a corporate trainer hired by a large company to design training curricula, e-learning packs a punch when it comes to benefits that make the creation and delivery processes easier and hassle-free. Important benefits are outlined below: No Boundaries, No Restrictions Along with locational restrictions, time is one of the issues that learners and teachers both have to face in learning. In the case of face-to-face learning, the location limits attendance to a group of learners who have the ability to participate in the area, and in the case of time, it limits the crowd to those who can attend at a specific time. E- learning, on the other hand, facilitates learning without having to organize when and where everyone who is interested in a course can be present. More Fun Designing a course in a way that makes it interactive and fun through the use of multimedia or the more recently developed methods of gamification (further discussed in later chapters) enhances not only your engagement factor, but also the relative lifetime of the course material in question. Cost Effective This is directed to both learners and teachers, but there is a good chance that 172 whatever your role you had to pay exorbitant amounts of money at some point to acquire updated versions of textbooks for school or college. While textbooks often become obsolete after a certain period of time, the need to constantly acquire new editions is not present in e-learning. It Just Fits! As companies and organizations adopt technologies to improve the efficiency of day-to-day operations, the use of the internet becomes a necessity. As multinational corporations expand across the globe, the chances of working with people from other countries increases, and training all those parties together is an issue that e-learning successfully addresses. And that's a great advantage of online learning! Let's blend all of that together and apply it in a real-life scenario: In an effort to enhance the credibility of course material, oftentimes a professor will summon a field specialist to give a lecture relevant to the topic at hand. In the traditional model of education, the professor would have to extend an invitation to said expert, and incur the costs of his flight, stay and training. With e-learning: With e-learning the professor has the ability to host a guest lecture without having to spend much money. It can be done virtually, with cameras for both the lecturer and the students, and with the use of microphones to facilitate the same level of interaction that would be possible if the lecturer were physically present in the room. The added benefit comes in when we are able to replay the lecture and gain even more out of it. Students that missed out can view the recording, or students that attended can watch it again to further their understanding. Concerns that arise with e-learning Even given all the benefits of e-learning, one cannot deny there are some drawbacks. A good example of a disadvantage of online learning is that practical skills are somewhat harder to pick up from online resources. For example, although building a wooden table is something you can easily share information about, record videos of and explain, the practical experience is essential. Pottery and car engineering are examples of skills that require hands-on experience. Isolation Though e-learning offers ease, flexibility and the ability to remotely access a

173 classroom in the student's own time, learners may feel a sense of isolation. This is because learning online is a solo act for the most part, which may give the learner the feeling that they are acting completely alone. As technology progresses and e-learning benefits from the advancements being made, learners can now engage more actively with professors or other students using tools such as video conferencing, social media, and discussion forums amongst others. Health Related Concerns E-learning requires the use of a computer and other such devices; this means that eyestrain, bad posture and other physical problems may affect the learner. When running an online course it's a good practice to send out guidelines about correct sitting posture, desk height, and recommendations for regular breaks. 4.4.5 Importance of

Internet and Websearches in the Modern Education Things are changing rapidly as the world is progressing. In this modern world people are using advanced machines to do their work. Computer is the most advanced machine that people use to do their work. This particular machine is used in every field of life. Advanced techniques are used with help of computers to diagnose dangerous diseases. Advanced manufacturing techniques are used with the help of computers to manufacture the products. Computers are extensively used in the field of engineering. In past one machine was used to perform only a single task but now-a-days with the help of computers you can perform different tasks at one time. In modern business environment computers have special importance. A huge amount of time is saved due to multitasking. In business terms time is money, so if you are saving time you are saving money as well. Due to multitasking the costs of businesses have reduced. What is the meaning of multitasking? It means that running several programs simultaneously. Since modern computers typically execute instructions several orders of magnitude faster than human perception, it may appear that many programs are running at the same time even though only one is ever executing in any given instant. Multitasking may slow down a computer that is running several programs at one time. Many advanced computers are designed to share their work across many CPUs. This process is called multiprocessing. This technique is generally used in powerful computers such as super computers, mainframe computers and servers. Thus, the entire world is fully dependent on computers. Due to this factor demand of computers has been increased. Computers have changed the way we work, be it any profession. Therefore, it is only but natural the role of computers in education has been given a lot of prominence in the recent years. Computers play a vital role in every field.

174 Importance of Educational Websites In this technology era, the passion of internet is boosting among the students. For any search they usually like to use the Google to collect the information. Similarly in the case of education, it is often helpful to use education websites as a means of collecting the relevant information about the concerned subject. Well, it has become very necessary for any new business to promote over the web. If we want to put up and enlarge your business in worldwide then it's vital for you to make a good web site, so that people can easily understand the mission and vision of your business and liberally enjoy the various services. Today the many institutes and colleges in India are developing their own sites to offer the clear concepts to the students. With the help of these education websites student can search any colleges across the country just by entering the few relevant keywords like best law colleges in India, medical colleges in India. It is well said "Action Speaks Louder than Words"; in the same way education website will speak volume for students. At present there are some great education websites are available which directly conveys the useful information. Suppose you want to find the list of best law colleges in India these education websites help you out and shows the all best law colleges in India in the form of list even it can also mentioned the complete details of the colleges including courses offered, fee details, duration of the course and contact details of the colleges. The concept of education websites is still new in India but owing to its growing need, it is gaining popularity at a fast pace. Students have become more conscious about their career so that picking right course is necessary as it is the merely way that ensures their good professional life. In this regard, they visit education websites and openly discuss their areas of interest and seek all significant info. Students also visit these education websites to get the information about the various college or institute; they want to take admission in like medical colleges in India. These education websites are especially best for those students who live in the remote areas and don't able to reach the colleges. They can add their request by mailing these education websites and fetch the instant responses. 4.5

Disability Friendly Technology - Punarjani and E-Learning Framework Developed by C-DAC 4.5.1

Punarjani:

Punarjani is an assessment tool for the children with Intellectual disabilities. CDAC

175 Trivandrum is engaged in developing an assessment tool named Punarjani. The system will collect a lot of data about a particular child with intellectual disabilities like developmental history, school history, home environment, social environment etc. and will be capable of suggesting a long term goal for the

child. This is an assessment tool for teachers who work with children with intellectual disabilities. This tool frees the teacher from time consuming activities like preparing reports. Doing manual assessment etc. and thus gives the teacher more time with the children. The teacher can override the assessment data generated by Punarjani but then has to give sufficient reasons why the result has been overridden. The software has built in learning capability based on the teacher's input.

4.5.2 E-Learning Framework developed by C-DAC Centre for Development of Advanced Computing (C-DAC) is the premier R&D organization of the Ministry of Electronics and Information Technology (MeitY) for carrying out R&D in IT, Electronics and associated areas. Different areas of C-DAC, had originated at different times, many of which came out as a result of identification of opportunities.

- The setting up of C-DAC in 1988 itself was to build Supercomputers in context of denial of import of Supercomputers by USA. Since then C-DAC has been undertaking building of multiple generations of Supercomputer starting from PARAM with 1 GF in 1988.
- Almost at the same time, C-DAC started building Indian Language Computing Solutions with setting up of GIST group (Graphics and Intelligence based Script Technology); National Centre for Software Technology (NCST) set up in 1985 had also initiated work in Indian Language Computing around the same period.
- Electronic Research and Development Centre of India (ER&DCI) with various constituents starting as adjunct entities of various State Electronic Corporations had been brought under the hold of Department of Electronics and Telecommunications (now MeitY) in around 1988. They were focusing on various aspects of applied electronics, technology and applications.
- With the passage of time as a result of creative echo system that got set up in C-DAC, more areas such as Health Informatics, etc., got created; while right from the beginning the focus of NCST was on Software Technologies; similarly C-DAC started its education & training activities in 1994 as a spin-off with the passage

176 of time, it grew to a large efforts to meet the growing needs of Indian Industry for finishing schools. C-DAC has today emerged as a premier R&D organization in IT&E (Information Technologies and Electronics) in the country working on strengthening national technological capabilities in the context of global developments in the field and responding to change in the market need in selected foundation areas. In that process, C-DAC represents a unique facet working in close junction with MeitY to realize nation's policy and pragmatic interventions and initiatives in Information Technology. As an institution for high-end Research and Development (R&D), C-DAC has been at the forefront of the Information Technology (IT) revolution, constantly building capacities in emerging/enabling technologies and innovating and leveraging its expertise, caliber, skill sets to develop and deploy IT products and solutions for different sectors of the economy, as per the mandate of its parent, the Ministry of Electronics and Information Technology, Ministry of Communications and Information Technology, Government of India and other stakeholders including funding agencies, collaborators, users and the market-place.

C-DAC has developed a number of indigenous solutions for content management, evaluation and assessment, virtual classroom, collaboration for e-learning domain. Some of the solutions are listed below.

- e-Shikshak is a learning management system with rich support for Indian languages.
- National Online Examination System (NOES) is an examination system primarily aimed at conducting recruitment.
- Online Labs (Olabs) for school lab experiments provides students with the ease and convenience of conducting experiments over the Internet.
- Veda is a general purpose online testing and question banking system, primarily supporting multiple choice questions (including its variant forms such as match the following).
- Video conferencing solutions for building virtual classrooms supporting synchronous lectures are also available from C-DAC.
- e-Saadhya (SaraAnukulaneyAdhyayan) an Adaptable and Accessible e-Learning framework for the children with mild mental retardation and Autism, is being developed with the domain support from National Institute for the Mentally Handicapped (NIMH) with local language support in three Indian languages Hindi, Telugu and Kannada.

177 • An Academic Networking portal for the faculty members, students, and academic institutions to network and share information about courses, academic events, projects, etc. has been created through a portal called SEEKHA (www.seekha.in)

e-Sikshak - Learning Management System

Salient features of e-Sikshak: 1. Course Organizer 1. Support for 3-level course organization with a hierarchy of Course, Module and lesson 2. Create and modify courses 3. Course Reports 2. Online Assessment 1. Question bank creation 2. Multiple-choice single answers 3. Multiple-choice multiple answers 4. True or False questions 5. Uploading of assignments by instructor 6. Uploading solutions by student 7. Student performance reports 3. Whiteboard 1. Synchronous communication between student and instructor 2. Graphical interface to simulate real world Whiteboard 3. Facilitates drawings with color; all drawing tools like rectangle, circle, free- hand etc. 4. Text with desired color font etc 5. Shared discussion area between student and instructor 4. Bulletin board 1. Creates forums for subject discussions 2. Thread based discussions 3. Search

178 5. Chat 1. Real-time communication between instructor and learner 2. Public chat between student and instructor 3. Blocking/unblocking chat users by the instructor 6. e-Mail 1. Asynchronous communication tool 2. Facilitates offline interaction with instructor or among the student community 3. Attachment facility 7. User Management 1. Portal efficiently handles user management in successful implementation of the course. The different users involved are : 1. Administrator Can • Manage users • Create and update courses • Assigns learners to the courses 2. Instructor Can • Upload course material • Maintain question bank • Evaluate assignments • Activate discussion forums 3. Learner Can • Register into multiple courses • Access course material and download • Get the performance report • Take online test e-Sikshak is a Multi-lingual e-Learning framework Features: 1. Unicode based multilingual solution 179 2. Customizable Graphical User Interface 3. Supports multi media content 4. Portable to mySQL and Oracle 5. Servlet based serve side technology

e-Sikshak is right now used by : 1. Information Security and Education- CDAC Hyderabad 2. Indian Law Institute- New Delhi 3. National Institute Of Agricultural Extension Management- Hyderabad 4. India Development Gateway - CDAC Hyderabad. 5. Two online courses are being offered by CDAC Hyderabad on esikshak portal (www.esikshak.in) • Core Competency in Software Process Management [CCSPM] • Certificate Course on Cyber Security [CCCS] • C-DAC Certified Cyber Security Professional [CCCSP] • C-DAC's Certified Professional in Linux System Programming [CCP-LSP] • C-DAC's Certified Professional in Linux Kernel Programming & Device Drivers [CCP-LKPDD National Online Examination System National Online Examination System (NOES) is a robust, fault tolerant, secure and scalable examination system through which examinations can be delivered on an "on demand" basis in selected examination centers spread across the country. The system can be used by educational institutes and organizations for registration, examination and multi-level interviews.

180 Architecture The system has been developed using Adobe Flex, Spring, and Hibernate framework and is highly secure and fail safe. It utilizes the following framework across its various tiers namely Adobe Flex at the Presentation tier, Blaze DS at the Remoting tier, Spring at the Business tier, Hibernate at the Object Relational Mapping tier and Terracotta for providing JVM Level Clustering for high availability and better throughput. Functionality The main functionalities provided by the system include: • Online Registration Process through which candidates can provide their demographic details, choose their examinations, select exam slot timings and make payments (either through payment gateway or demand drafts) • Question Entry and Verification system through which questions can be entered under various subject headings and subsequent verification of those questions. • Exam Administration which provides the facility for creating examination, generation of question paper, result generation etc. • Exam Conduct system which presents the question paper to the candidate and captures the response submitted by the candidate. It supports both static and adaptive mode of examination. • Interview Conduct process comprising of Interviewer & Interview controller module. Interviewer module is used by interviewer for grading an eligible candidate. Interview controller module is used for assigning the candidate to a particular Interview Panel. Salient Features: • Authorized user based access control. • Online registration process with provision of exam scheduling and making payment (either through payment gateway or demand draft. • Automatic generation of admit cards. • Automatic generation of question paper by the system using input criteria like subject, number of questions and difficulty level. • System provides end to end security as question papers are encrypted. • AIR sandbox environment for the examination screen. • Highly fail safe with the ability to resume exam on the last saved state.

181 • Supports both static and adaptive modes of examination. • Multi-level interview process • Immediate result generation. MySikshak (personalized e-Learning framework) MySikshak (personalized e-Learning framework) which extends the learning environment with personalized e-Learning services assisted by instructor through web. It mainly focuses on needs and aspirations of individual learners. This model recognizes that every student is an individual, with a distinct learning style, learning pace, learning path, and learning aspiration. It is also dedicated for building individualized learning programs whose intent is to engage learner continuously in the learning process in the most productive way to optimize learner's learning potential and success Salient Features • Interoperable Services • Standards Compliant • User interface with rich interaction • Intelligent filter mechanism to group the learners • Collaborative activity/course building environment for Instructors • User interface with rich interaction • Platform independent Services provided by MySikshak: User Registration • Online registration • Updating user profile • Necessary user reports for instructor and learner • Provides the learning style • Request for a course Course Organizer • Add and Delete courses • Folder hierarchy based conversion into SCORM compliant standard course

182 • Collaboration among the instructor to upload the content into the course Learners' Information in dashboard • Dashboard provides assistance to instructor in analyzing the learning styles of the student cluster • Cluster management tool provides the facility of creating/deleting/ modifying the student clusters and their corresponding characteristics Learning Path Editor • Provides facility to instructor to design the SCORM compliant learning path template based on learner's prior knowledge and learning style • Provision for instructor/expert to add and modify the e-Learning activities like quizzes, examples and/or case studies within template, specific to the group identified • Leads to the creation of personalized learning path template comprising of learning content and activities Personalized Content and Activity Delivery • Takes the SCORM compliant learning path template assigned for learners • Use Run Time Environment (RTE), to deliver and track the learners' activities according to SCORM complaint learning path template Adaptive Assessment • Pre, Formative and Summative Assessments • Formative assessment using Computerized Adaptive Testing (CAT) • Summative assessment using Computerized Classification Testing (CCT) • æpQuestion Repository conforming to standards (IMS QTI) Query Handler with semantic web technology • Query Handler capable of semantically identifying the queries and supervised with expert rating mechanism • Ontology editor provides facility to create subject specific ontologies with help of experts

183 • Provides assistance to instructors for replying the queries with additional multimedia support from web. 4.6 Devolving Technology Integrated Lessons- Individual And Group When technology integration in the classroom is seamless and thoughtful, students not only become more engaged, they begin to take more control over their own learning, too. Effective tech integration changes classroom dynamics, encouraging student- centered project-based learning. The first step in successful tech integration is recognizing the change that may need to happen inside of yourself and in your approach to teaching. When any teacher brings technology into the classroom, he or she will no longer be the center of attention. The level of refocused attention will, of course, depend on the amount and the type of technology (e.g., mobile device, e-reader, laptop, interactive whiteboard) being brought into the classroom. However, this does not mean that the teacher is no longer essential to the learning process. While students may be surrounded by technology at home, it is dangerous to assume that they know how to use it for learning -- this is commonly referred to as the "myth of the digital native," Lesson Development Using Technology Lesson development refers to all the activities that teachers do as they create, teach, and evaluate lessons with students. Lesson development involves a teacher's decisions about three interrelated elements of teaching lessons: • Academic content (what to teach) • Teaching goals, methods, and procedures (how to teach) • Learning assessments (how to know what students have learned) Lesson development using technology involves how teachers use electronic resources to facilitate these processes. Academic Content (What to Teach) Every time they teach, teachers make choices about academic content-the facts, concepts, ideas, skills, and understandings they intend to share with students. Clearly, school system guidelines and state and national curriculum frameworks define and in some cases mandate "what to teach." Lesson development must be connected to local curriculum frameworks, which are aligned to state and national standards. However, because no local

184 curriculum or national standard spells out everything to teach about any given topic, classroom teachers must make choices about what will be explored or explained to students each day. Technology plays an essential role in assisting teachers to answer the academic content or "what to teach" question. Digital content available on the Internet includes a vast collection of curriculum resources and information. Using Internet search engines, electronic databases, online encyclopedias, blogs, wikis, and other technology tools, teachers and students have access to powerful new ways to research and retrieve information. Teaching Goals, Methods, and Procedures (How to Teach) As they answer the "what to teach" question, teachers simultaneously decide the teaching goals, methods, and procedures they will use in their classes. Goals are the reason why a lesson is being taught. Methods are the instructional strategies—large groups or small groups, discussions, lectures, role-plays, simulations, case studies, inquiry-based activities, creative writing, learning and reflection journals, drill and practice exercises, online tutors, or learning games—that teachers use to convey academic content to students. Procedures are the scheduling and grouping of students by teachers during a lesson, including how much time each activity has allotted to it. Teachers combine goals, methods, and procedures into formats for daily learning. Sometimes curriculum content dictates these processes; sometimes the goals, methods, and procedures dictate the choice of content. Either way, content, goals, methods, and procedures mutually support each other in a dynamic process of lesson development, which technology can support in a variety of ways, such as the following:

- Presentation software
- Visual thinking software
- Web-based diagram- and flowchart-making tools
- Teacher-developed websites
- Threaded discussions and email
- Web Quests
- Intelligent tutoring systems
- Digital cameras and movie-making software
- Assistive technologies

Learning Assessments (Knowing What Students Have Learned) Learning assessments occur before, during, and after teaching lessons and enable teachers

185 to evaluate student knowledge, understanding, and performance. They can be summative (summarizing what students have learned at the end of a lesson), formative (happening as a lesson unfolds), or diagnostic (preceding a lesson as a way to measure what students already know) (McTighe & O'Connor, 2005). Assessment tools include multiple-choice and short answer tests, essays and other written tasks, oral discussions, teacher observations, class participation, and student projects, portfolios, and performances, all of which provide evidence of what students have learned and are able to do as a result of the teaching. Technology tools that support the assessment and evaluation process include

- Electronic tests and quizzes
- Digital portfolios
- Personal response systems
- Online surveys
- Online evaluation rubrics

When technology integration in the classroom is seamless and thoughtful, students not only become more engaged, they begin to take more control over their own learning, too. Effective tech integration changes classroom dynamics, encouraging student learning.

4.7 Implications of Technology Based Instruction In Inclusion

Inclusion or integration

is an important part of equal opportunity in education. Demands for inclusive education have increased and fostered major changes to schooling and education. Students with disabilities are educated alongside their peers within the local community therefore mainstream schools are required to adapt to accommodate a diverse group of students with a variety of needs (O'Gorman, 2005, p. 377).

Approaches to the inclusion of children and young people into mainstream classrooms, and the identification and recognition of special educational needs, is an integral part of daily school work.

The wellbeing and actualization of developmental and learning potential within a diverse student population is challenging

the organization of learning settings.

Educational Technology for Inclusive Classroom: Integrating Technology into Instruction in an Inclusive Classroom for Diverse Learners is a welcome step to overcome the challenges. Inclusive Education is based on the concept of multiple intelligence and

186 individual difference. There is evidence to say that all individuals are different from each other and no two individuals can be completely alike even if they have been brought up in the same environment. Teachers should also realize that having high scholastic ability is not the only measure of child's intelligence. What is important is to develop flexible student centered pedagogy capable of educating all students, including those who are disabled or disadvantaged. In an inclusive setting we expect greater participation of students with special educational needs in the culture and curricula of mainstream schools. In this context we have to think of some techniques that permit all students who are different from each other to learn together in the same classroom.

Major Teaching Strategies: To make inclusive education a success and to teach students having diverse abilities in the same class the following teaching strategies may be used: 1. Use of Multimedia and computer assisted instruction 2. Team teaching 3. Cooperative learning 1. Use of Multimedia and computer assisted instruction One major factor to enhance learning in the inclusive classroom is the use of technology. Technology provides ways for children with disability to communicate and interact on a more equal level with other children. Adaptive technologies can open a new world to children with physical limitations and therefore children often feel better about themselves as active learners. Computer programmes can be individualized and automatically adjusted to the student's instructional level. This is more evident in the case of individuals with hearing and vision impairment. Multimedia approach of instruction (audio, video, graphics, internet, animations etc.) is essential for effective and efficient learning because in any learning situation, the more the senses are stimulated, the more the person learns and the longer he retains. Multimedia in the classroom also includes Power Point presentations that are created by the teachers.

Multimedia activities encourage students to work in groups, express their knowledge in multiple ways, solve problems, revise their own work, and construct knowledge.

The advantages of integrating multimedia in the classroom are many. Through participation in multimedia activities, students can learn: • Real-world skills related to technology •

The value of teamwork

187 " Effective collaboration techniques • The impact and importance of different media • How to present information in convincing ways •

Techniques for synthesizing and analyzing complex content • The importance of research, planning, and organization skills • The significance of presentation and speaking skills • How to accept and provide constructive feedback • How to express their ideas creatively 2.

Team Teaching: The special education teacher may brief the regular teacher on the IEP (Individual Educational Plan) of the learning disabled students. The two teachers can develop instructional plans and worksheets weekly. They share the task of grading student worksheets. In actual practice, the regular education teacher assumed most of the responsibility for the overall instruction and classroom management while the special education teacher give individual support to both special and regular students. Throughout the year the two teachers can refine their team teaching skills and can become a finely tuned instrument of education serving all the students in an enhanced classroom organization. For eg.if a blind student writes his/ her answer in Braille the general teacher may require the help of specialist to correct the answers. 2. Cooperative Learning: A working definition of Cooperative Learning is the use of small groups through which students work together to maximize their own and each other's learning. In cooperative learning, students work with their peers to accomplish a shared or common goal. The goal is reached through interdependence among all group members rather than working alone. Each member is responsible for the outcome of the shared goal. Cooperative learning is the instructional use of small groups so that students work together to maximize their own and each other's learning (Johnson & Johnson, 1989). Cooperative learning makes sense in inclusive classrooms because it builds upon heterogeneity and formalizes and encourages peer support and connection. However, cooperative learning is not of value only to children with disabilities, it is equally important for the normal children. Important skills such as critical thinking, creative problem solving, and the synthesis of knowledge can easily be accomplished through cooperative group activities

188 in inclusive classrooms. Not only can students get to know each other's abilities within a cooperative process, but teachers can as well. A general education teacher and a special education teacher planning together often find that they have unique skills and ideas to contribute to the process. The general education teacher may have a broader perspective on the curriculum and on curriculum integration, whereas the special education teacher may have special skills in modifying instruction and developing adaptations that benefit many children. General education teachers who are used to working with larger groups of children often can contribute important classroom management and organizational strategies to balance some of the individualized approaches proposed by the special education teacher. Cooperative learning is a strategy used by group/ number of students to achieve a common goal with mutual collaboration and support. In cooperative learning groups, students have two responsibilities: 1. To learn the assigned material 2. To make sure all other members do likewise. When learning situations are structured cooperatively, regular and special education students can work together in pairs or teams to accomplish their common goals. 4. Peer -tutoring: This involves one-to-one instruction from one student in the tutoring role to another student. In this method, students teach each other on one-to-one basis. Peer is defined as the individual of the same social gathering. For example, in a class a fellow student would be a peer. Therefore, when a student from the same class provides instruction to another student of the class the technique is called peer-tutoring. Sometimes peer tutoring may prove to be quite effective and both the student and the peer tutor may gain from the process. The push for technology in the classroom is not a new initiative. In the past there have been many attempts to incorporate technology in the classroom. In some cases school districts did not have funding to support technology while in others schools with technology and resources do not have the personnel and the know how to implement it effectively. In some cases teachers are not provided with the support needed to successfully integrate technology into the classrooms. In today's ever changing world, technology has found its way into every facet of our lives. The internet, mobile devices, you tube videos, social networking, I-pads and android all comprise the world our students are living and learning in. As educators, we must be able to embed this

189 technology into our practices and allow our children to benefit from these technological advances. Although this may seem like a difficult venture it really isn't. The reality is that most kids do not need instruction on how to operate a computer; we instead need to focus on learning how to teach content with and through technology. Teachers need to understand how technology can benefit student learning. Technology can allow a teacher to access each and every child's individual learning style while providing a platform where students can work at their own pace. Technology can help teachers balance the limited instruction time by providing activities, project-based learning, and one-on-one coaching and peer support all while making learning interactive and fun. Well employed use of technology in the classroom can allow teachers to tailor learning to students' individual needs while freeing up classroom time, leaving teachers more time for projects, one-on-one coaching, and more creative activities. 4.8 Let Us Sum Up

Today's generation of students are growing up in a digital world. Using digital devices is a huge part of their everyday experience out of school. Through Google they have access to a wide wealth of digital information, content and resources. With all of this so intrinsic to their 'outside school' experience, the challenge for the teaching profession is how to harness all this for learning within the classroom and at home. This generation of 'digital natives' has much lower need for libraries of physical content for example, the traditional resource used by students half a generation ago. Learning styles are changing and teachers need to adapt their teaching styles accordingly. One crucial question is will this new technology actually improve education? The impact of ICT on learning outcomes has been inconclusive, billions of pounds/euros spent - but is generally difficult to evaluate effectiveness in terms of improved results. Nonetheless there are outcomes that are conclusive, and which indirectly impact on learning outcomes. These include improvements in: • Engagement • Motivation • Independent learning • Parental engagement • Student and staff attendance and punctuality • Extending the children's learning time

190 With the change in learning styles, the role of the teacher is changing too; as well as being a presenter of lesson material; they also assume the role of facilitator/coach in an increasingly collaborative learning environment. These two key styles of learning; presenting and collaborating; link directly to some of the different types of technology employed in the classroom. Interactive White Boards have been the base of the presenting style of learning, where the teacher is at front of class, and all students are involved in interactive learning. For the more personalized learning, laptops, netbooks and tablets are increasingly pervasive in the classroom. Globally 2% of students have a mobile computing device supplied by the school, forecast to increase to 7% by 2016. The crucial point is that the teacher will still want and need to be in charge of the classroom, they may decide to let students use technology for some parts of a lesson but they will still want to be the centre-point of attention and control. This may be at the front of the classroom or, as is becoming more relevant, to be able to move around the classroom and still remain in control. In these styles of classroom environment clearly the ability of devices to talk to each other ie the seamless connectivity between student tablets and front-of-class display, becomes increasingly key.

Currently 13% of the 34 million classrooms globally have an interactive display, leaving a massive 87% without Individual 1:1 teaching equipment is not new, in its most basic format many schools use small simple hand-held whiteboards for children to write on, allowing each to write an answer or create a picture which can be held up for the teacher or class to see. The first individual student communication technology was the voting system, allowing each student to answer questions which could then be automatically collated and attributed to them. Teachers would often start the lesson with a couple of short questions to assess understanding of the previous lesson and if they needed to go back and recap - much more precise than just a show of hands. However mobile PCs (laptops, netbooks, tablets) truly unleash the full potential of 1:1 learning, allowing a fully personalised learning experience for each student. The concept of the "Flipped Classroom" is a method of teaching which is turning the traditional classroom on its head. Students do not need a teacher there when they are just viewing a lecture which can be done at home, perhaps by watching a video created by the teacher, or when they are completing an assignment.

191 Teachers do need to be present to help understand issues and work through problems and answer questions. The teacher then becomes a facilitator, tutor or guide and can spend more time one on one with the students. Teachers are finding that they can start to introduce this concept and slowly build on it and does not need to start as a complete radical change The transition to digital within education is leading to a raft of new exciting opportunities for education. The key factors for schools when considering technology investments are:

- Carefully consider technology investments in the context of their impact on pedagogy
- A need for a clear vision as to how the devices would be utilised and add value to the learning experience.
- Some concepts can be introduced, and slowly built on, without having to start with a complete radical change e.g. the flipped classroom.
- Take a broad approach to investment, considering both presentation style and collaborative style learning, and how the relevant devices communicate and interconnect.
- Consider the student's holistic learning experience, both in-class and at home and how these can feed into each other.
- Recognise the impact on teachers and the amount of training that will be needed to maximise the benefit of the technology.

4.9
Check Your Progress 1. Prepare a poster on Technology and Inclusion. 2. Comment on the recent trends in Technology for teaching and learning. 3. Compare technology integrated lesson with conventional method of teaching. 4. Develop technology supported lesson plans for PwID 4.10 References for further Readings 1. Bates, A. (1995) Technology, Open learning and distance education. London: Routledge.

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Unit - 5: Application of Technology Structure 5.1 Introduction 5.2 Objectives 5.3 Application of Technology in Lesson Planning, Worksheet Preparation, Report Writing and Evaluation. 5.3.1

Technology and Classroom Learning 5.3.2 Technology Integration Lesson Planning Process 5.3.3 Assistive Technology Tools & Resources for Students with Disabilities 5.4 Application of Technology in Assistive Devices 5.4.1 Assistive devices and technologies 5.4.2 Technology Areas 5.4.3 JAWS Screen Readers 5.4.4

Smart Phones 5.4.5 Screen Readers 5.5 Application of Technology in Instruction: Individual, Small Group and Large Group 5.5.1

Enhancing Small Group Instruction through Technology 5.5.2 Enhancing Large Group Instruction through Technology 5.6 Advantages, Merits and Demerits of Application of Technology 5.6.1 List of the Advantages of Technology in Education 5.6.2 List of Disadvantages of Technology in Education 5.7 Implications for Inclusion 5.8 Summary 5.9 Check your Progress 5.10 Assignments/ Activities 5.11 Points for Discussion / Clarification

195 5.1 Introduction

Today's generation of students are growing up in a digital world. Using digital devices is a huge part of their everyday experience out of school. Through Google they have access to a wide wealth of digital information, content and resources. With all of this so intrinsic to their 'outside school' experience, the challenge for the teaching profession is how to harness all this for learning within the classroom and at home. This generation of 'digital natives' has much lower need for libraries of physical content for example, the traditional resource used by students half a generation ago. Learning styles are changing and teachers need to adapt their teaching styles accordingly. One crucial question is will this new technology actually improve education? The impact of ICT on learning outcomes has been inconclusive, billions of pounds/euros spent - but is generally difficult to evaluate effectiveness in terms of improved results. Nonetheless there are outcomes that are conclusive, and which indirectly impact on learning outcomes. These include improvements in:

Ø Engagement Ø Motivation Ø Independent learning Ø Parental engagement Ø

Student and staff attendance and punctuality ∅ Esxtending the children's learning time With the change in learning styles, the role of the teacher is changing too; as well as being a presenter of lesson material; they also assume the role of facilitator/coach in an increasingly collaborative learning environment. These two key styles of learning; presenting and collaborating; link directly to some of the different types of technology employed in the classroom. Interactive White Boards have been the bastion of the presenting style of learning, where the teacher is at front of class, and all students are involved in interactive learning. For the more personalized learning, laptops, netbooks and tablets are increasingly pervasive in the classroom. Globally 2% of students have a mobile computing device supplied by the school, forecast to increase to 7% by 2016. The crucial point is that the teacher will still want and need to be in charge of the classroom, they may decide to let students use technology for some parts of a lesson but 196 they will still want to be the centre-point of attention and control. This may be at the front of the classroom or, as is becoming more relevant, to be able to move around the classroom and still remain in control. In these styles of classroom environment clearly the ability of devices to talk to each other ie the seamless connectivity between student tablets and front-of-class display, becomes increasingly key.

Technology in education plays an important role in improving the educational skills and knowledge of the people. This is very important especially those who need improve their knowledge in order for them to achieve a successful life in the future. Technology in education is manifested through the use of computers. This is also a great help for teachers since they can already enhance their teaching skills and strategies every time they are facing their class. This technology is very essential for both the students and the teacher but there are some instances wherein this technology is seen to be disadvantageous for both of them as well.

Information technology in education has improved and has also brought about an easy access to different learning resources. They help to improve teaching skills and learning abilities of students. These learning resources include audio and visual education. Students are taught with projectors in classrooms or lectured through class speakers. Students and teachers can also easily download eBooks from the internet which can be read from anywhere through your phone or tablet. 4.2

Objectives After going through this unit you will be able to

∅ discuss about application of technology in

lesson planning, worksheet preparation, report writing and evaluation.

∅ discuss about the assistive devices. ∅ discuss about the advantages and disadvantages of technology. ∅ discuss the implications

of technology in Inclusion 5.3 Application of Technology in Lesson Planning, Worksheet Preparation, Report Writing and Evaluation. 5.3.1

Technology and Classroom Learning Technology integration is an important way to create meaningful learning experiences.

197 Lesson planning for teachers can be overwhelming when incorporating the use of computers in activities. Technology has revolutionized the way humans interact and connect with each other, and modern classrooms, homes, and offices are drastically different from how they were just 20 or 30 years ago. Students today need to prepare for a workplace more exposed than ever to social media, television, video games, and other technological advancements. By bringing technology into the classroom, teachers help prepare students to handle the professional world of the future. Here are seven ways teachers can leverage the Internet and other technologies to enhance classroom learning.

1. The amount of information available When using the Internet, teachers and their students have the opportunity to access seemingly limitless information. School projects are no longer confined to the reach of textbooks within their local libraries. Students can use Google to learn more about topics in far less time. Teachers can use the information students have at their fingertips to challenge them and encourage them to delve deeper into subjects and master the information.
2. The modern languages opportunities Modern language skills are extremely valuable in the professional world. Allowing students to communicate with native speakers of that language is just one of the uses of technology in education. Students are able to hear the language, practice speaking skills, and enhance their overall understanding.
3. The chance to learn geography, history, and culture With a world that is increasingly defined by global trade and intercommunication, the opportunity to meet and speak with students in other countries is a valuable experience in itself. Geography, international history, languages, and cultures take on a much greater meaning when students can interact with people from that country rather than just learn about them in a textbook. Students can interview other children about their local customs and cultures to get first hand experiences.
4. Access to new norms of education Large classrooms with disproportionate student-to-teacher ratios make it challenging for a teacher to give individualized attention to each student. While the Internet is not a substitute for personal interaction, it does offer a wide range of resources for teachers to use to help some students gain understanding of the material. There are study guides, interactive diagrams, explanations, and videos all available on the Internet.

198 The Internet can be extremely helpful for students who have different learning styles. There may be some who will learn a subject the best when they can read the material, taking time to digest it. Others may learn better through videos or interactive instruction. These methods can all be taught simultaneously through the Internet.

5. Individualized lessons With the Internet, not only will students have the opportunity to study using their preferred means of learning, they will also be able to better set the pace. In every classroom there are some students who grasp material quickly and become bored with subsequent repetition. On the other hand, there are students struggling to keep up. Technology can help teachers create lessons that will allow the quickly moving students to delve deeper into the subject or explore related topics while allowing the slower students more time to understand the material.
6. Adding new meaning to student projects Students enjoy finding meaning to their work. While in the past they could create reports and projects that would be viewed only by their teacher and fellow students, their work can now be easily displayed online. They can create materials to be used by other students and get feedback on their ideas from students in other schools all over the world. This will help students take pride in their work and find meaning in their assignments.
7. Student collaboration opportunities Along the same lines, students can collaborate on projects with students from around the world. They can work with students from the school across the street or across the country. There is a full range of technology, such as the recent popularity in cloud technology, which will allow the students to speak and work together with ease without ever meeting in person. Technology presents teachers the opportunity to open doors for their students. They have access to limitless information and students are better prepared to enter the workforce because integrating technology into their educational lives better prepares them for the global world.

5.3.2 Technology Integration Lesson Planning Process When designing computer-based activities, you must

give consideration to how technology can be used to acquire, organize, demonstrate, and communicate information. The planning process for technology integration is similar to planning a curriculum unit. The main differences are HOW the students acquire the knowledge and skills,

199 HOW they demonstrate and apply the knowledge and skills, and HOW learning will be assessed or evaluated. These differences have a major influence on the structure of a lesson plan as they incorporate the use of the computer. In addition to the skills and knowledge that must be taught as part of the curriculum, consideration must also be given to the technology skills students need to learn. Often teachers assume that the students will figure it out on their own. However, this can waste instructional time. It is a good idea to plan ahead, so that the time in the computer lab is well spent.

Step 1: Examine Curriculum Documents

- Ø select the topic

∅
identify learning objectives within a subject Step 2: Determine Knowledge and Skills
∅ determine students' background knowledge and existing technology skills ∅ decide how students will acquire new knowledge and skills ∅
gather resources required to achieve instructional goals Step 3: Select a Technology Product to Apply Learning ∅ choose a technology-based product for students to create ∅ outline the content it will contain
∅
select the software program(s) needed ∅ list the technology skills required to complete the task Step 4: Select a Method of Assessment and Criteria for Evaluation
∅ determine the method of assessment ∅
set the criteria to evaluate the technology product with a focus upon content, quality of information, layout and design, and technology skills demonstrated. 5.3.3
Assistive Technology Tools & Resources for Students with Disabilities One tool to help students with disabilities even in the face of a special education teacher shortage is assistive technology. Today, assistive technology can help students with certain disabilities learn more effectively. Ranging in sophistication from "low" technologies such as a graphic organizer worksheet to "high" technologies including cutting-edge software and smartphone apps, assistive technology is a growing and
200 dynamic field. Several areas of assistive technology and sample products may be found in any given classroom, making a difference in how students of all abilities learn. Text-To-Speech Assistive Tools As an assistive technology, text-to-speech (TTS) software is designed to help children who have difficulties reading standard print. Common print disabilities can include blindness, dyslexia or any type of visual impairment, learning disability or other physical condition that impedes the ability to read. However, other students can benefit from TTS technology, such as children that have autism, attention deficit hyperactivity disorder (ADHD) or an intellectual disability. The technology works by scanning and then reading the words to the student in a synthesized voice, using a large number of speech sounds that make up words in any given context. With the advances in speech synthesis, TTS technology is more accurate and lifelike than ever. Intel Reader The Intel Reader is a mobile handheld device that uses TTS technology to read printed text aloud. It features a high-resolution camera that captures printed text, converts it to digital text and reads it to the user. During playback, words are highlighted as they are read aloud, and the user can pause and have the device spell out highlighted words. The available Intel Portable Capture Station functions as a stand for the Intel Reader to easily and quickly capture text from books and other documents. At about the size and weight of a paperback book, the Intel Reader is mobile enough to use in any environment. Students can also transfer content from a home computer, or save generated audio versions of printed materials to a computer. Available voices vary in gender, pitch and speed. Kurzweil 3000 The Kurzweil 3000 is a leader in TTS software for individuals that struggle with literacy. In addition to a range of TTS features, the full-featured software program integrates abilities that can help students in other areas, potentially appealing to those who may have a non-print disability or those who may not typically consider a TTS program. Some of the features include: ∅ Multiple TTS voices ∅ Support for 18 languages and dialects ∅ Talking spell-checker

201 Ø Picture dictionary graphics for more than 40,000 words Ø Text magnification Ø Tools for test taking, essay writing, note taking, reference and more The Kurzweil 3000 strives to provide students with a multi-sensory approach to literacy learning. It is available for Windows and Macintosh. Graphic organizers can be effective in helping students to organize their thoughts during the writing process. As an assistive technology, graphic organizers can be a strong choice for students with dysgraphia or disorders of written expressions - particularly the conceptual aspects of writing. Graphic organizers work by helping the student map out a course of action. Depending on the type of writing, the graphic organizer can prompt the writer to describe an object, chart out a course of events or perform some other task that can help in planning the piece. Graphic organizers vary by type and technological sophistication. Low-Tech Handouts Graphic organizers do not need to be technologically advanced; in fact, they can exist in simple handout form. Sample handouts can be found at the Houghton Mifflin Harcourt Company. The sandwich chart can assist students with paragraph writing. The sequence chart can help with narrative writing and the ordering of events. The sense chart is designed for descriptive writing, where writers are prompted for terms that characterize and express an item. Dozens of other sample charts exist and can help students with virtually any type of writing. Draft:Builder Draft:Builder is a writing tool that integrates outlining, note taking and draft writing functions to break down the writing process into three steps. Using a graphical organizer, the program helps the student visualize the project and insert information into the appropriate place without having to conceptualize the whole process. It then automates the process of creating the paper, where the student can drag and drop what is written in each note to the rough draft. Other features include a talking spell checker that uses TTS technology, a bibliography tool, a dictionary and the ability for teachers to add locked text into the program for further guidance. Draft:Builder is available for Windows and Macintosh.

202 Assistive Listening Systems A variety of assistive listening systems, or hearing assistive technology, can help students who are deaf or hard of hearing, as well as those with other auditory and learning problems. According to the National Association for the Deaf, assistive listening systems can be used to enhance the reach and effectiveness of hearing aids and cochlear implants, or by children who do not need those tools but still need help hearing. Assistive listening systems use a microphone, a type of transmission technology and a device for capturing and bringing the sound to the ear. The specific transmission technology used in the system is typically what contrasts one type of assistive listening system from another. FM Systems According to the American Speech-Language-Hearing Association (ASHA), FM systems are the best choice for children with sensorineural hearing loss. The most common type of hearing loss for all ages, sensorineural hearing loss occurs when the inner ear (cochlea) or nerve pathways from the inner ear to the brain are damaged. FM systems work using radio broadcast technology. With a transmitter microphone and a receiver, the teacher and student can maintain a consistent sound level regardless of distance and background noise. Additionally, ASHA notes that the hearing aid microphone can be turned off, so the student can concentrate on the teacher alone. Sound-Field Systems Sound-field systems are a strong choice for classrooms that need to assist listening for all children in the class. ASHA notes that these systems benefit not only children that have hearing loss, but those that have other auditory and learning problems, such as language delays, central auditory processing disorder, articulation disorders and development delays. Additionally, sound-field systems can be used for students who are learning English as a second language. Sound-field systems use a microphone that projects sound through mounted speakers around the classroom. In classrooms that have good acoustics, sound is able to travel evenly throughout space, eliminating problems of distance between the speaker and each listener. Sip-and-Puff Systems Sip-and-puff systems are used by students who have mobility challenges, such as paralysis and fine motor skill disabilities. These systems allow for control of a computer, mobile device or some other technological application by the child moving the device

203 with his or her mouth. Similar to a joystick, the child can move the controller in any direction and click on various navigational tools using either a sip or a puff. An on- screen keyboard allows the child to type using the same movements. Sip-and-puff systems are a type of switch device, which refers to the technology used to replace a computer keyboard or mouse. Other switch devices include buttons or other objects that a student can touch, push, pull, kick or perform some other simple action that can then control the device. Jouse 3 The Jouse3 is a sip-and-puff system that allows children to control a device using any part of the mouth, cheek, chin or tongue. Due to its accuracy and quick response, home users can use it for drawing or computer games. It can mount to the desktop, a bedframe or any other type of structure; it does not require a headpiece or placement on the body of the user. The product supports Windows, Macintosh, Linux and Unix based computers, in addition to Android and iOS mobile devices. It can support one or two external switches, and has two types of mouthpieces. Sip-and-Puff Systems from Origin Instruments Origin Instruments offers a range of sip-and-puff products that students can use to control an electronic device. Using a head mounted or gooseneck user interface or available tubing for a custom solution, the child can control a mouse, joystick or keyboard with ease. The primary system is powered using USB technology. The product supports Windows, Macintosh and Linux based computers. Two pressure switches connect the system to the user interface solution for use on electronic devices. Proofreading Software Proofreading software is a branch of assistive technology that goes above and beyond the typical proofreading features found in a word processing system, such as correcting words frequently misspelled by students with dyslexia. A number of other features offered within this category can help students work on his or her English skill set to become a more effective and accurate writer. Although primarily geared towards individuals with dyslexia, proofreading software can be helpful to those with any type of learning disorder that makes writing and reading challenging.

204 Ginger Ginger offers several features that can help students with dyslexia and other learning disorders with writing. It is also designed for speakers of languages other than English. Some of the features include: Ø Grammar checker that analyses context to determine any errors or misspellings. For instance, Ginger can recognize whether "there," "their" or "they're" should be used in a sentence, which is a common mistake in writing. Ø Word prediction and sentence rephrasing tools that can be helpful for students learning how to construct sentences properly. Ø TTS functionality so students can hear what they've written. Ø A personal trainer that provides practice sessions based on past mistakes made by the student. Ginger is available for Windows and Macintosh systems, as well as for use on iOS and Android mobile devices. Ghotit Ghotit is specifically designed for students with dyslexia and other learning disorders who have difficulties with writing. The name is inspired by the word "Ghoti," which is a constructed term that illustrates irregularities in the English language. And since many spellings are counterintuitive - especially for those with dyslexia - Ghotit dedicates itself to assisting children and adults who struggle with writing accurately. It features the ability to learn from the user's past mistakes, personalizing suggestions for spelling and grammatical errors. Ghotit can predict words, check passages of text contextually, read text aloud using TTS technology and recognize split and merged words. It also includes an integrated dictionary for students to quickly look up a word. Math Tools A range of technology and tools can help students that have trouble with math, most commonly found in a learning disability called dyscalculia. Dyscalculia makes it difficult to grasp numbers and it is characterized by a general lack of understanding in the field of math. Assistive technology in math is not just for those with dyscalculia. It can also help students with blindness, fine motor skill disabilities or some other type of disability that makes it difficult to perform math-related work.

205 MathTalk MathTalk is a speech recognition software program for math that can help students with a range of disabilities. From prealgebra to Ph.D. level mathematics, students can perform math problems by speaking into a microphone on their computer. The program works with Dragon NaturallySpeaking programs for voice-to-text functionality, making it ideal for students who have fine motor skill disabilities. Students with blindness or vision disabilities can use the integrated braille translator. In addition to these audiences, MathTalk also appeals to students with dyscalculia. The program functions as an electronic math worksheet, allowing the child to organize, align and work through problems on the screen, making it helpful for students who have difficulties performing math problems on paper. Math Simulations Math simulations can help students with dyscalculia visualize math problems and concepts. As a result, students can better understand the application of a particular type of problem, since many students struggle with the conceptual aspects of math.

5.4 Application of Technology in Assistive Devices

5.4.1 Assistive devices and technologies

Assistive devices and technologies are those whose primary purpose is to maintain or improve an individual's functioning and independence to facilitate participation and to enhance overall well-being. They can also help prevent impairments and secondary health conditions. Examples of assistive devices and technologies include wheelchairs, prostheses, hearing aids, visual aids, and specialized computer software and hardware that increase mobility, hearing, vision, or communication capacities. In many low-income and middle-income countries, only 5-15% of people who require assistive devices and technologies have access to them.

5.4.2 Technology Areas

Academic and Learning Aids: Many students with disabilities use assistive technology to enhance their participation and achievement in their educational programs. There are a range of assistive technology solutions to address student needs in all academic areas including reading, writing and spelling, math, and study and organization.

Aids to Daily Living: Many students with disabilities use assistive technology to enhance their participation and achievement in their educational programs. There are a range of assistive technology solutions to address student needs in all academic areas including reading, writing and spelling, math, and study and organization.

Assisted Living Devices and Environmental Aids: Students who are hard of hearing or deaf often need assistive technology to access information that is typically presented verbally and accessed through the auditory modality. A variety of technology solutions are available that amplify speech and other auditory signals or that provide an alternative to the auditory modality. These include assistive listening devices that amplify sound and speech both in the classroom and home environment, text telephone (TTY), closed captioning devices, real time captioning, and environmental aids that support independent living skills.

Augmentative Communication: Students with severe expressive communication impairments have difficulty communicating with peers and adults within their environments. Many of these students need a means of supplementing their communication skills. These students frequently use augmentative communication technology. A range of low technology to high technology solutions are available including: object based communication displays, picture communication boards and books, talking switches, voice output communication devices and computer based communication devices.

Computer Access and Instruction: A variety of technology solutions are available to adapt the classroom computer for students with disabilities. Some computer access technology offers a method of input other than the standard computer keyboard and mouse. Other computer adaptations include software and hardware that modifies the visual and sound output from the computer. Varieties of devices are available and include the following: adaptive pointing devices, keyboard adaptations.

Environmental Control: High technology environmental aids are available to assist students with physical disabilities in controlling electronic appliances within the school and home. These devices allow the student to use an alternate input device such as a switch to control one or more electronic appliances such as lights, televisions, and electronically controlled doors.

Mobility Aids: Students with physical disabilities often need access to mobility aids to provide them with a means of moving about their environments. Mobility aids include canes, crutches, walkers, scooters, and wheelchairs. Generally, assistive technology devices such as the mobility aids referenced above are recommended by physical and occupational therapists based on the student's individual needs.

207 Oral Communication and the AAC: Assistive Technology in the field of Oral Communication can include a variety of areas to assist individuals with speech or language difficulties. Pre-Vocational and Vocational Aids: Students with physical and cognitive disabilities who are enrolled in educational programs that address pre-vocational and vocational skills may benefit from the use of pre-vocational and vocational aids. These types of technology solutions include modifications of the tools and manipulative used in the completion of work related tasks. Low technology solutions include grips for handling materials and stabilization devices for supporting work materials. For students using electronic appliances such as staplers and paper shredders, an environmental control unit such as the model available from AbleNet can be used to allow for switch control of the appliance. Many of the adaptations required for participation in work activities may be teacher constructed. For example, a picture-based task schedule can be created to represent all of the steps in a particular activity for students with intellectual disabilities. Recreation and Leisure: Some students with physical, sensory, and intellectual disabilities require assistive technology in order to participate more fully in appropriate recreation and leisure activities. A range of low technology to high technology solutions are available including game adaptations, book adaptations, switch adapted toys, and environmental control access for televisions, videos, tape players, CD players and MP3 players. Seating and Positioning: Students with physical disabilities often require adaptive seating and positioning systems as an alternative to the standard classroom seating systems. Adaptive seating and positioning systems include seat inserts for wheelchairs, side liars, prone sanders, and adaptive chairs. These seating and positioning systems are generally determined by the physical and occupational therapist in consultation with the classroom staff. Sammons Preston offers several different seating and positioning devices for the classroom. Visual Aids: Students with visual impairments can benefit from assistive technology in a variety of areas. A critical need for assistive technology is often in the area of accessing printed information and to providing a means of producing written communication. There are many visual aids including talking dictionaries, adapted tape player/recorders, large print and talking calculators, braille writers, closed circuit televisions (CCTV), and software such as screen reading and text enlargement programs.

5.4.3 JAWS Screen Readers JAWS, Job Access With Speech, is the world's most popular screen reader, developed for computer users whose vision loss prevents them from seeing screen content or 208 navigating with a mouse. JAWS is a screen reader for Microsoft Windows offered by Freedom Scientific, Inc. JAWS will assist users who are blind or low-vision to use a Windows computer. A JAW has a variety of features, including Braille support, multi-lingual speech synthesis, and multi-screen support. It stands for "Job Access With Speech." JAWS works with the PC to provide access to software applications and the Internet. JAWS also outputs to refreshable Braille displays. Features Ø Two multi-lingual synthesizers: Eloquence and Vocalizer Expressive Ø Talking installation Ø Built-in free DAISY Player and full set of DAISY-formatted basic training books Ø Works with Microsoft Office, Internet Explorer, Firefox, and much more Ø Supports Windows 8.1 and Windows 10, including touch screens and gestures Ø Support for MathML content presented in Internet Explorer that is rendered with MathJax Ø Fast information look-up at your fingertips with Research It Ø Convenient OCR feature provides access to the text of PDF documents, even those with scanned images that are reported as empty documents by screen readers Ø Save time with Skim Reading Ø The only Windows screen reader to provide contracted Braille input from your Braille keyboard Ø Fully compatible with MAGic, screen magnification software, and Open Book, scanning and reading program Advanced Features Ø JAWS Tandem available for free to help with support and training Ø Optional support for Citrix, Terminal Services, and Remote Desktop Ø Powerful scripting language to customize the user experience on any application Ø Includes drivers for all popular Braille displays Ø Includes voices for over 30 different languages Ø Distributed worldwide with local sales and support in most countries

209 Powerful Access to Screen Content JAWS is the world's most popular screen reader, developed for computer users whose vision loss prevents them from seeing screen content. JAWS reads aloud what's on the PC screen and gives the user a unique set of intelligent tools for navigating and accesses Web pages and all screen content. Compatible with the Most Frequently Used Workplace and Classroom Applications JAWS enable you to work with Lotus Symphony, a suite of IBM tools for word processing, spread sheets, and presentation creation and with Lotus Notes by IBM. JAWS also is compatible with Microsoft Office Suite, MSN Messenger, Corel WordPerfect, Adobe Acrobat Reader, Internet Explorer, Firefox - and many more applications that are used on a regular basis on the job and in school. Unmatched Braille Support With a refreshable Braille display like Freedom Scientific's Focus, JAWS also provides Braille output in addition to, or instead of, speech. An array of versatile features and customizable options lets you tailor JAWS for your individual needs and preferences 5.4.4 Smartphones Assistive

Technology is an ever-changing group of products and devices. Today devices everyone uses can be easily adapted to assist those with special needs. The current trend for technology is to make it simple to learn, to use, integrate, and support. This is welcome news to parents and caregivers of children with special needs. This new trend allows for more people to have

the

ability to use the technology. Smart phones are an excellent example of technology with the potential to enhance the teaching and learning experience of children with disabilities. In addition to serving as a means of communication, smart phones have the capability to run multiple applications that support and accompany students in their day-to-day activities. For example, the iPhone offers the application isign. The app facilitates communication between deaf students and general education teachers and other who do not sign. Students and teachers who need to learn American Sign Language can use the program containing 800 signs with gestures modelled with a 3D character. Students with hearing and speech impairments can communicate with their hearing peers and teachers using the Google Android phone and an application called Speaking Pad. Users of these technologies enter data into their cell phone and then make information available through speech output.

210 Another application can be used by students with autism and other disabilities to create and organize personal tasks. iPrompts, which provides visual prompting tools to help users transition between activities, understand upcoming events and make choices and focus on tasks. For students with visual impairments, screen magnifiers are available, enabling user to capture text and images with a built-in camera and then enlarge items that appear on the phone's screen. At the same time, applications designed for people with disabilities are crossing over into the mainstream, blurring the distinctions between AT and consumer technologies. Text-to-speech is an integral part of in vehicle GPS units and cell phones, screen magnifiers help consumers cope with shrinking screen sizes, and captions on TV and internet video are being used to reinforce language learning

and to provide viewing solutions for noisy environments. 5.4.5 Screen Readers Screen readers are software programs that allow blind or visually impaired users to read the text that is displayed on the computer screen with a speech synthesizer or braille display.

A screen reader is the interface between the computer's operating system, its applications, and the user. The user sends commands by pressing different combinations of keys on the computer keyboard or braille display to instruct the speech synthesizer what to say and to speak automatically when changes occur on the computer screen. A command can instruct the synthesizer to read or spell a word, read a line or full screen of text, find a string of text on the screen, announce the location of the computer's cursor or focused item, and so on. In addition, it allows users to perform more advanced functions, such as locating text displayed in a certain color, reading pre- designated parts of the screen on demand, reading highlighted text, and identifying the active choice in a menu. Users may also use the spell checker in a word processor or read the cells of a spreadsheet with a screen reader.

How does a screen reader relay information to the user? There are two ways that a screen reader can provide feedback to the user: Ø Speech; Ø Braille. A screen reader uses a Text-To-Speech (TTS) engine to translate on-screen information into speech, which can be heard through earphones or speakers. A TTS may be a software application that comes bundled with the screen reader, or it may be a hardware device

211 that plugs into the computer. Originally, before computers had soundcards, screen readers always used hardware TTS devices, but now that soundcards come as standard on all computers many find that a software TTS is preferable. In addition to speech feedback, screen readers are also capable of providing information in Braille. An external hardware device, known as a refreshable Braille display is needed for this. A refreshable Braille display contains one or more rows of cells. Each cell can be formed into the shape of a Braille character, a series of dots that are similar to domino dots in their layout. As the information on the computer screen changes, so do the Braille characters on the display change, providing refreshable information directly from the computer. Whilst it is possible to use either format independently, Braille output is commonly used in conjunction with speech output. How does a screen reader work? Since the majority of screen reader users don't use a mouse, all screen readers use a wide variety of keyboard commands to carry out different tasks. Tasks include reading part or whole of a document, navigating web pages, opening and closing files, editing and listening to music. A visually impaired computer user will use a combination of screen reader commands and operating system commands to accomplish the many tasks a computer is capable of performing. All current operating systems have their own keyboard shortcuts, which are available to everyone not just screen reader users. An example of a Microsoft Windows keyboard shortcut is using the alt + A key combination to open the Favourites menu in Internet Explorer. Each screen reader uses a different series of commands, so most people will tend to choose a screen reader and stick with it, as the task of learning a large number of new keyboard commands is considerable. Which operating systems do screen readers work with? Screen readers are available for each of the most common operating systems, Linux, Mac OS and Windows. 5.5

Application of Technology in Instruction: Individual, Small Group and Large Group

The information age with the mass of technology it brings can be both blessing and curse for the teaching and learning environment. As lecturer and teacher one is confronted with new roles, new work, new decisions, new skill requirements, new language, and last but not least, a new generation of learners (with their own unique new excuses!). On the other side of the coin there are unprecedented opportunities to use technology to enhance learning, to increase the excitement of the subject matter and to expose learners

212 to their subject in "real life". This brings with it the temptation to use all the "bells and whistles" of the wonderful hardware and software available, and leaves many of us confused and overwhelmed as to what is useful and what is over the top. 5.5.1 Enhancing Small Group Instruction through Technology Classroom interaction, combined with online activities, can greatly accelerate the learning process and reduce the time. Technology is a tool that can change the nature of learning. First and foremost, educators want students to learn. It is certainly not enough to tell educators that they need to use the boxes and wires that have invaded their schools simply because they are expensive or because students need to know how to use the latest widget. If it's clear that technological tools will help them achieve that goal, educators will use those tools. The real world is not broken down into discrete academic disciplines. I've heard a number of teachers say that they would like to be able to change the way they teach -- to find ways to implement project-based, multidisciplinary lessons. Let's think about how that might happen when technology is used to support learning. Technology lends itself to exploration. But before technology can be used effectively, exploration must be valued as important to both teaching and learning. In a technology- rich classroom, students might search the Web for information, analyze river water, chart the results, and record what they've learned on the computer. In many small group teaching situations, the role of the teacher is that of facilitator of learning: leading discussions, asking open-ended questions, guiding process and task, and enabling active participation of learners and engagement with ideas. However, small groups function and behave in various ways and have different purposes. Teachers therefore need to be able to adopt a range of roles and skills to suit specific situations, often during the same teaching session which technology can support. Effective tutors are essential to ensuring that small groups work well. Any teaching event will be more successful if the teacher: Ø is enthusiastic Ø has organised the session well Ø has a feeling for the subject Ø can conceptualise the topic Ø has empathy with the learners

213 Ø understands how people learn Ø has skills in teaching and managing learning Ø is alert to context and 'classroom' events Ø is teaching with their preferred teaching style Ø has a wide range of skills in their teaching repertoire, including 'questioning, listening, reinforcing, reacting, summarising and leadership' (McCrorie, 2006, p. 8). Technology has all the above qualities required as an effective small group instructor. 5.5.2 Enhancing Large Group Instruction through Technology Technology is making it increasingly possible to envision the ideal of customizing instruction on an individual basis. Today schools can implement software that assesses student strengths and weaknesses, builds an individualized learning plan, delivers computer-based content using a variety of interactive methods, and then tests mastery of content standards. Teaching with technology can deepen student learning by supporting instructional objectives. However, it can be challenging to select the "best" tech tools while not losing sight of your goals for student learning. Once identified, integrating those tools can itself be a challenge albeit an eye-opening experience.

Students Use Information Technologies to: 1. Participate in a media revolution, profoundly affecting the way they think about and use information technologies. 2. Improve the ways of learning in new learning fashions 3. Extend the ability and skills of applying their learning in real situation. 4. Working in groups for cooperative and collaborative learning 5. Developing self-learning habits at their own pace and time. 6. Learn with the teacher rather by the teacher. 7. Develop inquiry-learning habits. 8. Use right information at right time to achieve right objective. 9. Review and explore qualitative data.

214 10. Exchange learning experiences and information with others students and teachers living anywhere in the world. Information technologies

facilitate students in their learning process through their active participation on one hand and help teachers on the other hand. Therefore, Teachers Use The

Information Technologies to: 1. Present the material in more interesting and attractive way. 2. Guide and help students in searching the qualitative material. 3. Make best use of time. 4. Coach the students. 5. Provide individualized instruction. 6. Direct

the students toward cooperative

as well as collaborative learning activities. 7. Prepare learning material for students, rather teaching in conventional situations. 8. Diagnose the learning problem of students and help them to overcome. 9. Solve the study problems of students. 5.6

Advantages, Merits and Demerits of Application of Technology

Technological advancements have made the world a great and convenient place to live in. There is no denying of how they make lives better and easier, especially in the fields of science, medicine and education. But, like most things, technology also has its drawbacks. In fact, some of the more recent inventions are now being categorized as lazy aids, and are considered major contributors of obesity and a generally unhealthy population.

Can the same thing be said for technology used in the classroom? Tools, such as computers, mobile devices and the internet, are now integrated into the educational system. While they are beneficial in certain academic aspects, they also have negative implications. 5.6.1

List of the Advantages of Technology in Education 1. Promotes independent learning in students

The internet is a treasure trove of information. Practically anything you need to know can be found online. Although there is a question of the credibility of the source and the data provided, it can still serve as an educational resource for students. Even without

215 assistance from parents and teachers, students can just look up their lessons online. Unlike regular textbooks, electronic books and web-based content are updated in real time, feeding students with the most current information they can get their hands on, helping them become more knowledgeable even outside the classroom setting. 2. Prepares students for the future From the way technological advancements are going, it is obvious that the future will be digital and technology-focused. If students are well-versed on using technology to collaborate and communicate as early as now, they will not have trouble fitting in, competing and finding jobs in the future. Being familiar with using at least one form of technology at an early age will help them become comfortable using it, and eventually develop other skills necessary to handle other innovative devices and processes. 3. Has the potential to lower textbook and tuition prices With resources more accessible and in great abundance, the cost of textbooks is likely to decrease. It is also possible that students may no longer need to buy a textbook, if it is converted into digital format. The actual books can stay in the classroom, while the content is saved on a student's computer. Tuition will also decrease when learning is done online, rather than inside the classroom. By taking out the factors that contribute to a higher tuition fee, such as utility bills and transportation allowance of teachers, the overall cost of education will be lower. 4.

Allows teachers to create an exciting way to educate students

Gone are the days when the only tools for teaching are limited to books, a blackboard or whiteboard, and a chalk or markers. With technology integrated to education, teachers can now incorporate images, videos and other graphics when delivering lessons. Specific websites, apps and programs will also enable teachers to vary how they provide instructions. This creates an exciting learning environment and promotes interest in education in general. Other tools available for teachers include Smart Boards (interactive whiteboards), email Skype, and PowerPoint. 5. Encourages development of new teaching methods Rather than spend an hour or so talking while the students listen, or have them read an entire chapter in silence, teachers and professors now have the option to use advanced teaching methods, such as podcasts, blogs and social media. When working with a particular group or one-on-one, teachers can take advantage of web conferencing

216 technologies other online communication tools.

Technology also presents universal tools that enable teachers to educate all types of students, including those who are struggling or have special needs. These include voice recognition, text-to-speech converter, translator, volume control, word prediction software and other assistive technologies. 5.6.2

List of Disadvantages of Technology in Education 1. Results in a lack of interest in studying

Because everything is now accessible online or through data saved in a computer or mobile devices, students are likely to develop poor studying habits and a lazy attitude towards education. Some of them may even think they can skip school because they can find answers and lessons online. Who needs teachers when you have internet and Google, right? This can also lead to students forgetting the basics of studying. They would rather rely on computers and the internet, instead of their books and the input from their teachers. Most of them will misspell words because they often use spell checkers. Rather than solve mathematical equations the traditional way, they would seek assistance from computers or look for the answers directly through search engines. When it is time to take the tests in the classroom and without any form of technology, students are likely to fail. 2. Makes students vulnerable to potential pitfalls While computers prove to be an invaluable educational tool, it can also be a source of problems. This is especially true for students who lack the skills needed to maximize a device's functionalities. Technical problems and computer malfunctions can cause loss of assignments and other materials, resulting in high levels of stress that students would rather not experience. Difference in internet speeds and a device's capabilities can also lead to certain difficulties that will de-motivate students. Add to this other things that they will discover online, which are completely unrelated to school and education, and they will be distracted to no end. 3. Negative views on technology Consumerism has taught us that technologies, from computers to mobile devices, are widely viewed as tools to entertain rather than educate. Textbooks, on the other hand, are seen as tools for learning. So, between a tablet and a textbook, students are likely to gravitate towards learning when reading a book, while they are likely to use a tablet to

217 play games or spend time on social media. 4. Raise instructional challenges For professors and teachers to stay abreast with technology, they may need to be retrained. Those who have been teaching all their lives using traditional methods may not be very susceptible to the changes being applied. They may even see it as a threat to their job security and shun technology altogether. In fact, a majority of teachers believe that constant use of digital technology is affecting a student's attention span and his ability to persevere when a challenging task is thrown his way. Although such belief is subjective, scholars, experts and teachers all agree that technology has changed the way students learn. 5. Can diminish overall value of in-person education Although research on online learning did not establish a direct link to how personal interaction affects a student's performance, data gathered did show that those who enrolled in online courses have higher chances of failing, dropping out of classes, and are less likely to benefit from them. This may have something to do with the fact that lessons delivered online or through digital resources lack the face-to-face interaction between teacher and student that provides a more personal experience 5.7 Implications for Inclusion

Technology can be the great equalizer in a classroom with diverse learners. Whereas teachers can find it difficult to differentiate instruction for 30+ students in one class, all with different needs and abilities, "assistive technology" (devices and software to assist students with disabilities) can often help teachers personalize lessons and skills enhancement to each child.

Children with learning disabilities often have better technology skills than their teachers and are drawn to computers and other gadgets, so using them in the classroom make perfect sense. For children with physical disabilities, technology can give access to learning opportunities previously closed to them. E-readers help students turn book pages without applying dexterity, and voice adaptive software can help students answer questions without needing to write. Computers are engaging and more advanced than the typical modified lesson allows. Assistive technology is not always just for students with disabilities; it can be used to help any student with motivation, academic skills, and social development. There is no doubt that technology has changed the way children learn in the classroom. Technology has altered how students engage in learning activities, the format of learning

218 materials they use, how tasks are completed, and how they demonstrate what they know. The way we as educators design and deliver learning experiences, and what instructional materials we use to enhance student learning, has also changed. What about students who experience consistent academic failure due to learning difficulties or disabilities? Are computers and other technologies going to assist them to access the curriculum, keep up with their peers and learn how to learn? Students with learning difficulties can be defined as students who experience particular difficulties in achieving at school that are not due to a disability or impairment. (Ashman, 2005; Westwood, 2003) Students with learning disabilities include those students with chronic academic problems. These students may have been diagnosed with dyslexia, dyspraxia, dyscalculia, dysgraphia or other neurologically based conditions. Students with learning difficulties and disabilities display a variety of characteristics that can be grouped into four main categories, academic, emotional, motivational, cognitive and metacognitive. (E. Twomey, 2006.) These students typically encounter learning problems across all curriculum areas. Persistent failure throughout school, despite remediation, may lead some students to develop social and emotional difficulties including low self esteem, an embarrassing reliance on others, low motivation and disengagement from school activities. Poor handwriting, comprehension and organisational difficulties may also be barriers to learning for these students. Inclusive learning technologies can be described as those technologies, whether software or hardware, that help students learn strategies to bypass, work around or compensate for their difficulties. Many of these technologies incorporate Universal Design features which focus on providing learning resources that accommodate for learner differences. Inclusive technologies may be designed to remediate specific difficulties and contain key supportive features, while others have many features that support a range of learning needs. They may be standalone programs or may integrate with other commonly used applications. What types of technologies are there and how can they help? Reading Tools Text to speech Software that incorporates text to speech enables students to access content and information by having text read aloud, often in a high quality, realistic synthesised

219 voice. This software may highlight words, sentences or paragraphs in selected colours to draw the reader's attention to the text as it is being spoken. Using this method, students are assisted to decode words, and maintain reading fluency and comprehension. Using text to speech, they can read and re-read information as many times as they need. Talking word processors are one kind of software that incorporates text to speech. Other software packages work with standard software programs such as Microsoft Word, to speech enable them. Many of these programs allow students to read aloud text in a range of formats, including Word documents, PDFs, emails and web pages. Text to speech is also an important support for proofreading, helping students listen for any possible errors in their writing.

ØØØØ OCR Optical Character Recognition (OCR) is a method of converting text from paper format to an electronic version. This is usually carried out by using a scanner. Software that incorporates OCR, may also provide the option of scanning text into a range of formats (such as Word, PDF or other documents). This means that books, printed worksheets, even photographs with graphics and text can be converted to electronic format and read aloud using text to speech. Reading material is instantly made accessible.

ØØØØ Talking books Talking books are essentially books that are in electronic format, often looking very similar to the paper version. They may read text aloud, and include a range of multimedia elements such as real photos, animations, videos and recorded sounds that make the reading experience motivating and fun. The advantage talking books is that they allow students of any age and ability to be independent readers and take advantage of supports if and when they choose. Additional extension activities may be included with some books to help support balanced literacy instruction. Using book making templates, teachers can create their own high interest individualised learning materials.

llll Software that converts text files to audio Being able to convert text to an audio file has the advantage of providing yet another format for accessing information and is an ideal way for students to engage in independent revision and study. Students can listen to audio files via their computer or their iPod anytime, any place. Software that has this feature may also include high quality synthesised speech and the ability to save the files in a range of formats including WAV, Mp3 and WMA.

220 Writing Tools Common problems for students with learning difficulties and disabilities centre around spelling, grammatical errors, tense and punctuation. They may have ideas which they can articulate very well, but because of spelling problems fall back on using simple sentence construction and vocabulary. These students often need scaffolding to help organise and articulate their ideas into a written format.

llll Organisational software Organisational software helps students brainstorm and display their ideas using a concept map of words and/or pictures that can then be transferred to a document outline with the click of a button. Templates to assist students develop their ideas for different writing tasks may also be included as an added feature. Another strategy for developing a written draft is to use highlighting tools and extract main points from a document or web page. By creating an outline of what has been read, students can use this as a starting point for their writing.

" Onscreen word banks Learners needing support to spell words or construct meaningful sentences can quickly and easily carry out written tasks using on-screen word banks. This software provides the additional support of text to speech and pictures for those whose visual recognition of words is poor. "

Word prediction Word prediction is a strategy that assists with spelling and word completion by making suggestions as you type. These suggestions are displayed in a window. Word prediction can help students expand their vocabulary, as they are less likely to avoid words for which they are unsure of spelling. In some cases, the word prediction program may accommodate for phonetic spelling errors. Such programs also learn words that are used frequently. Research studies have reported up to a 70% reduction in spelling errors when using word prediction programs. "

Voice recognition Voice recognition software allows students to create large amounts of text or control their computer entirely by voice. Documents and e-mails can be dictated without spelling mistakes and the need to extensively use the keyboard and mouse is significantly reduced.

221 " Portable word processors or notetakers For students whose handwriting is untidy or illegible, and who find writing with pen and paper frustrating, these devices help overcome these barriers and encourage students to independently take notes rather than rely on a scribe or peers. They are low cost, portable alternatives to laptops. Infrared capabilities mean that no cords are needed when transferring text to a computer for further editing. These devices are lightweight, sturdy and have the advantage of a long battery life. They are easy to use and can be used in conjunction with word prediction programs if the student struggles with spelling 5.8 Let us sum up Earlier, technology in education was a debatable topic amongst the society. Everyone had their own views on modernizing education and making it technology aided. There were a huge number of positives and negatives to education technology. But, gradually as technology was embraced by the educational institutes, they realized the importance of technology in education. Its positives outnumbered the negatives and now, with technology, education has taken a whole new meaning that it leaves us with no doubt that our educational system has been transformed owing to the ever-advancing technology. Technology and education are a great combination if used together with a right reason and vision. With technology, educators, students and parents have a variety of learning tools at their fingertips. Here are some of the ways in which technology improves education over time: Ø

Teachers can collaborate to share their ideas and resources online: They can communicate with others across the world in an instant, meet the shortcomings of their work, refine it and provide their students with the best. This approach definitely enhances the practice of teaching.

Ø

Students can develop valuable research skills at a young age: Technology gives students immediate access to an abundance of quality information which leads to learning at much quicker rates than before. Ø Students and teachers have access to an expanse of material: There are plenty of resourceful, credible websites available on the Internet that both teachers and students can utilize. The Internet also provides a variety of knowledge and doesn't limit students to one person's opinion.

222 Ø Online learning is now an equally credible option: Face-to-face interaction is huge, especially in the younger years, but some students work better when they can go at their own pace. Online education is now accredited and has changed the way we view education. Technology that is made use of in the classroom is very beneficial in helping the students understand and absorb what they are being taught. For instance, since there are a number of students who are visual learners, projection screens connected to computers could be put in classrooms to let the students see their notes as opposed to simply sitting down and listening to the instructor teach. There is a number of very good software that can be used to supplement the class curriculum. The programs make available to students quizzes, tests, activities and study questions that could help the students continue with the learning process when they are out of the classroom. Today, technology has been incorporated into a good number of curriculum even those that do not belong to the technology and computer classes. Students make use of computers to come up with presentations and also make use of the internet to carry out research on a variety of topics for their essays and papers. Students also get to know how to use the technology available in the world today through the tech and computer classes. This gives the guarantee that following their graduation, the students will not have any difficulties with using technology when they are out there in the work place, which might serve to make them more competitive compared to an individual who has no access to a certain software or technology in school. With the continuing advances in the technological world, students are getting improved access to such educational opportunities. Every time something 'better' and 'new' is brought into the market, the price of the existing technology is decreased which makes it much more accessible in the educational setting even to those schools that might not have a lot of financial resources available to them. Technology has greatly grown to the point that it is also available today to assist those kids who are yet to begin school. There are a number of educational systems and video games for the small children that assist them in getting ready for school and in a number of situations also give them a head start on their education.

223 5.9 Check your Progress 1. Write about the different assistive devices used for children with special needs. 2. Discuss about the use of Screen readers for children with visual impairment. 3. Comment on the implications of technology in an inclusive classroom. 5.10 References for further reading

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Hit and source - focused comparison, Side by Side

Submitted text	As student entered the text in the submitted document.
Matching text	As the text appears in the source.

3 Netaji Subhas Open University From the Vice-Chancellor's Desk Dear Students, from this Academic Session (2015-17) the Curriculum and Course Structure of B. Ed.- Special Education have been thoroughly revised as per the stipulations which featured in the Memorandum of Understanding (MoU) between the Rehabilitation Council of India (RCI) and the National Council for Teacher Education (NCTE). The newly designed course structure and syllabus is comprehensive and futuristic has, therefore, been contextualized and adopted by NSOU from the present academic session, following the directives of the aforesaid national statutory authorities. Consequent upon the introduction of new syllabus the revision of Self Instructional Material (SIM) becomes imperative. The new syllabus was circulated by RCI for introduction in the month of June, 2015 while the new session begins in the month of July. So the difficulties of preparing the SIMs within such a short time can easily be understood. However, the School of Education of NSOU took up the challenge and put the best minds together in preparing SIM without compromising the standard and quality of such an academic package. It required many rigorous steps before printing and circulation of the entire academic package to our dear learners. Every intervening step was meticulously and methodically followed for ensuring quality in such a time bound manner. The SIMs are prepared by eminent subject experts and edited by the senior members of the faculty specializing in the discipline concerned. Printing of the SIMs has been done with utmost care and attention. Students are the primary beneficiaries of these materials so developed. Therefore, you must go through the contents seriously and take your queries, if any, to the Counselors during Personal Contact Programs (PCPs) for clarifications. In comparison to F2F mode, the onus is on the learners in the ODL mode. So please change your mind accordingly and shrug off your old mindset of teacher dependence and spoon feeding habits immediately.

I would further urge you to go for other Open Educational Resources (OERs) - available on websites, for better understanding and gaining comprehensive mastery over the subject. From this year NSOU is also providing ICT enabled support services to the students enrolled under this University. So, in addition to the printed SIMs, the e-contents are also provided to the students to facilitate the usage and ensure more flexibility at the user end. The other ICT based support systems will be there for the benefit of the learners. So please make the most of it and do your best in the examinations. However, any suggestion or constructive criticism regarding the SIMs and its improvement is welcome. I must acknowledge the contribution of all the content writers, editors and background minds at the SoE, NSOU for their respective efforts, expertise and hard work in producing the SIMs within a very short time. Professor (Dr.) Subha Sankar Sarkar Vice-Chancellor, NSOU

5 B. Ed. Spl. Ed (M. R. / H. I. / V. I)- ODL Programme AREA - C C-15 (MR) : TECHNOLOGY AND DISABILITY

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7 Netaji Subhas Open University AREA - C C-15 (MR) : TECHNOLOGY AND

DISABILITY C - 15 (MR) □ □ □ □ □ TECHNOLOGY AND DISABILITY UNIT - 1 :

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of

educational and instructional

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1.1 Introduction There was a time when students used to be clustered at the feet of their gurus to listen and memorize what was read to them from a precious, laboriously produced hand written manuscript. Then gradually came the printed book which was a form of automation, a kind of teaching machine and students got their own copy to study on their own. So the function of the teacher has been changed. The teacher got relief from the tedious duty of reading information and got time to counsel and provide individualized teaching to students. The teacher got time to improve teaching by Explanation, interpretation and correlate the mass of information and knowledge available in text book to make the learning easier and joyful for the learners. But as the world is progressing very rapidly due to new innovations in the field of science and technology which can be seen everywhere in our daily lives, we need to prepare our children for this new world by changing the way we educate them. The 21st century is dealing with two basic problems namely population explosion and information explosion. The educational institutions has been affected with the increased number of students due to population explosion, increased mobility of students, increased range of students abilities and diverse backgrounds. The world has become a global village and due to technological advancement information flows rapidly among learners. The Administrators and Teachers are actively searching for ways to prepare students for the future, and the educational system has been evolving faster than ever before. A classroom is no longer consisting of four walls with a blackboard and a lecturer in front, talking to students instead of interacting with them. Interactive whiteboards, tablet PCs, projectors, mobiles and a host of other tools allow teachers to present information 11 in ways that prompt discussion and collaboration and make learning interactive and accessible. Educationists believe that if technology is properly supported and widely used in teaching and learning process could help the most of the pressing needs and many teaching problems can be solved by the proper use of rich experience that can be gained through various media. In this technological era therefore, a modern and updated teacher must take full advantage of the existing technological resources to help facilitate students learning. In this first unit of, we will make an attempt at understanding the concept and nature of educational technology. This unit will also help us to understand hardware, software, and systems approaches to educational technology. The scope of educational technology, recent trends and significance of ET. We will also know about another important learning point, the concept of universal design of learning and individualized instruction which can help teachers to teach children with learning problems or who are differently able to access education with the help of educational and instructional technology. 1.2 Objectives After going through this unit, the learner will be able to l Understand the concept of educational technology; l Understand the scope and importance of educational technology in the teaching- learning process; l Understand the role of technology in education and acquire knowledge about its various approaches and modes. l differentiate hardware, software, and systems approach to educational technology; l classify different types of educational technologies and recent trends l understand the concept and importance of universal design of learning and individualised instruction 1.3

Educational and Instructional Technology - Meaning, Nature, Scope, Definition, Objectives and Significance 1.3.1

Meaning and Definition of Educational Technology - Before understanding the meaning of educational technology we should first of all know

12 the meaning of technology. In general we say the application of scientific laws and principles for the purpose of making daily life easy and comfortable is technology. With the help of these applications we make different machines and devices which accelerate and systematize our daily life. Therefore technology refers to two aspects namely - theoretical, based on ideas and practical based on putting those ideas into practice. When we use technology for the purpose of accelerating and facilitating educational process and to make the education accessible to all kind of learners, that technology is called as educational technology. But this is not the complete meaning of educational technology. For many of us the term 'educational technology' is associated only with the equipment and with the hardware, which is used, viz. over head projector (OHP), LCD projector, television, computer etc. However, the concept of educational technology should not be confused or limited with the electronic gadgetry; it has a broader meaning. In its wider perspectives ET includes the entire process of the setting of educational goals, the continuous reforms of curriculum, the tryout of new teaching methods and materials, the evaluation of the education system as an integrated whole and if necessary, resetting of goals on the basis of the findings of evaluation and innovations.

Educational technology implies the use of all type of educational resources - men, materials, machine, methods and techniques, means and media in an integrated and systematic manner for optimizing teaching learning process in its best possible manner. Educationists have understood educational technology in different ways, some of these dimensions are: J.K Gailberth in his book *The New Industrial State* has given two main characteristics of every technology: 1. Systematic application of scientific knowledge to the practical tasks and 2. The division of the practical task into sections and sub sections. These two techniques are followed in educational technology too. For example by using educational technology the teacher first determines the teaching objectives then creates environment, all inputs(hardware and software), selects and applies appropriate teaching strategies for achieving teaching objectives. At the end the teacher will evaluate the students to understand whether the teaching objectives have been achieved or not. If the outputs of the students are not satisfactory then changes will be made in the strategies so that teaching objectives can be achieved. This whole process completes into four stages: 1. Analysis of teaching tasks including inputs, process and outputs. 2. Observation or combined search and analysis for some specific components which has been used during teaching learning process.

13 3. Drawing conclusions about what strategy or behaviour has been successful. 4. Translating the experience into usable language for the benefit of other teachers. Second meaning is Mechanization of educational process of human knowledge for the benefit of big masses through three phases (A) Preservation of knowledge like printed books, tape recorder, CDs and digitals. (B) Transmission of knowledge - sharing knowledge with the help of media. (C) Advancement of knowledge - through machine knowledge reaches to mass and when they face any problem and they try to find out the solution with the help of technology and intelligence then knowledge advances automatically. Third meaning is ET unites the science of learning with Art of teaching. Definitions of educational technology: There are number of definitions of educational technology which have been provided by educationists, Researchers and scholars over the years. Some of the representative definitions are given below to get a better understanding of the term "educational technology".

G.

O.M. Leith: "Educational Technology is the systematic application of scientific knowledge about teaching-learning and conditions of learning to improve the efficiency of teaching and training (

Leith, 1967)."

S.S. Kulkarni: "

Educational Technology can be defined as the application of the laws as well as recent discoveries of science and technology to the process of education(Kulkarni, 1969)."

D. Unwin: "Educational Technology

in

concerned with the

application of modern skill and techniques to requirements of

educational training. This includes facilitation of learning by manipulation of media and methods, and the control of environment is so far as this reflects on learning (

Unwin, 1969)." W. Kenneth Richmond: "Educational Technology is concerned with providing appropriately designed learning situations which, holding the view of objectives of teaching or training, bring to bear the best means of instruction (Richmond, 1979)."

J.R. Gases: "

Educational

Technology has to be seen as a part of persistence and complex endeavor of bringing pupils, teachers and technical means together

is

an effective way (Ford Foundation Team, 1971)."

14

US President Commission of Enquiry: "Educational Technology may be defined as

a systematic way of designing, carrying out and evaluating a

total process of teaching and learning in terms of specific objectives based on

findings from research in human learning and communication (

cited in, tucker, 1979:159). "

Educational technology offers the means

to reach large numbers in remote and inaccessible areas, remove disparity in educational facilities available to the disadvantaged, and provide individualized instruction to learners conveniently suited to their needs and pace of learning (

NPE, 1986). - Educational technology is a communication process resulting from the application of scientific methods to

the behavioural science of teaching and learning. This communication may or may not require the use of media such as

television broadcasts, radio, cassettes etc. (UNESCO, 2001). Based on the above discussion we may conclude that

Educational technology is concerned with the systematic application of science and technology in the field of education.

It is helpful for both, the teacher and learner to set the learning objectives, strategies, procedures, materials and establish

a good communication between them and make the teaching learning process more effective. 1.3.2 Nature of

Educational Technology | ET is the applications of scientific principles to education. | ET is the development of methods

and techniques for effective teaching-learning. | ET is not confined to the use of electronic media in Education. It

includes systems approach also. | ET involves total teaching and learning process:input, output and process aspects of

education. | ET provides technical guidance and solution to the educational problems. | It helps in effective

communication between teacher and students. | ET speed up the process of learning. | ET is very effective in large

classroom management by using projector, microphone, speaker etc. | ET can train large masses with the help of media.

15 | New concepts are coming out with help of edu tech like e-learning, online learning, mobile learning etc. So we can

say educational technology has the potential to bring about improvement in education both qualitatively and

quantitatively. 1.3.3 Objectives of Educational Technology | General Objectives The objectives of Educational Technology

at macro level or broad level are as under: 1. Identifying educational needs of the community. 2. Determining the aims of

education. 3. Developing a suitable curriculum. 4. Developing certain models to improve the process of teaching and

learning. 5. Identifying the human and non-human resources. 6. Developing

the appropriate aids and equipment to meet the educational needs. 7. Identifying the major obstacles in the

educational environment and the ways and means to tackle those. 7. Suggesting remedies to overcome the above traced

out obstacles. 8. Managing the whole system of education including planning, implementation and the evaluation

phases. | Specific Objectives The objectives of educational technology

at micro-level i.e., in view of specific class- room teaching are as under: 1. Identifying the educational needs and

analyzing the characteristics of the pupils. 2. Determining the class-room objectives in behavioural terms. 3. Analysing

the contents of instructions and

organise them sequentially. 4. Identifying the available and necessary teaching-learning materials and resources. 5.

Planning the suitable teaching strategies 6. Utilizing the man-material resources for achieving specific classroom

objectives.

16 7. Evaluating class-room teaching in terms of students' performance. 8. Providing feedback to the teacher and the students for betterment of teaching- learning process. Regarding objectives of Educational Technology, Hilliard Joson has given the following objectives : 1. Transmission of Information. 2. Serving as role model. 3. Assisting the practice of specific skills. 4. Contribution to the provision of feedback. l

Main Objectives of Educational Technology 1. To help to improve the environment required for the teaching learning process. 2. To make the class-room teaching-learning more effective. 3. To modify the behaviour of the teacher and the learner. 4. To improve and update the methods of

teaching and learning. 1.3.4 Origin and history of educational technology: To describe the emergence of educational technology we need to discuss it from two aspects. The first aspect is the global and general worldwide historical development, while the second aspect relates to the historical development at the local level or Indian history. Global Historical Development of Educational Technology Stone Age Period: We have studied in our school that during Stone Age people used to live in cave and they used to draw on the cave wall, tree trunk, slabs, and rocks to share their experience. There was no teaching concept or standardized writing language for communication. People used to experience and learn from the environment. Those drawings are associated with the invention of writing technology. At about 3100 B.C Egyptians devised a system of picture writing called hieroglyphics. Gradually standardized writing system evolved in many countries. With the progress of civilization education system emerged. Socrates used to teach his pupil with oral dialogue system and pupil used to memorize it. Hand written books were in uses for teaching.

17 The Age of Book and Chalkboard In 1456, Johann Guttenberg developed the printing machine and printed the first Bible. With this invention, the art of printing spread widely and other books were produced. The one each to one teaching or verbal method of teaching changed and knowledge spread among pupil in the form of books. School system started and teacher started teaching with the help of blackboard and chalk. Mass Communication Age The invention of the radio and the television made a significant landmark in the development of Educational technology worldwide. Knowledge spread all over the world without any boundary and to the mass. Mass education and education to less privileged society was easy with the help of this technology. Though, the radio served this purpose better than the television as it was low cost. The Information Communication Age/Computer Age The invention of the computer has remarkably changed the educational practice the world over. With computer technology comes the information age. The first computer was invented by IBM. With the advent of the computer technology the following developments started (Conway, 1990): (i) Electronic board akin to the white boards with special pens capable to transferring data written on it to the system; (ii) Multimedia system equipped with a sound blaster and speakers; (iii) CD-ROM player / DVD-ROM player (on which audio, images and video files are recorded); (iv) Video disk player and a videotape player controlled by the personal computer PC); (v) PC - PC conferencing mode; (vi) The touch screen and voice recognition/communication devices for the special education students; (vii) The digital camera that combines very well with computer where images can be shown and be manipulated / printed; (viii) Advances in virtual reality - virtual libraries, virtual universities, etc. Computers are now using packaged instructions like CAI, CBI, and CAL either in a mediated form or in non-mediated form using any or a combination of the styles of drill and practice, tutorials, games, simulations, and/or interactive knowledge-based system.

18 So nowadays education does not depend on face to face interaction between teacher and learner and a closed set up rather than education is now anytime anywhere matter with the help of technological devices and programmed learning. Online learning with the help of internet facility has opened limitless quantity of doors of possibilities for contemporary learner to make their life happier than ever before. Use of educational technology in India: Indian education started with Gurukul system where pupil used to listen to their gurus and learn. Then gradually came the age of books and some other teaching material like, blackboard chalk, teaching aids etc. Before 1960 the term educational technology was not popular to Indian education system. But now educational technology is being used in all sector of education and both in formal and non formal education system. The use of technology properly started and became popular after the invention of radio. In 1929 Bombay aired some educational programmes for school children for the first time. As the radio network cover most of the part of the country so it was easy to reach many people at a time. Thus various education programme was started to develop to educate the mass. Radio was used to teach people about agriculture, weather, basic literacy and educational programmes for both in school and out school groups. The school TV project was first introduced in Delhi in 1961 and it is widely used in education sector. In the year 1972-1973 govt. of India launched first education technology project.

With the advent of satellite services and with the launching of EDUSAT project,

television started to be used more and more for the national development and reached to the masses living in remote or rural areas. The central institute of technology NCERT established in 1984. The CIET started working to develop software materials to meet the educational needs and also conducted research, trained human resource to use educational technology in education sector. In 1975, the satellite television experiment (SITE) was launched. INSAT was used by UGC. National open school and IGNOU established in 1979 and 1985. Distance mode education, NOS started to use technology with combination of media and it was helpful for those who could not complete formal education. For teaching foreign languages like, German, Spanish, French etc also technology is used.

19 Nowadays we are using computers, advanced form of ICT and internet in association with various technological aids in education sector. Country like India where population is very high and scope of higher education is limited in rural and remote areas technology is kind of boon which can help to learn at own place. To sum up, educational technology in India is being used as under: Ø School broadcast Ø TV Telecast lessons Ø Teacher preparation Ø Distance education Ø Correspondence courses Ø Development of audio- visual materials Ø Language teaching Ø Production of multipurpose kits or instructional aids Ø Computer literacy and studies in schools.

1.3.5 The Scope of Educational Technology (By Lucido, 1997)

Educational

technology is the

development, application, and evaluation

of systems, technique, and aids to improve the process of human learning. (

Association for Educational

Communication and Technology)

ET is

the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning. (

Hoffman, 1994-2009, as cited by www.books.google.com) ET is a systematic, iterative process for designing instruction or training used to improve performance. As

Educational technology aims to improve the quality of human learning process so

the scope is unlimited as it tries to reach out to more and more people involved in the teaching-learning process. The scope of educational technology

can be described under the following points: 1. Spelling out Educational goals and Objectives. Ø Help for the formulation of objectives and goals of education based on individualized and social needs.

20 2. Curriculum Development. Ø Planning of curricular and co-curricular inputs in order to realize planned goals and objectives. 3. Developing Teaching-Learning materials and Resources. Ø Develops necessary learning materials in the form of

programmed learning books, computer learning packages, mass media instruction, individualized self- instructional packages etc. 4.

Developing Human resources. Ø ET covers the area of teacher education. 5. Developing Strategies. Ø

Teaching strategies, approaches and methods are devised and developed catering to different types of students. 6.

Developing Multi-Sensory Aids. Ø Design, development of audio visual aids. 7. Develops Feedback Mechanism. Ø ET

develops tool of evaluation to provide feedback. 8. Develops Passive Instruction Services. Ø Educational radio, TV, computers are used for transmitting information. They are passive services since all decisions are in the hands of the providers, i.e., what to be presented, for how long, in what sequence and when. 9. Develops Interactive Instruction

Services. Ø ET tries to provide opportunities for the learner to control the pace, mode of presentation etc. e.g. Computer Assisted Instruction (CAI), Teleconferencing via Internet etc. 10. Develops Learning Environments. Ø ET develops learning

environment that are learner friendly. Eg. Simulation 11. Developing Information Resources. Ø ET bridging the gap between developments in Information Technology and Education. Information Resources:Eg. E-libraries, On line

encyclopaedia,World Wide Web, 12. Develops Communication Devices. Ø ET has developed communication devices for students who have problem in communication.

21 Thus we can say Educational technology aims at increasing efficiency, effectiveness of teaching learning process and simultaneously aims at bringing pedagogical changes for betterment of education.

It works for over all

planning and organization of the system or subsystem of education. 1.4

Educational Technology

and Instructional Technology: Role and Recent Trends The two concepts Educational Technology and Instructional Technology are used interchangeably. Instructional Technology is a subset of educational technology, based on the concept that instruction is a subset of education. Educational Technology is wider concept than Instructional Technology as education is wider than instruction. Instructional Technology is the theory and application of proper tools and techniques in instructional settings, while educational technology is concerned with whole education process and contexts. All parameters of instructional technology are suited within that of educational technology, while all of educational technology does not suit within the parameters of instructional technology. Instructional Technology is not merely a knowledge area that deals only with audiovisual instructional materials. It is a way to think about problems of teaching and learning to find workable solutions (Wittich&Schuller, 1973).

1.4.1 Definition and Meaning of Instructional Technology

As defined by Momurin (1970), Instructional technology

is a

systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction.

Sharma (1989) defined

instructional technology

as a network of techniques or devices employed to accomplish certain defined set of learning objectives.

Instructional technology applies the

principles and theories of psychological learning to get deep insight into the content, structure and sequence of instruction to develop instructional resources for attaining desired learning outcomes. In other words, instructional technology works at shaping the instructional uses of the materials to turn them into instructional resources.

In brief we can say the term "Instruction" refers to systematically organized programme designed to produce certain knowledge, skill, understanding, attitude, and behaviour patterns among learners.

22 The term "Technology" refers to systematic application of scientific or other organized knowledge to practical tasks.

So a technology of Instruction is a particular systematic arrangement of teaching learning events designed to put the knowledge into practice in a predictable effective manner so as to attain specific objectives.

Further, Instructional technology determines

and provides appropriate stimuli to the learner to produce appropriate responses for making learning more effective.

The

definition of Instructional Technology prepared by

the

Association for Educational Communications and Technology (2000) is as follows,

Instructional Technology is

the Theory and Practice of Design, Development, Utilization, Management, and Evaluation of processes and resources for learning.

23

From the above it is understood, theory consists of concepts, constructs, principles, and propositions that serve as the body of knowledge; Practice is the application of that knowledge to solve problems; Design refers to the process of specifying conditions for learning; Development refers to the process of translating the design specifications into physical form; Utilization refers to the use of processes and resources for learning; Management refers to processes for controlling Instructional Technology, and Evaluation is the process for determining the adequacy of instruction. (Seels & Richey, 1994). Through Instructional Technology teachers share content or information to the learners. Contents can be presented on three levels, memory, understanding and reflective levels. However instructional Technology present the content to the second level of teaching only and for reflective level of teaching, help of teaching technology is necessary. In a similar way communication also has two elements verbal and nonverbal. When teacher asks question and students give answer then it is called as verbal communication. But when teacher uses his body actions or gestures or material for communicating the content then it is called as nonverbal instruction. For example if a teacher wants to show the meaning of clap to the class he does the activity and say it is clap. Instruction can be provided by the teacher or by the machine like in online learning or self instructional material, and it does not make any difference. For example Open Universities gives teaching instructions by using TV, radio or Internet to thousands of students in a single sitting and who's over is interested can take the benefit of this program. So instructional technology is based on hardware approach as all the communication with the learners are being done by using audio video recorder, radio or television or computers. There is no direct interaction between teacher and students as we see in teaching or behaviour Technologies. Here teacher plays the role of an instructor and he/ she does not invite the students to participate in the lesson. With effective communication skill teachers makes the instruction proves interesting and intellectually stimulating. In instructional technology, instructional materials are prepared based on the objectives formulated in advance, and then content is presented by using different strategies, techniques and material. At the end the outcomes of the learners are evaluated in order to ascertain whether instructional process is successful or not. A teacher needs knowledge of psychological and scientific principles and laws and awareness of social values and norms, teaching maxims and principles of teaching while preparing instructional materials.

24 1.4.2 Characteristics of Instructional Technology: 1. Objectives of cognitive domain can be achieved. 2. This technology is helpful to fill up the deficiency of effective teachers because we can communicate the instructional material to thousands of learners at a time by recording the lecture of an effective teacher into machines. 3. By the use of this technology students can learn according to their own ability and needs and pace. Can practice same content repeatedly as long as he wants without the help of teacher. 4. With trial and error process students learn independently. Students can be reinforced regularly which will lead to for the right responses to occur. 5. Analysis of the subject matter is also possible with the help of this technology and it can make the presentation easy and logical. 6. Developing instructional technologies based on psychological learning theories and principles. To develop a successful instructional plan/strategy for a specific content following steps should be kept in mind: 1. Setting of instructional objectives To develop a successful instructional plan first we needs to plan and set instructional objectives. After learning the content or matter what type of behavioural changes are expected from the learner that needs to be decided and written

in behavioural terms by taking the help of Robert Eggers approach Robert Miller approach or RCEM approach before proceeding further in the task of imparting instruction. Instructional objectives must be based on the following: Ø Grade level of the learner Ø

the physical emotional social and mental potential of the learner Ø

the previous experiences of the learner related to the subject and topic Ø the main material resources available for imparting instruction

Taking decisions about the instructional material Based on the instructional objectives learning experience and teaching materials need to be decided and organized for delivering the instructions successfully. Instructional material will be selected and used based on the

following the principles of simple to Complex specific to general theory to practice etc.

There are different types of teaching learning material available from visual to audio-visual aids and many technologically advanced products like computer, projector, audio books etc, so the teacher must select appropriate TLM based on the content and instructional strategy.

25 Taking Decision about the media and methods: To carry out the teaching learning process effectively, appropriate decision must be made for selecting media and method for delivering instructions. Various types of instructional strategies are available, so teacher must have enough knowledge to select and use the strategy properly according to the syllabus and topics. Some of the important

instructional strategies like lecture strategy, demonstration strategy tutorial strategy innovation strategy description strategy, role playing, gaming, group discussion, question answer, discovery, problem solving

Strategies and strategy assignment etc. can be used for teaching and learning. Special instructions are needed for carrying out auto instruction of

self learning like program instruction carrying out with the help of teaching machines, computer assisted instruction, personalized system of instruction CSI learner construction LCI, etc.

Taking decision about the proper instructional environment: A suitable instructional environment must be chosen by the teacher based on the topic for carrying out the particular type of instruction. Helping in the task of evaluation : Evaluation is a very important part in

any type of instructional activity carried out by the teacher or learner in the shape of auto instruction to understand that the instructional objectives have been achieved or not. Some evaluation strategies are , teacher made test, standardized test, construction of the achievement test, evaluating the cognitive affective and psychomotor changes in people's behaviour through suitable test and techniques, self evaluation test Strategies and techniques.

So in this way instructional technology can help the teacher as well as the learners in the attainment of the stipulated instructional objectives. 1.4.3 Advantages and Needs of Instructional Technology n Advantages

of Instructional Technology Ø Advantages of Instructional Technology Ø Makes the instruction more interesting. Ø Delivery of instruction is more standardized. Ø Learning becomes more interactive by applying accepted learning techniques. Ø

Quantity

of learning is improved. Ø Instruction can be provided as and when required. Ø Help in development of positive attitude of students towards learning and to the learning process itself. Ø The role of instruction can be appreciably changed in positive direction.

26

n Needs of Instructional Technology The purpose of instructional technology is to make education more productive, individualistic, powerful and scientific which enhances the learning more immediate with more equal access. The use of instructional Technology can solve educational problems related to are given below as l Growing population l

Heterogeneity of learners l Divergent and even conflicting needs of the learners coming from different socio- cultural areas l Rapid development of new information l Knowledge explosion l Development of communication devices l

Extending curricular and social changes arising from modernization 1.4.4 Role of Educational Technology in the

Teaching-Learning Process 1. Educational Technology has brought revolution in the entire education system. Previously, the teachers used to be the sole interpreter of knowledge to the learners and the textbooks was the sole resource. But

now this conventional role has been changed and it has opened up the new areas of teacher functions such as management of resources and management of learning. Today, teachers have a range of media to assist and supplement

the instructional work. With the help of technology teachers can even specify the learning intentions, select the topic, identify the stimulus situation, determine media, manage teaching and finally conduct evaluation and modify the

instructions in the light of evaluation results. So the teachers have the opportunity to design meaningful learning experiences that embed technology. 2. Learning with technology has become essential in today's schools. Worldwide,

governments, education systems, researchers, school leaders, teachers and parents consider technology to be a critical part of a child's education. 3. Educational process can't proceed systematically without the help of educational

technology. Every aspect of educational system is fully enlightened with educational technology. 4. Educational technology has provided a scientific base to the educational theory and practice. It has transformed a passive classroom

to an active and interactive classroom, with audio-visuals, charts and models, smart classrooms and e-learning

27 room which has drastically motivated and increased the attention level of the students. 5. The teaching-learning climate of the educational institutions has been modernized.. The learners are being exposed to professionally designed programmes on video or computers under programme learning concept. 6. Educational technology helps the learners to learn at their own pace with repeated practice so teachers are relieved of the burden of routine repetition for exercise and revision purposes. It has helped and supplemented the teachers in their instructional programmes also through the structured lessons for remedial, enrichment or drill purposes. 7. Educational technology has provided well-integrated structured materials for teachers thus saving a lot of their time which in turn may be utilized for creative work and quality improvement. 8. Educational technology helps the teacher to use scientific methods for solving educational and administrative problems. It adds to the teaching competence of teachers and inculcates a scientific outlook and scientific temper in teachers and students. 9. Educational technology has made the teaching-learning process more effective and process oriented. Television, Radio, V.C.R, Computers and LCD projectors etc. have enriched and facilitated effective transmission of knowledge. 10. Educational technology has improved the process of teaching by giving it Teaching Aids and Programmed Instructional Material. 11. Feedback devices have modified teaching-learning behaviour so produced effective teachers in the teacher-training institutes. 12. Educational programmes on T.V, Radio and Internet are beneficial for Students who appear for higher or competitive examinations. 13. Examination process, evaluation, classroom-teaching and various other sectors of education are being modified with the help of ET and new researches are going on to make it more effective for learning. 14. Educational technology can help teachers to teach according to individual differences of learners and based on the learners need assistive technology can be introduced for smooth learning. 15. It helps in constant social interaction; digital content can be easily created and shared among large population. 16. Technology helps to find information by accessing the internet through cell phones and computers or chatting with friends on social networking sites.

28 17. Educational technology has provided scientific foundation to education through the theories of learning and intelligence and it allows for 24/7 access to information. 18.

Thus educational technology is required in each and every aspect of teaching learning process and serves all the purposes for modern education.

According to Davis and Hartley. 19. "Educational Technology in its wide sense as understood today, includes the development, application and evaluation of systems and techniques involving men, machines, media and instructional material as components, so as improve the process of human learning and attain the educational goals. -" 1.4.5 Recent Trends of Educational Technology and Instructional Technology Let us look at a table to understand the recent trends in technological development in education sector: Source: IGNOU E-gyankosh, Santosh Panda

29 From the above tables it is very clear that technology has a great impact on the entire education system. From face to face interaction or lecture method to online learning, things has been changed a lot. Now classrooms are well equipped with different types of technological devices from smart board to laptops, speaker, microphone, head phone, projectors, smart phones, e books, audio books, internet, Wikipedia, you tube, blogs, podcasts, moodle, CAI, and many more things to improve and personalize the learning experience. 1.5 Major approaches of Educational Technology Lumsdaine(1964) has suggested following approaches of Educational technology:- A. Hardware approach or first Educational technology B. Software approach or second Educational technology C. Systems approach or third Educational technology D. Individual and Mass Media Approach. 1.5.1 . Hardware Approach (Technology in Education) This approach implies the use of mechanical materials and equipments in education. The term was first introduced by James O. Finn & Others. This approach originated from

Physical Science and engineering and is based on the concept of service, i.e., using technology in education (Silverman 1968).

This approach is a by-product of the scientific and technological developments of the 20th century. In this approach the main feature is the use of audiovisual aids like charts, models, film-strips, slides, audio cassettes, and sophisticated equipments like film projectors, OHP, slide projector, radio, tape recorder, LCD projector, DLP Projector, CD players, DVD Players, TV, computer etc in teaching learning process.

Hardware approach mechanizes the process of teaching so that teachers would be able to deal with more students with less expenditure, less time and effort

in educating them. Human knowledge has three aspects I Preservation, I Transmission and I Development. With the invention of printing machines the preservation of knowledge

started. The knowledge is preserved with these machines in the form of books and kept in the libraries,
30

taperecorders and films.

The second aspect of human knowledge is its transmission. A teacher can impart knowledge himself to his pupils. Now days, transmission of the knowledge is supported by machine like mike, radio and television.

With these, thousands of pupils can

be benefitted at a time. The third aspect of human knowledge is its development. Teachers can study through online libraries and enrich themselves other than that they can do research work to develop new knowledge.

For this purpose, presently the researcher uses the electronic machines and computers to collect and analysis of data.

Hence, all the three aspects of knowledge allow the use of machines. In short, the teaching process has been mechanized. The mechanization of teaching process is termed as the Hardware Approach

and also called as technology of education. 1.5.2 Software Approach (Technology of Education) This approach implies the use of Psychological principles and learning theories in education. The term was first introduced by Skinner & Gagne and it originated from Behavioral Science.

Software

Approach is also termed as Instructional Technology or Teaching Technology or Behavioural Technology.

This approach

of educational technology

involves a systematic, scientific application of appropriate scientific research, both from the physical science, social sciences and particularly from psychology and sociology, in order to solve a problem. Here, it is important to understand that technology of education emphasizes on the techniques of teaching and learning derived from the principles, ideas, and practices drawn from various fields of knowledge such as; psychology, sociology, philosophy, management, cybernetics, etc. in order to optimize the teaching-learning process. Instead of using machines this approach uses the principles of teaching-learning for bringing desirable changes in the behaviors of the pupils. In software approach machines are only used for clarification of concept and principles. So this technology is related with the mental aspect of the task and it writes the educational objectives in the behavioural terms, selects suitable presentation strategies of the subject matter, uses reinforcement devices and evaluates the outcome of the learners. According to Silcherman (1968) it is also called as constructive educational technology. It consists of 6 steps: 1. Analysis of instructional problems. 2. Writing objectives in behavioural terms 3. Selecting suitable teaching strategies 4. Reinforcing the students on right responses

31 5. Selecting or constructing measuring instruments for evaluating instructional outcomes. 6. Decision making and improvement. From the above discussion it is very clear that both software and hardware approaches are so interlinked that they cannot be separated from each other. One without the other is incomplete. It is software approach which makes the hardware approach function well. 1.5.3 Systems Approach System: A system is any collection of interrelated parts that together constitute a larger whole. Many number of units working together for a particular goal. These component parts, or elements of the system are intimately linked with one another, either directly or indirectly, and any change in one or more elements may affect the overall performance of the system, either beneficially or adversely. The Term was first introduced by Davis & Hartley. Definition: System approach is an integrated, programmed complex of instructional media, hardware and personnel whose components are structured as a single unit with a schedule of time and sequential phasing.

32 It is a modern approach in educational administration and organization. It acts as a link between hardware and software approach. It is

also known as 'Management Technology'. It has brought to educational management a scientific approach for solving educational administrative problems.

As we know that teaching learning is a complex process and it needs systematic planning to achieve pre determined objectives. To streamline the teaching-learning process we use the systems approach which is concerned with systematic planning, designing, construction and evaluation of the education system. Systems approach is applied to develop, implement and evaluate the whole educational system, sub-system, and curriculum or, for designing an individual lesson. There are four elements of the systems approach: input, process, output, and analysis & feedback. Let us understand, how these elements function together to make the education system more productive. Parameters of system approach So we see that

the System Approach focuses first upon the learner and then course content, learning experiences and effective media and instructional strategies

and then the performance level of the students. Based on the performance level feedback will be collected from all including teachers, students and administrators .So if there is any problem within the system then it will be identified and rectified and also the parameters of the system approach can be modified for improving the overall teaching learning system.

Such a system incorporates within itself the capability of providing continuous self-correction and improvement. It is concerned with all elements of instruction including media, including hardware and software and evaluates various aspects of the education system, and sub-system. The main purpose of the systems analysis is to create a systematic, organized, effective and enabling learning environment for both teachers and students.

33 1.5.4 Individual and Mass Media Approach Due to information explosion and population explosion we need to use mass media which is a boon of science and technology to convey loads of information to larger section of people within short time span. For example newspaper, TV, radio, internet etc. As number of students are increasing day by day and world has become a global village, now a days this mass media technology is utilized for educational purposes also.

Mass media

have proved to help in classifying concepts, stimulating group and individual activities, developing a collective critical awareness, changing attitudes, imposing a new structure or organization on certain subjects and encouraging originality and creativeness.

Therefore, teachers need to be properly motivated and interested

for using such materials. Other than that training is also necessary for the teachers to use and maintain the materials. For a learning society like India which has a huge population of one billion, the media systems based on modern technology constitute a very potent tool for education and development. It has varied and numerous applications bearing on almost all aspects of individual and social life. In one sense, all these uses of information technology basically have their impact in educating people, giving them knowledge, skills, improving understanding and changing their attitudes. The media is used for both formal and non- formal education systems and also for individual and mass levels of learning. Technology is used for Distance Learning Mode courses and appears to be an avenue of promise for every country in the world. In India, IGNOU and CIET (Central Institute of Educational Technology) are launching distance education programmes throughout the country. In general, distance education employs a variety of delivery systems such as correspondence courses, radio, television, audio-visual materials, telephone lessons and teleconferencing. So it is seen that mass media approach is very effective role to play in adult education. In the formal school situations also we can use media to make the teaching learning process more interactive or interesting. The Delors Commission (P-173) also observed that the new technology has created a host of new tools for use in the classroom as under: -- Computers and Internet, - Cable and Satellite TV Education,

34 -- Multimedia equipments, -- Inter-active information exchange system including e-mail and on-line access to libraries and public data base. Ø Teachers can coach their students to use media effectively for the information (like helping students to find specific websites) and in this way, a new partnership can develop in the classroom. Ø If technology and media is used with the conventional mode of education it can enrich the formal system by filling instructional gaps, updating knowledge, and giving new learning experiences. Ø With the advent of computer and internet the information and knowledge is not limited within teacher and library only, the students can access to any information at home also and can learn on their own. Ø The role of media and educational technology has been clearly defined in NPE-86 as under: Ø "Modern communication techniques have the potential to bypass several stages and sequences in the process of development encountered in earlier decades. Both the constraints of time and distance become manageable. In order to avoid structural dualism, modern educational technology must reach out to most distant areas and most deprived

sections of beneficiaries."

Importance

of Mass Media: 1.

Mass Media provide information to the mass within a less time. 2. It takes a wide coverage of information regarding anything that is happening in any corner of the world. 3. It brings the entire world to the individual or to the classroom. Children spend hours together sitting in front of the television and can visualize, hear and acquire knowledge about the world

so it is kind of multisensory learning also. 4.

These media easily reach groups, allow repeated use, give more reality, influence attitudes, show cause and effect relationships and ultimately motivate the audience. 5. It sends information to remote places and helps in distant learning. 6. It helps in modification of attitudes, inculcation of desirable values and acquaintance with cultural heritage. 7. Mass media acts as an agency of social change. 8. Mass media are useful for reinforcing group dynamics and interpersonal communication.

35 9. Mass media as means of communication make ideas clear to children and help them to acquire correct knowledge. They help in simplifying and in giving vividness to explanation. 10. Mass Media make the instruction concrete and stimulate interest and excite curiosity in things.

So

education today, has a far greater responsibility than it had ever before. It has to meet the demands of a dynamic world which change its character every day. Contemporary education has to be more comprehensive and complete than it was ever before.

The role of the various agencies of education like home, society, community etc. has consequently increased, so has the role of the mass media like television, radio, cinema, newspaper increased.

According to educationists and researchers use of mass media like educational TV, radio, press, newspaper, films, documentaries, internet, educational apps, mobile, etc has made the quality of education improved and also made the learners and teachers modern and up to date. Individual approach: Using individual approach is a modern trend in education. If a student cannot understand a matter in classroom set up, they need individualized teaching and repeated practice but due to heavy workload teachers cannot help a student individually always. So with the help of technological equipment and media like Programmed instruction,

programmed books, and programmed learning modules, teaching machines, computer assisted instruction and computer managed learning, video and audio recorded learning and instructional material, email, internet, teleconferencing,

online library etc these problems can be solved. The use of computers and multimedia systems make it possible to design individual learning paths along which each pupil can move at his/her own pace. The compact disc technology (CD) has a special role to play, for it can handle large amount of information complete with sound pictures and text. Interactive media allows pupils to ask questions and look up information themselves. It is observed that pupils who are under-achievers or experienced difficulties in conventional mode of education reveal their talents better and show more motivation and curiosity in informal mode. But development of these technologies cannot replace the textbook and the teacher. In child's education they have their own role to play. Text books are the cheapest media and easiest to handle, illustrating the teacher's lessons, allowing the pupils to revise lessons and to gain independence. Similarly, the development of these technologies does not diminish the role of teachers, but it is also true that in today's world teachers cannot be regarded as the only repository of knowledge that they have to pass on to the younger generation. Now the role of the teachers have been changed, now they are learning partner, guide, instructional designer and supervisor for self learning and how to seek, look up and appraise facts and information.

36 1.6 Differential Instruction, Universal Design of learning and Individualized Instruction 1.6.1 Differential Instruction As we know that 'one size doesn't fit all' (Willis and Mann 2000) so the one single curriculum, one instructional or evaluation strategy may not be suitable for all type of learner. Every child is unique and special and differs from one to another in size, shape, and social development. Students also learn differently. Teachers can no longer teach "The Lesson" and hope that everyone gets it. Based on this knowledge, differentiated instruction applies an approach to teaching and learning that gives students multiple options for taking in information and making sense of ideas. Differentiated instruction is a teaching theory based on the premise that instructional approaches should vary and be adapted in relation to individual and diverse students in classrooms (Tomlinson, 2001). Differentiated instruction recognizes the fact that we have a diverse student population and teachers must understand students' background knowledge, readiness, learning styles, language and interests. According to right to education Act (RTE) - 2009, the present day classroom should be inclusive in nature and welcoming and is pedagogically capable of educating the naturally diverse population of students who arrive at its door. Based on the Differentiated instruction principles teachers can create such classrooms. Differentiated instruction is a technique that teachers use to accommodate each student's learning style and instructional preferences. This strategy may involve teaching the same material to all students using a variety of instructional methods, or it may require the teacher to teach content at varying levels of difficulty based on the readiness, interests and ability of each student. The foundation of Differentiated instruction is based on Piaget's constructivist theory, Vygotsky's socio-cultural theory; Gardner's multiple intelligence theory, varied learning style. According to Piaget' teachers should facilitate the learning process by organizing learning activities and using variety of aid material according to the level of student's cognitive structure to enable him to construct knowledge through his experiences. According to Gardener teachers should provide educational opportunities in such a way that nurture the strong area of intelligences but also allow students to use all their intelligences.

37 Tomlinson (2005), a leading expert in this field, defines differentiated instruction as a philosophy of teaching that is based on the premise that students learn best when their teachers accommodate the differences in their readiness levels, interests and learning profiles. A chief objective of differentiated instruction is to take full advantage of every student's ability to learn (Tomlinson, 2001a, 2001c, 2004c, 2005). In addition, she points out that differentiating can be performed in a variety of ways, and if teachers are willing to use this philosophy in their classrooms, they opt for a more effective practice that responds to the needs of diverse learners (Tomlinson, 2000a, 2005). Tomlinson (2000) maintains that differentiation is not just an instructional strategy, nor is it a recipe for teaching, rather it is an innovative way of thinking about teaching and learning. To differentiate instruction is to acknowledge various student backgrounds, readiness levels, languages, interests and learning profiles (Hall, 2002). Differentiated instruction sees the learning experience as social and collaborative, the responsibility of what happens in the classroom is first to the teacher, but also to the learner (Tomlinson, 2004c). Building on this definition, Mulroy and Eddinger (2003) add that differentiated instruction emerged within the context of increasingly diverse student populations. Within the learning environment permitted by the differentiated instruction model, teachers, support staff and professionals collaborate to create an optimal learning experience for students (Mulroy and Eddinger, 2003). Also in this environment, each student is valued for his or her unique strengths, while being offered opportunities to demonstrate skills through a variety of assessment techniques (Mulroy and Eddinger, 2003; Tomlinson, 2001a; Tomlinson and Kalbfleisch, 1998; Tuttle, 2000). Differentiated instruction supports the classroom as a community, accommodating differences and sameness (Bosch, 2001; Brimijoin, Marquissee, and Tomlinson, 2003; Lawrence-Brown, 2004; Tomlinson, 2003). It allows for the creation of an environment in which all students can succeed and derive benefit (Lawrence-Brown, 2004; Tomlinson, 2003). Students differ in three important ways - readiness, interests and learning profiles - in a differentiated classroom, the teacher is obliged to attend to these differences in order to maximize the learning potential of each student in that classroom (Tomlinson, 2000b, 2001a). Differentiated instruction requires teachers to transform their practices from a program- based pedagogy to a student-based pedagogy. Teachers attempt to adapt pedagogical interventions to the needs of each student, acknowledging that each student differs in interests, learning profile, and level of functioning. Differentiated instruction may facilitate high levels of both student engagement and curricular achievement (Caron, 2003; Tomlinson, 2004).

38 Curriculum tells teachers what to teach, while differentiated instruction tells teachers how to teach it to a range of learners by employing a variety of teaching approaches. Students can develop their potential if they are provided with appropriate activities in an environment that is planned and organized to meet the needs of all students. The teacher can differentiate one or a number of the following elements in any classroom learning situation (Tomlinson, 2004):

- l The content (what the students are going to learn)
- l The processes (the activities)
- l The products (the accomplishment following a learning period)
- l The learning environment

Differentiation is a process through which teachers enhance learning by matching student characteristics to instruction and assessment. Differentiation allows all students to access the same classroom curriculum by providing entry points, learning tasks, and outcomes that are tailored to students' needs. In a differentiated classroom, variance occurs in the way in which students gain access to the content being taught, the process by which they acquire information, and the manner in which they demonstrate understanding (Hall, Strangman, & Meyer, 2003). Let us know the strategies of differentiating instruction:

- Content: What the teacher plans to teach and what the students need to learn. The teacher can plan range of activities:
- l Students level will be determined through formative assessment
- l Using reading materials at varying readability levels
- l Putting text materials on tape/CD
- l Using spelling/vocab lists at readiness level of students
- l Presenting ideas through auditory, visual, kinaesthetic, & tactile means
- l Using reading buddies
- l Flex grouping
- l Compacting
- l Meeting with small groups to reteach idea/skill, or to extend the thinking/skill

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- l Multi-levelled questions
- l Modelling Process: How the students will access the information. Activities in which the students engage in order to make sense of or master the content
- Strategies:
 - l Tiered activities through which all learners work with the same information, understanding, & skills, but proceed with different levels of support, challenge, or complexity.
 - l Centres/Stations
 - l Developing personal agendas
 - l Manipulative
 - l Varying the length of time a student may take to complete a task
 - l Cubing
 - l Learning logs or journals
 - l Note-taking organizers
 - l Graphic organizers
 - l Highlighted materials
 - l Jigsaw
 - l Think, Pair, Share
 - l Learning Menus
 - l Web quests
 - l Labs
 - l Role Play / Simulations
- Product: How the student will demonstrate what s/he has learned.
 - l Choice boards
 - l Podcast
 - l Blog
 - l Presentation

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- l Quiz/Test
- l Using rubrics that match and extend students' varied skill levels.
- l Encouraging students to create their own product assignment as long as it contains required elements.
- l Enabling students to use contemporary media/technology as tools to demonstrate knowledge and understanding.

Let us see a graphical presentation of differential of instruction:

41 Conclusion Differential instruction

is an organized, but flexible way of adjusting teaching and learning methods to accommodate each child's learning needs, interests and preferences specifically children who have learning problems or special need in order to achieve his or her maximum growth as a learner and provide them best learning experiences.

1.6.2 Universal design of learning: Learning in general is very person specific, as unique as a person thumb print. Universal design is an architectural concept that focuses on the design of the products, building or environments so that they can be used by all type of people. The term "universal design" was coined by architect and designer Ron Mace at the Center for Universal Design at North Carolina State University (Burgstahler, 2008; Center for Applied Special Technology, 2011b). Mace and his colleagues defined UD as "

the design of products and environments

to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (Center for Applied Special Technology, 2011a). With ADA (Americans with Disabilities Act), 1990 Universal design became very popular among architects and designers who were trying to make public building and city streets accessible for all. Though it was basically for the people with disabilities but afterwards it was seen that this concept is very effective among other population also. So the chief characteristic of Universal Design is that it "proactively builds in features to accommodate the range of human diversity" (McGuire, Scott, & Shaw, 2006, p. 173).

- l Adaptation and modifications to the products, built environment and streets like audio books, closed captioning TV, trolley case, automatic door openers, curb cuts, entry ramps, universal-height drinking fountains, disable friendly toilet, lift with audio sounds, road signals with audio, low floor buss, signage, Wireless remote controlled power sockets and others-are beneficial to many people including pregnant woman, woman with kids in lap, sick and old people, not just those with disabilities. Indeed, people today routinely use door openers to enter a building

42 when their hands are full or kids in lap, pregnant women can use low floor bus, foreign language people can use signage for directions and children visiting the hospital can drink water from a fountain without assistance. Similarly, commuters in noisy airports and students in quiet libraries rely equally on TV closed captioning. Each of these conveniences was originally conceived as a disability accommodation. | Disabilities have less to do with individual deficits-what some people can't do that others can-and more to do with environmental barriers that obstruct people's ability to function effectively and participate fully in society (United Nations, 2006 - Preamble E). Universal Design helps all by removing unnecessary barriers. | The philosophy of UDL has been proved to be fruitful in the field of education also.

If the goal of UD is to remove barriers from the physical environment, the goal of UDL is the elimination of barriers from the learning environment. As David Rose, one of UDL's founders, has stated, "UDL puts the tag 'disabled' where it belongs-on the curriculum, not the learner. The curriculum is disabled when it does not meet the needs of diverse learners" (Council for Exceptional Children, 2011).

| A concise definition of Universal Design for Learning was provided by the Higher Education Opportunity Act of 2008, which stated: | The term UNIVERSAL DESIGN FOR LEARNING means a scientifically valid framework for guiding educational practice that:(A) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and(B) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient. | Universal Design for Learning is a set of principles for curriculum development that give all individuals equal opportunities to learn. UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone--not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs.

The origin of the term Universal Design for Learning (UDL) is generally attributed to David Rose, Anne Meyer, and colleagues at the Center for Applied Special Technology (CAST).

UDL is about providing options. In the words of David Gordon, a director at 43 the Center for Applied Special Technology (CAST), "Options are essential to learning, because no single way of presenting information, no single way of responding to information, and no single way of engaging students will work across the diversity of students that populate our classrooms. Alternatives reduce barriers to learning for students with disabilities while enhancing learning opportunities for everyone" (Council for Exceptional Children, 2011).

Why is UDL necessary? Individuals bring a huge variety of skills, needs, and interests to learning. Neuroscience reveals that these differences are as varied and unique as our DNA or fingerprints. Three primary brain networks come into play: Principles of UDL: I. Multiple means of representation - providing learners with various ways to acquire knowledge and information.

44 II.

Multiple means of expression - providing learners with alternatives to demonstrate what they know and what and how they think. III. Multiple means of engagement - providing learners with appropriate means of engaging and interacting with the learning environment. The provision is built into the planning and design of all aspects of the activity or unit - not as an add-on. The approach of Universal Design for Learning can be supported using inclusive technologies. How UDL can help all students to learn | Enriches learning environment | Caters to different learning styles | Motivates learners and increases productivity | Engages reluctant learners | Improves independence and self directed learning | Enhances self esteem | Provides indirect and unplanned learning opportunities How UDL assists teachers | Helps to make education practices more inclusive | UDL caters to diverse learners | Supports effective pedagogy | Improves the quality of teaching and learning | UDL makes planning more efficient | UDL is cost/time effective | Supports Curriculum Framework | Consistent with legislation | Disability Standards in Education 2005 | Education General Provisions Act 2006 Multiple means of representation to support all students

45 Visual support | Graphics | Movies | Animations | Text | Physical objects or movement Supports visual lestrum Disorder. Auditory support | Digital recordings | Wav or MP3 files | Text-to-speech Supports auditory learners as well as students with cognitive impairment, learning difficulties, Dyslexia, speech-language impairment, English as second language. | Signs - Makaton signs supports students with intellectual impairment | Auslan and signed English supports students with hearing impairment Captions | Video captions support students with a hearing impairment Multiple means of expression Communication modes - Speech, sign, AAC including speech generating devices, text- tospeech Writing modes - Pencil and paper - Computer Visual modes - Sculpture - Photos - Movies - Dance - Drama Auditory modes - Sounds - Music Multiple means of engagement Tools that assist students to actively engage with learning, both input and output. The most successful of these for UDL are those that can engage a diversity of students within the one device or system. Many of these devices will have hidden benefits HARDWARE - Various configurations of keyboards

46 | Range of pointing devices | Trackballs ? Joysticks ? Alternative mouse systems ? Glidepoint ? Touch screens ? IWBs - Digital Pens ? Smartpen ? Intellipen | Alternative Computer Systems | Micro laptops ? iPad SOFTWARE Configuration of system or software | Windows/Mac OS | Wordprocessor configuration | Writing templates or scaffolds Rate enhancement software | Supports students who may fatigue from the mechanics of writing | Supports students who struggle with reading or writing and may have poor motivation | Reduces errors in literacy processes | Increases accuracy, speed, productivity and motivation | WordTalk; Natural Reader; Co Writer; textHELP Graphic Organizers | for students with difficulties organizing information and getting started with writing Multi-media interactive | Contain tools and functions that enable a range of students to engage with the learning | Framework applications (Clicker 5, IntelliTools Classroom Suite, "Communicate" series) | 'Learning objects' from TLF An example of how ICT functionality and UDL can address learner differences using multiple means of representation: digitized text

47 | More flexible than printed materials | Readily manipulated | Enlarged text | Background/foreground colour highlighting | Recorded sounds or voice | Graphic support | Text-to-speech | Converted to MP3 | Print to Braille printer Source: CAST 1.6.3 Individualization of instruction: It is auniversally recognized and accepted effective approach to the teaching-learning

48 process.It is a teaching methodology that is to be used for a specific purpose and an identified client.It is also called "tailor-planned" mode of instruction.Sometimes termed as programmed instruction alsoif the teaching material follows a "programmed" style of presentation. As this is the era of inclusive education so individualization of instruction is a major trend in the modern educational practices and is the demand of the hour. Based on the psychology of individual differences instructional process also must be organized according to the needs, interests, learning speed and abilities of the learners.

To individualize the instructional process we need the help of hardware and software technology both. Some of the necessary materials and equipments which are used for individualized instructions are as follows: | Programmed instruction,

programmed books, and programmed learning modules. | Teaching machines, computer assisted instruction and computer managed learning. | Video and audio recorded learning and instructional material.

| Email, internet, teleconferencing and other online educational facilities. | For students with disabilities assistive aids, Special aid material, equipment and appliances can be used. | Special provisions and facilities are made for the creative and gifted students to nurture and develop their individual capacities according to their pace and interest. | Steps of individualized instruction planning: 1. Assessment of student's background, needs and interests 2. Selection of appropriate subject matter 3. Determining the teaching strategies to meet the needs and interests 4. Constant monitoring progress 5. Undertaking revisions/alternative wherever needed 6. Comprehensive evaluation, including qualitative and quantitative records.

49 Advantages: 1. Success-guaranteed as teaching is based on the interest, needs and abilities of the students and are carefully planned. 2. Teaching learning process will be joyful as students will not be bored with the activities. / Care in planning is important so that the procedure must not be too easy or difficult to accomplish. 3. The student progress is in accordance with his intellectual and social traits. 4. Strong retention of learning 5. Substitution of materials or choice of alternatives activities will be easy since the teacher is considering only one student. 6. Easy to adjust planned progress and can easily pinpoint problems and guide in overcoming problems. / Problems and errors could easily be observed and instant remedy could be undertaken. 8. Student learns to be more responsible and is ready to suggest alternative activities to suit his needs. 9. Evaluation system will also be individualized to find out the actual individual achievement.

1.7 Implication of differential instruction, UDL and individualized instruction for inclusion: 1.7.1 Concept of Inclusion As we believe that every child can learn and "If a child can't learn the way we teach, maybe we should teach the way they learn"- Ignacio Estrada Education makes a person self reliant and independent, so education systems must be designed and organized in such a way that it can meet the varying needs of individual learners, and provide an appropriate education and fulfill the fundamental right to education of each child.

50 To attain the goal of universalization of elementary education, govt. of India has launched some innovative legislation and policies like IEDC, RTE, RPWD, signed in UNCRPD etc. The dream of education for all (EFA) cannot be achieved unless all children, including the large population of children with special needs, are provided educational services. Due to disability and varying needs children with special need experience multiple disadvantage in the way of education. Most of the time they are perceived as different and unable to cope with mainstream education and they are kept isolated at home or special schools. But the scenario is being changed with the emergence of philosophy of inclusion, concept of UDL, differential instruction and individualized instruction. UNESCO Salamanca Statement and Framework for Action (1994) proclaimed that, "Every child has a fundamental right to education and must be given the opportunity to achieve & maintain an acceptable level of learning. Every child has unique characteristics, interest, abilities and learning needs, educational system should be designed & educational programmes implemented to take into account the wide diversity of these characteristics and needs. Those with special educational needs must have access to regular schools which should accommodate them within a child-centered pedagogy, capable of meeting these needs." The 1994 UNESCO World Conference also realized this situation when it argued that a school should, ...accommodate all children regardless of their physical, intellectual, social, linguistic or other conditions. This should include disabled and gifted children, street and working children, children from remote or nomadic populations, children from linguistic, ethnic, or cultural minorities and children from other disadvantaged or marginalized area and groups. (UNESCO, 1994, Framework for Action on Special Needs Education, p.6) These inclusive schools, ... must recognize and respond to the diverse needs of their students, accommodating both different styles of learning and ensuring quality education to all through appropriate curricula, organizational arrangements, teaching strategies, resource use and partnerships with their communities. (UNESCO, 1994, Framework for Action on Special Needs Education, p.11-12)

51 Sebba and Ainscow (1996) have offered a definition of inclusion: Inclusion describes the process by which a school attempts to respond to all pupils as individuals by reconsidering its curricular organization and provision. Through this process, the school builds its capacity to accept all pupils from the local community who wish to attend and, in so doing, reduces the need to exclude pupils (p.9).

1.7.2 National and International Legislations Support Inclusive Education : Let us look at the International legislations in support of inclusion: Source: World Bank Group: Education Global Practice Toolkit for master trainers in Preparing Teachers for Inclusive Education for Children with Special Needs

52 Module 1 : Education There are various constitutional provisions in India that have promoted mainstreaming of children with special needs into regular schools. Article 21A of the Constitution guarantees education as a fundamental right to all children in the 6-14 age group, while

53 Section 26

of the Persons

with Disabilities Act, (Equal Opportunities, Protection of Rights and Full Participation) Act (1995)

articulates that free and compulsory education has to be provided to all children with disabilities up to the minimum age of 18 years. The Government of India's 12th Five-Year Plan considered exclusion the single most important challenge in universalizing elementary education. The Draft Persons with Disabilities Bill (2012) enshrines a strong commitment to inclusive education. Government policies and schemes such as Sarva Shiksha Abhiyan (SSA) and Right of Children to Free and Compulsory Education (RTE) Act (2009), have changed the education landscape significantly, resulting in a significant decrease in the number of out-of-school children in the last decade. This has also led to an increasing number of children with disability entering government and private schools. SSA's goal is to provide eight years of elementary schooling for all children, including those with special needs, in the 6-14 age groups. Children with disabilities in the 15-18 age groups are provided free education under two national schemes: Integrated Education for Disabled (IEDC) and Rashtriya Madhyamik Shiksha Abhiyan (RMSA). The 2001 census report says that fifty-one percent of persons with disabilities are illiterate, so India has to continue its efforts to provide Education for All (EFA). It is therefore essential that to mainstream the children with disabilities effectively into regular schools teachers must be trained in inclusive education, need to learn to apply the principles of UDL, and understand the importance of differential instruction.

1.7.3 Key principles of inclusive education:

- Ø IE is based on the belief that the right to education is a basic human right for all children.
- Ø IE ensures good teaching
- Ø IE is a strategy to implement and fulfil the obligation of RTE
- Ø Providing equal opportunities to all children, which do not mean similar things for all children.
- Ø It is based on the concept of providing equitable learning opportunities, keeping in mind the differences and difficulties of the child besides their diverse background and their needs.
- Ø Teaching children from diverse backgrounds requires a tremendous amount of flexibility in teaching practices and processes as well as in curriculum design and learning materials.
- Ø Ensuring equitable learning opportunities by making the education system accessible and responsive to all children, including disadvantaged children, i.e. Scheduled Castes/Scheduled Tribes (SC/ST), minority, children with disabilities, girls, urban deprived, and also ensuring their entitlements to achieve optimal learning outcomes.

54 Ø IE is a process of addressing and responding to diverse needs of learners by reducing exclusion within schools. Ø IE is an entry point to improve the quality of the education system in terms of culture, policy and practices (pedagogy, classroom management, teaching learning materials [TLMs] and the learning environment). Ø Inclusive teachers are good teachers who are flexible in their approach and believe that the source of difficulties in learning is largely environmental and can be addressed.

55 From the above discussion and by looking at the international and national legislation we can clearly understand that inclusion is need of the hour to accommodate all children under the umbrella of education. With the passing of the rights of the persons with disabilities act (RPWDA) 2016 ON 27TH DECEMBER, 2016, inclusive education has become more than just rhetoric. For example section 16 of chapter III of the RPWDA, is clearly stated about inclusive education, "The appropriate government and local authorities shall endeavor that all educational institutions funded or recognized by them provide inclusive education to the children with disabilities and towards that end shall (i) Admit them without discrimination and provide education and opportunities for sports and recreation activities equally with others; (ii) Make building, campus and various facilities accessible; (iii) Provide reasonable accommodation according to the individual's requirements; (iv) Provide necessary support individualized or otherwise in environments that maximize academic and social development consistent with the goal of full inclusion; (v) Ensure that the education to persons who are blind or deaf or both is imparted in the most appropriate languages and modes and means of communication; (vi) Detect specific learning disabilities in children at the earliest and take suitable pedagogical and other measures to overcome them; (vii) Monitor participation, progress in terms of attainment levels and completion of education in respect of every student with disability; (viii) Provide transportation facilities to the children with disabilities and also the attendant of the children with disabilities having high support needs. In preamble it is clearly defined that "Inclusive education" means a system of education wherein students with and without disability learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities; In UNCRPD, Article 24 Education stated that, (a) Persons with disabilities are not excluded from the general education system on the basis of disability, and that children with disabilities are not excluded from free and compulsory primary education, or from secondary education, on the basis of disability; (b) Persons with disabilities can access an inclusive, quality and free primary education and secondary education on an equal basis with others in the communities in which they live;

56 (c) Reasonable accommodation of the individual's requirements is provided; (d) Persons with disabilities receive the support required, within the general education system, to facilitate their effective education; (e) Effective individualized support measures are provided in environments that maximize academic and social development, consistent with the goal of full inclusion. 1.7.4 Educational practices Support Inclusive Education To make the dream of inclusion successful some strategies are being followed, Ø Principles of Effective Instruction Ø Universal Design for Learning (UDL) Ø Co-Teaching Ø Differentiated Instruction Ø Curricular Accommodations Ø Collaborative learning Ø Peer mediated teaching Ø Positive Behavior Supports

57 In the 1990 when UDL was introduced into the education domain as the momentum for inclusive education grew. The fundamental objective of inclusion was to prepare an appropriate curriculum to ensure all students can access and participate in the education system. Universal design was clearly relevant to full inclusion. Those who work in the application of UD to teaching and learning invented the term Universal design for learning. UDL emphasizes development of a curriculum that does not involve adaptation or retrofitting. In other words, it is not an add-on to the standard curriculum. Adjustment of curriculum and modified teachers instruction should be built from the beginning. UDL is the exchange of the Power base associated with the transfer of knowledge. UDL gives students control over the way in which they gain access to information, which encourages, their independence in learning and problem solving. It provides for equal access to all by removing barriers to knowledge and learning without diminishing the challenges. (Bauer & Kroeger, 2004) UDL involves the application of three primary principles: 1. Representation- It means using various ways of presenting essential concepts. As there is no single best way of presenting the curriculum that will satisfy the need of all students. For some students only lecture is enough but for some lesson notes are also needed along with the oral presentation. For some other students using graphics, drawings and photographs, even YouTube clips can also help. 2. Engagement - that is ensuring that learning activities must be designed in such a way so that they cater for student's skill levels, preferences and interests. So students must be provided such material which can capture their interests and motivate them in learning. 3. Expression - that is using alternative means of expression that allow students to demonstrate mastery of a topic, skill or acquired knowledge in a variety of way. Some students may write well and some may not, they may even find it difficult to write a simple letter. So providing a range of options that includes written, oral or multimedia presentations like dance, painting, project or even show and tell can help students to demonstrate their achievement of the curriculum goals. UDL also involves 7 teaching and learning features 1. Equitable use- the same technology or resources will be available to and usable by everyone, example most commercial digital mathematics programs have materials that cover a range of students capabilities

58 2. Flexible use - the same technology or resource is used for a number of purposes, example arithmetic or social or language 3. simple and intuitive application - example everyone knows how to look for a book in the library or use the web to search for information 4. Perceptible information - that the technology communicates essential information to the user regardless of the user's capabilities, example instruction and guidelines or manuals. 5. Tolerance for error - example the learning process includes recovery processes if error occurs. 6. Low physical effort - example the teaching process is accessible to students with sensory or mobility impairment 7. Size and space - example accommodates students with particular need such as making seating arrangement for a student with vision impairment at the front of the class. So UDL is all about tools and resources that are usable by all students in a classroom. Burgstahler (2001) distilled the initiatives achieved in design and architecture in to a set of features relating to classroom application. These are, Ø Inclusiveness - a classroom environment that respects and values diversity Ø Physical access - classroom resources and equipment that are accessible to all students. Ø Delivery methods - employment of varied instructional methods Ø Information access - use of for example captioned videos electronic copies of printed materials etc. Ø Interaction - different ways in which teacher and learner interact. Ø Feedback - effective and timely prompting and feedback and Ø Demonstration of knowledge - multiple ways for students to demonstrate their knowledge. UDL focuses on curriculum adaptation and ICT and promotes teaching practices that allow for equal access to all students. Differentiation is a core element of responsive teaching. The concept appears in the professional literature under several heading; curriculum differentiation differentiated

59 instruction and multi level instruction. Differentiation refers to flexible approach to teaching that address the different capabilities of individual student. Curriculum differentiation is the management of the, Ø Content - what is taught and learnt. (e.g.; by providing activity based task through to the conceptual and abstract) Ø process or methods for acquiring content - how knowledge is delivered(e.g.; accommodating preferred learning styles : visual auditory , tactile or kinesthetic) Ø method for assessment - how learning success is evaluated (using authentic task that involve real and relevant problems) Ø resources required - including material and human resources (e.g.; equipment, ICT teacher aids, volunteers, experts) The idea of differentiation is not new maker 1982 suggested ways in which the curriculum might be modified to take into account learner's characteristics, their skills and knowledge the pace of presentation, the complexity of the information and the depth of learning required. Conclusion: So with the implication of the above strategies inclusive education can be successful. Though there are some Barriers to access education and success inclusion which is physical as well as structural. But more than that, it is the curriculum, the pedagogy, the examination and the school's approach, which create barriers. So we need to take care of those barriers by applying the principles of UD(structural), UDL and differentiated instruction or individualized instruction to make the education accessible to all children. 1.8 Summary: So we have seen in this unit that

educational technology is concerned with the systematic application of science and technology in the field of education. It is helpful for both, the teacher and learner to set the learning objectives, strategies, procedures, materials and establish a good communication between them and make the teaching learning process more effective. The initiation of educational technology movement started with audiovisual aids (within 'technology in education') and behaviourism and programmed learning (within 'technology of education'). educational technology in India is being used for School 60 broadcast, TV Telecast lessons, Teacher preparation, Distance education, Correspondence courses, Development of audio- visual materials, Language teaching, Production of multipurpose kits or instructional aids, Computer literacy and studies in schools. The scope of educational technology is very wide and it is utilized in various areas of teaching and learning process like formulation of

educational goals and objectives, Curriculum Development, Developing Teaching-Learning materials and Resources, teacher training, Development of teaching - learning Strategies,Developing Multi- Sensory Aids, Develops Feedback Mechanism, Develops Interactive Instruction Services, Developing Information Resources, Develops Communication Devices etc. Instructional Technology is a subset of educational technology and

it is a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction.

It is helpful for both teacher and learner. Instructional Technology can make the instruction more interesting, more standardized, interactive, instant and need based, develops positive attitudes among students. Educational Technology has brought revolution in the entire education system in our country and also globally with the use of hardware approach, by using various technological aids, like projector, computer, smart phones and many other things; and software approach like using programmed instruction, CAI, CBI etc. With the help of educational technology teaching is not confined within the four wall of classrooms and source of information is not only the teacher, now learner can learn any time anywhere based on their needs and suitability with the help of online learning, online library, internet, blogs, Wikipedia, moodle and many more. There are three major approaches of Educational Technology namely Hardware Approach (Technology in education), Software Approach (Technology of Education) and System Approach. The use of hardware approach and software approach is very necessary to fulfill present age education needs. To reach large population easily, it is being used in distance mode courses, correspondence courses, online learning, and adult education very effectively. Educational Technology can make the teaching learning process effective and interesting by using multisensory approach, individualized education and reinforcement technique with the help of hardware and software technologies.

61 System Approach is a modern approach in educational administration and organization and it acts as a link between hardware and software approach. It is concerned with development, implement and evaluation of the whole educational system, sub-system, and curriculum by organizing human resource and physical resource in an effective and economic way to get the best from the education system. As we are living in the era of information explosion so role of mass media become very important in education sector. Mass media approach in education means to use educational TV, radio, press, newspaper, films, documentaries, internet, educational apps, mobile, etc to reach mass to provide education and also make the learners and teachers modern and up to date. Differentiated instruction is a teaching theory based on the premise that instructional approaches should vary and be adapted in relation to individual and diverse students in classrooms (Tomlinson, 2001). The teacher can differentiate instructional strategies based on the content (what the students are going to learn), the processes (the activities), the products (the accomplishment following a learning period) and the learning environment. The term "universal design" was coined by architect and designer Ron Mace at the Center for Universal Design at North Carolina State University (

Burgstahler, 2008; Center for Applied Special Technology, 2011b). The term UNIVERSAL DESIGN FOR LEARNING means a scientifically valid framework for guiding educational practice that: (A) provides flexibility in the ways information is presented,

in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (B) reduces

barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students,

including students with disabilities. Principles of UDL are 1. Multiple means of representation - providing learners with various ways to acquire knowledge and information. 2.

Multiple means of expression - providing learners with alternatives to demonstrate what they know

and what and how they think and 3. Multiple means of engagement - providing learners with appropriate means of

engaging and interacting with the learning environment. 1.9 Check your Progress Ø Explain the meaning and concept of educational technology in detail. Ø Explain 'hardware' and 'software' approach to education and their contribution towards effective teaching and learning.

62 Ø Differentiate between "technology of education" and "technology in education". Ø Describe in detail the scope of educational technology. Ø Discuss the recent trends of Educational Technology and Instructional Technology in

teaching learning process. Ø What is UDL and how it has a wide applicability to make inclusion successful? Ø Mention

the three primary principles and their uses in inclusive classroom. Ø Justify the need of differential instruction for

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Unit 2 □ □ □ □ □ Information and Communication Technology (ICT) Structure 2.1 Introduction 2.2 Objectives 2.3 ICT - Meaning, Definition, Scope and Significance 2.3.1

Meaning and Definition of ICT 2.3.2 Components of an ICT system 2.3.3 The scope of ICT 2.3.4 Significance of ICT 2.3.5 Functional Approach of ICT Usage 2.3.6 ICT as Medium of Teaching and Learning 2.4 Psychological Bases for ICT among Teachers and Learners 2.4.1 Different psychological principles 2.4.2 Use of ICT in education from the point of view of learning 2.4.3 Use of ICT in teacher education from the point of view of motivation 2.5

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Use of ICT to Simplify Record Keeping: Information Management in Educational Administration in Special and Inclusive Setting 2.7.1 Role of ICT in record keeping and information management in school administration 2.7.2 Record Keeping 2.7.3 Use of ICT in Information management in Schools. 2.8 Let us sum up 2.9 Check your progress 2.10 References 2.1

Introduction Information and Communication Technology (ICT) is a generic term, which is being used for collecting, storing, editing and passing on information in various forms. Although there is no single, universal definition of ICT, the term is generally accepted to mean all devices, networking components, applications and systems that allow people and organizations (i.e., educational agencies, businesses, nonprofit agencies, governments and criminal enterprises) to interact in the digital world.

ICT is generally used to represent a broader, more comprehensive list of all components related to computer and digital technologies

than IT. The scope of ICT is not fixed, but is responsive to ongoing technological developments. ICT is leveraged for economic, societal and interpersonal transactions and interactions. ICT has drastically changed how people work, communicate, learn and live.

More than three decades ago, computers and related information technologies were introduced to educators for direct teaching and learning purposes.

Learning and teaching whether it is through actual classroom settings or through technological applications utilizes many psychological principles knowingly or unknowingly. ICT enables interactive and collaborative learning at several and best possible ways. ICT can help the school administrators to improve administrative tasks such as school record keeping system and school information management system.

67 2.2

Objectives After going through this unit, you will be able to • Understand the meaning, definition, scope and significance of

ICT • Understand

the

psychological bases for ICT among teachers and learners • Understand stages, requirement and process of development of ICT • Understand the process of using ICT in developing collaborative networks •

Understand the use of ICT to simplify record keeping 2.3 ICT - Meaning, Definition, Scope and Significance 2.3.1 Meaning and Definition of ICT The

integration of computers and communications offer unprecedented opportunities to the education system with its capacity to integrate and interact with each other over a wide geographic distance in a meaningful way to achieve the instructional objectives.

Increasingly rapid advances in ICT will have profound impact on way teachers teach and how learners learn in near future. The development of new broadband communication services, convergence of telecommunication with computers, recent developments in the field of communication protocol have fostered numerous proposals for the uses of ICT to support the teaching and learning environment.

The growth of these communication and computer systems, their ease of use, the power and diversity of information transfer allow teachers and students to have access to a world beyond the classroom.

It has the potential to transform the nature and process of the learning environment. Interactivity, flexibility and convenience have become the order of the day in the ICT supported environment.

Knowing how to use and integrate ICT in teaching and learning is of utmost importance for teachers in their role of creators of pedagogical environments. While literature provides some evidence of the effectiveness of using ICT in education, little is known about which learning strategies should be used for education and training. ICT development in education is a continuum approach along which an educational system or institution can be mapped depending on the stages of ICT development. These broad stages have been termed as Emerging, Applying, Infusing and Transforming stages of ICT development.

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ICT stands

for information and communication technology and is defined as a "diverse set of technological tool and resources used to communicate, and to create, disseminate, store, and manage information."

ICT, or information and communication technology (or technologies), is the infrastructure and components that enable modern computing. 2.3.2 Components of an ICT system ICT encompasses both the internet-enabled sphere as well as the mobile one powered by wireless networks. It also includes antiquated technologies, such as landline telephones, radio and television broadcast -- all of which are still widely used today alongside cutting-edge ICT pieces such as artificial intelligence and robotics. ICT is sometimes used synonymously with IT (for

information technology); however, ICT is generally used to represent a broader, more comprehensive list of all components related to computer and digital technologies

than IT. The list of ICT components is exhaustive, and it continues to grow. Some components, such as computers and telephones, have existed for decades. Others, such as smart phones, digital TVs and robots, are more recent entries. ICT commonly means more than its list of components. It also encompasses the application of all those various components. It's here that the real potential, power and danger of ICT can be found.

2.3.3 The scope of ICT

The scope of ICT is not fixed, but is responsive to ongoing technological developments. This is evident in the emergence of advanced internet technology over the past few years and the resulting changes in the ways that students construct with others. Student develop capability in using ICT for tasks associated with information access and management, information creation and presentation, problem solving, decision making, communication, creative expression, and empirical reasoning. This includes conducting research, creating multimedia information products, analyzing data, designing solution to problems, controlling processes and devices, and supporting computation while working independently and in collaboration with others. Students develop knowledge, skills and dispositions around ICT and its use, and the ability to transfer these across environments and applications. They learn to use ICT with confidence, care and consideration, understanding its possibilities, limitations

69 and impact on individuals, groups

and communities. Information and Communication Technology is often used as an extended synonym or as an umbrella term for Information Technology (IT), but it is a most specific term

that

stresses

the role unified communications and the integration of telecommunications (telephone lines and wireless signals), computers

as well as necessary enterprise software, middleware,

storage, and

audio-visual systems, which enable users to access, store, transmit, and manipulate information.

The term ICT is also used to refer to the convergence of audio-visual and telephone networks with computer networks through a

single cabling or link system.

To some scholars,

ICT has no universal definition, as "

the concepts, methods and applications involved in ICT are constantly evolving on an almost daily basis."

The broadness of ICT

covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a

digital form,

e.g. personal computers, digital television, email, robots;"

therefore, one can say that

ICT is concerned with the storage, retrieval, manipulation, or receipt of digital data."

ICT delineates how these various forms of digital mediums interact with one another.

Information and Communication Technology can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teacher's professional development and more efficient education management,

governance and administration. UNESCO helps a

lot in promoting ICT in education.

The scopes of ICT in various education sectors are: 1. Information Technology in Educational Management 2. Lifelong

Learning 3. Distance Learning 4. IT-Professional and Vocational Education in Information Technology 5. Advancing

community linkages 6. Improving policy planning and management 7. Establishing and sustaining lifelong learning 8.

Facilitating skill formation 9. Lively teaching learning process. 10. Those students can find information, they need proper

instructions, they need scope for creativity, and expectations of the teacher bring forth performance.

70 11. Helping the student learn. 12. Enhance teaching. 2.3.4 Significance of ICT ICT is leveraged for economic, societal and interpersonal transactions and interactions. leT has drastically changed how people work, communicate, learn and live. Moreover, leT continues to revolutionize all parts of the human experience as first computers and now robots do many of the tasks once handled by humans. For example, computers once answered phones and directed calls to the appropriate individuals to respond; now robots not only can answer the calls, but they can often more quickly and efficiently handle callers' requests for services. Pedagogical Usages of ICT

Studies of teaching and learning in schools

around the world identify four broad stages in the way the teachers and learners use leT as a support to teaching and learning.

More than three decades ago, computers and related information technologies were introduced to educators for direct teaching and learning purposes. It started with presentation software to CAL/CBT/CAI, then moved to multimedia courseware and finally to learning management system using open and flexible learning. Supporting work performance In the initial phase, teachers use productivity tools such as word processor, visual presentation software, spreadsheet, database, email etc. to support their daily work performance. In this initial stage, there is usually an emphasis on basic operations of electronic office software. This stage of using productivity tools for teaching and learning is linked with the emerging stage in ICT development Enhancing teaching Following on and from using productivity software, comes the stage of learning how to use and develop computer assisted learning software and beginning to make use of such software in different disciplines. This stage involves the technique of integrating computer-based learning in the traditional instructional process, and is linked with the applying stage in the ICT development model. Various instructional packages were selected, developed and used to enhance traditional classroom teaching. Facilitating learning The next stage involves using various types of instructional software to facilitate student learning. The key point is that the teachers need to learn how to choose the most

71 appropriate tools for a particular task, and using these tools in combination to solve real life problems. This stage implies the ability to recognize situations where various multimedia, simulation and modeling software can be utilized for teaching and learning. This stage is linked with the infusing stage in the ICT development model. Creating innovative learning environments The fourth and last stage involves specializing in the use of network based resources to create meaningful environment with rich affordable for innovative learning models so that it occurs when one enters more deeply into the shared learning environment that creates and transforms the learning situation. This is a completely new way of approaching teaching and learning using technology. It helps to develop, deliver and manage open & flexible learning program. This stage is linked with the transforming stage in the ICT continuum model. 2.3.5

Functional Approach of leT Usage Several attempts have been made to classify the functions of ICT in education in the literature, However, the most comprehensive and well defined classification describes the following functions of the use of ICT in education: (a) ICT as Object (b) ICT as Assisting Tools (c) ICT as Management of Learning and (d) ICT as Medium of Teaching & Learning. ICT as Object It refers to learning about ICT. Mostly organized in a specific course. What is being learned depends on the type of education and the level of the students. ICT curriculum prepares students for the future occupation and social life. There are various types of short term, long term and modular courses being offered in this area to satisfy the ever growing demand of skill personnel in the software industry. ICT as an Assisting Tool ICT is used as a tool, for example while making assignments, collecting data and documentation, communicating and conducting research.

It is independent from subject content. Generic assisting tools may be general or specialised in their application. Some of the examples of generic tools have been described below: Word Processing and Publishing Tools-preparing, editing and producing written, tabular and graphical material; Freehand and Geometric Drawing Tools-devising and producing pictorial representations of events, ideas and art effects;

72 Database Tools-searching, storing, categorizing and arranging data and information; Statistical Analysis and Modeling Tools-deducing trends and patterns, organizing and synthesizing information; Multimedia and Authoring Tools-capturing, editing, modifying integrating text, graphics, audio & video information; Simulation Tools-devising and testing ideas and hypotheses, and projecting future consequences; Animation Tools-creating editing and modifying 2D and 3D animation. 2.3.6 ICT as Medium of

Teaching and Learning This refers to ICT as a tool for the purpose of teaching and learning itself.

More than three decades ago, computers and related information technologies were introduced to educators for direct teaching and learning purpose. It started with CAL/CBT/CAI, then moved to Multimedia courseware and finally to Web Based instruction & Computer Mediated Communication (CMC) system. Using CAI for drill and practice of basic skills can be highly effective according to a large body of data and a long history of use. Students usually learn more, and learn more rapidly, in courses that use computer assisted instruction (CAI). This has been shown to be the case across all subject areas, from preschool to higher education, and in both regular and special education classes. Effective instruction requires presenting information, guiding the learner, practice, and assessment of student learning. The use of a computer to provide any combination of these factors may be termed computer-assisted instruction. It should be noted that there is no requirement that the computer provides all of these elements. Rather, any combination of these can be appropriate computer intervention in the learning process. Interactivity, flexibility and learner control is the hallmark of these technologies. The application of educational technologies to instruction has progressed beyond the use of basic drill and practice software, and now includes the use of complex multimedia products and advanced networking technologies. Today, students use multimedia to learn interactively and work on class projects. They use the Internet to do research, engage in projects, and to communicate. The new technologies allow students to have more control over their own learning, to think analytically and critically, and to work collaboratively. An increasing body of evidence suggests positive results of the ICT integration with teaching and learning. The type, features, styles, usage and pedagogical base of these transformations from CAL to WBI has been described below.

Type: Computer Assisted Learning (CAL)
73 Features: Interactivity, Flexibility and Learner Centered Styles: Drill & Practice, Tutorials, Simulation and Instructional Games Usage: Self Paced Instruction Pedagogical Base: Primarily Behavioral Objectives Type: Multimedia Based Instructional Software Features: Interactivity & Multi model Instruction Styles: Drill & Practice, Tutorials and Simulation & Modeling Usage: Self-Paced Instruction Pedagogical Base: Primarily Behavioral Objectives & Constructivism Type: Web Based Instruction Features: Interactivity, Just in time & On demand Instruction Styles: Computer Supported Collaborative Learning Environment Usage: Asynchronous & Synchronous Virtual Class Room Pedagogical Base: Primarily Constructivism

2.4 Psychological Bases for ICT among Teachers and Learners

2.4.1 Different psychological principles

The fast budding influence of Information and Communication Technology (ICT) and e-learning in content development and content delivery can be seen in every sector of education. Learning and teaching whether it is through actual classroom settings or through technological applications utilizes many psychological principles knowingly or unknowingly. The most commonly used or heard Schools of Psychology are Behaviourism, Cognitivism and Constructivism. All these schools of psychology are developed based on theories formulated by many psychologists and are being effectively applied in actual classroom situations. However, the application of these psychological principles in e-Learning is not much thought of. e-Learning could be more efficient and effective by the contextual use of different psychological principles. An innovative application of computer in the pedagogy and learning process is e-learning. E-Learning may be network based, intranet based or internet based, which includes

74 text, video, audio, animation and virtual environments. The facility of Internet and Intranet enables e-learning that allows learning anytime and anywhere. E-Learning provides faster learning at reduced costs, increased access to learning and clear accountability for all participants in the learning process. The fast budding influence of Information and Communication Technology (ICT) and e-learning in content development and content delivery can be seen in every sector of education. The American Society for Training and Development (ASTD) defines e-learning as a broad set of applications and processes which include web-based learning, computer-based learning, virtual classrooms, and digital. The definition of e-learning varies depending on the organization and how it is used; but basically it involves electronic means of communication, education, and training. Learning and teaching whether it is through actual classroom settings or through technological applications utilizes many psychological principles knowingly or unknowingly. Some of the predictions about the future of education tend to focus not so much on the technology, but on the intersection between pedagogy and technology, and its effect on psychology, epistemology and teaching praxis. The most commonly used or heard Schools of Psychology are Behaviourism, Cognitivism and Constructivism. The early use of technology in educational settings reflected a behaviourist view of teaching and learning. Behaviourism discusses behaviours that can be observed and does not fully consider the thought processes that go on in the learner's mind. Cognitivism differs from behaviourism in that it deals with the internal mental processes of the mind and how these processes could be used to endorse effective learning. We know that 'Learning is relatively permanent changes of behavior through some experience'.

2.4.2 Use of ICT in education from the point of view of learning

ICT is used in education for supporting students' learning or for development of competences, in other words for helping to reach the goals of education. The quality of learning depends on how ICT is used in learning. According to Bransford, Brown, & Cocking (1999) meaningful learning engages students in tackling the topic to be learnt in such a way that they create meaningful and understandable knowledge structures on the basis of a goal for learning. Based on them, it is possible to present an outline of learning with a specific focus on ICT use in learning. Learning represents each individual learner's own personal knowledge construction process which presupposes each learner's active, goal-oriented and feedback-seeking role. The constituents of meaningful learning are the following: activity, intention, contextualization, construction, collaboration, interaction, reflection, and transfer. These serve as development and selection criteria when choosing teaching and learning activities emphasizing ICT use. Activity and intention mean that students take responsibility over their own learning. Thus they set, together with a teacher, their learning goals and proceed according to the plan to reach the goals they set. This process may be facilitated, for example, by guiding students to plan by themselves or in small cooperative groups. On the other hand, students neither master the logical structure of the subject nor recognise their own biased preconceptions, and therefore students goal setting needs to be supported and guided by the teachers. Thus, activities that support co-operative planning and evaluating learning are important for learning. Learning could also be enhanced by self-evaluating activities. Bransford and Donovan (2005) emphasize the role of self-evaluation in learning. They suggest that a teacher should provide support for students self-evaluating for example by giving them opportunities to test their ideas by building things or making investigations and seeing then whether their preliminary ideas were working. Feedback is important for learning. Reflection means that students examine their own learning and develop metacognitive skills to guide and regulate their learning. Metacognitive skills are necessary for planning and evaluating one's own work. These skills make also learning a self-regulatory process in which the student becomes less dependent of the teacher. For example, self-evaluating or evaluating in a small group, taking multiple-choice tests, doing exercises and consulting answer keys support developing reflective and, moreover, metacognitive skills. Collaboration and interaction mean that students actively take part in group activities and support each other by discussing and sharing knowledge. Learning new concepts presupposes a dialogue both between the teacher and the students and amongst the students (explaining, debating, questioning). In addition to face-to-face interaction ICT offers several possibilities to share ideas through newsgroups, email, a LMS, or through social media like Facebook. Construction means that students combine their earlier knowledge with the new topics to be learnt and thereby tailor information structures that they can comprehend. Therefore, the teacher should encourage students to bring up their previous views and beliefs and thereby construct new knowledge on the basis of this shared information. For

76 example, prior to starting reading or writing, students need to be guided to bring up their prior views on the subject to be dealt with. Respectively, before an investigation or other practical activity students should be encouraged to present his or her prediction or even supposition. Contextualization means that learning takes place in real life situations or in situations simulating real-life instances. This in turn presupposes that the learning setting allows for authentic and real-life learning experiences. For example, when using a search machine (Google), students should be encouraged to look information in different sources. This enables them to treat the concepts in various contexts and thereby deepen the meanings these concepts acquire. It pays off also to keep in mind that the quality of all Internet-based sources needs to be checked carefully to ensure that the facts are right (source criticism). From the point of view of interestingness, the context in which science ideas are learned, rather than the ideas themselves, has important influence on learning. For example, when writing it is crucial that students write to prospective readers other than their teacher. Learning is cumulative and, therefore, students are aided in noticing how a new concept or skill is related to other already familiar concepts or the network of concepts or skills. Learning of science process and of ICT skills are similar processes. In both areas there are low level and high level skills. For example, before a student learns to use a LMS he or she should learn to use word processing and a search machine. Consequently, students should be supported in learning new skills and in internalizing the new concepts and in building conceptual networks in the given field. The previous characteristics of learning activity may be realized through the use of ICT. For example, by employing the Internet in the inquiry-based learning, students have access to meaningful information of the topic. When looking up information in varied sources, students at the same time actively structure the flow of information they encounter into meaningful entities in order to be able to complete tasks. Similarly, this exploration of information in varied sources forces students to evaluate the reliability of both the information and the sources they use. Within an activity students could be encouraged to work together and also to systematically evaluate their activities. Several studies have indicated that information processing, inquiry-based learning, and exploring resources via networks, are beneficial for education (Linn, 2003). 2.4.3 Use of ICT in teacher education from the point of view of motivation ICT could be used in education for supporting the development of students' motivation.

77 There are many concepts that can be used to describe motivational aspects of teaching and learning. Here we base our analysis on Self Determination Theory (SDT) (Ryan & Deci, 2000) and Theory of Interest (Krapp, 2007). According to SDT, a student's way of thinking has an important role in the process of motivation. Motivated behaviour may be (i) self-determined or (ii) controlled and they involve different reasons for behaving. Self-determined or autonomous behaviour is behaviour which arises freely from one's self. Controlled behaviour, in contrast, means that the behaviour is controlled by some interpersonal or intrapsychic force, like a curriculum or a task. The motivation styles in SDT are: (i) amotivation, (ii) extrinsic motivation and (iii) intrinsic motivation. Intrinsic motivation has positive effects on learning, in particular, to the quality of learning. Intrinsically motivated behaviours are based on the need to feel competent and self-determined (Deci & Ryan, 2000). Extrinsically motivated behaviour is instrumental in nature. Such action is performed for the sake of some expected outcome or extrinsic reward or in order to comply with a demand. Central to SDT is the concept of basic psychological needs assumed to be innate and universal. These needs are the need for autonomy, the need for competence, and the need for relatedness (need to belong to a group). The fulfillment of need for competence is especially problematic in the case of ICT because the required studies are perceived as being difficult. This perceived lack of competence has an effect on interest and motivation. Furthermore, the interest of the student in a learning activity has an effect to motivation. Consequently, the features of a learning activity and behaviour of a teacher (trainer) could increase the motivation of a learner (student teacher). This is because self-determined learning occurs when a learning activity itself supports fulfillment of basic psychological needs or development of interest. A closer analysis on motivational aspects is based on SDT; ICT is used for motivating or for increasing students' interest for learning. How motivating learning with ICT is for students depends on how ICT is used in this context. Interest is a content-specific motivational variable (Krapp, 2007). Interest is approached from two major points of view. One is interest as a characteristic of a person (personal

78 interest) and the other is interest as a psychological state aroused by specific characteristics of the learning environment (situational interest). Personal interest is topic specific, persists over time, develops slowly and tends to have long-lasting effects on a person's knowledge and values (Hidi, 1990). Pre-existing knowledge, personal experiences and emotions are the basis of personal interest (Schiefele, 1991). Situational interest is spontaneous, fleeting, and shared among individuals. It is an emotional state that is evoked by something in the immediate environment and it may have only a short-term effect on an individual's knowledge and values. Situational interest is aroused as a function of the interestingness of the topic or an event and is also changeable and partially under the control of teachers (Schraw & Lehman, 2001). Although students themselves primarily produce their motivation, it can be enhanced and learned. In practice, a teacher can offer optimal challenges and rich sources of motivating stimulations through choosing the learning activities. Therefore, in addition to previously discussed features of self-determined and controlled behaviour of a learner, it is appropriate to analyse also features of a learning activity which could increase motivation of a learner. This is because self-determined learning occurs when learning activity itself is considered as interesting, enjoyable, or personally important by a learner. From the point of view of the SDT, the motivational features of a learning activity could be classified in five categories: I. autonomy-supporting activities/teacher, through • choosing student-centred learning methods like "open ended" inquiry and other tasks where students have some choices how to plan or study. • collaborative learning activities which support feeling of autonomy, • co-planning of the learning activities. II. Use of ICT where students have • choices, possibilities for planning and evaluating one's own activities, and • support to the feeling of effectiveness and importance of working. III. Support to students' feeling of competency, through • choosing inquiry and other tasks, which are possible for the student to solve; • choosing and using constructive evaluation methods, like self assessment, portfolio evaluation

79 • informal discussions, which help students to recognise that they are good at an activity or do the activity well, • giving support to the feeling that the activity has some value or use for the student. IV. Support to students' social relatedness, through • choosing tasks, collaborative learning activities, co-planning, and ICT use which help students to feel close to peers • giving support to the feeling that the students can trust each other and feel themselves close to each other, • supporting the formation of learning communities over social media and various forms of networking v. Support to interest and enjoyment, through • waking up curiosity by choosing surprise-evoking inquiry and other activities or tasks, • organising enjoyable, fun-evoking and interesting activities, like through choosing interesting web pages or simulations, • choosing activities which hold attention, • interesting content (new materials or new knowledge) and context (human being, occupations, technology, or history). 2.5 Development of ICT - Stages, Requirement and Process 2.5.1 Stages of ICT development Countries in the various region of the world are at different stages of ICT development, in terms of both infrastructure and application of ICT in teaching and learning. Within any such country, there may be uneven development from region to region, area to area, and even from institution to institution. In view of the above considerations, it is useful to have a model for ICT development for developing competency standards for teacher development. Such a model can be a representation of the essential characteristics of ICT development to provide a scaffold or a framework. It can also be useful to show the inter-relationship of various components within a system and thus helping to locate its position in the whole framework. Based on the UNESCO publication, a model has been presented that can be useful in

80 determining the stage of ICT development reached by a country, a district, or even an individual institution. As mentioned earlier, this model is derived from international and national studies of ICT development that have identified a series of broad stages that educational system and institutions typically proceed through, in the adoption and use of ICT. The model is presented here to provide a framework for stages of pedagogy technology integration. Studies of ICT development in both developed and developing countries

identify at least four broad approaches through which educational systems and individual institutions typically proceed in their adoption and use of ICT. Sometimes, the number of stages identified varies, though there is a general consensus that the introduction and use of ICT in education proceeds in broad stages that may be conceived as a continuum or series of steps. These steps, termed Emerging, Applying, Infusing, and Transforming, are elaborated in

Figure 1. Figure 1: Stages of ICT development

Emerging Stage: Schools at the beginning stages of ICT development demonstrate the emerging approach.

Such schools have just started on their journey in the ICT field with a skeleton computing infrastructure either donated or purchased by the school authority.

In this initial phase, administrators and teachers just start to explore the possibilities and consequences of using leT for school management and adding leT to the curriculum. Applying Stage:

Those

schools, in which a new understanding of the contribution of K'T to learning

81 has developed,

exemplify

the applying approach. In this secondary

phase, administrators and teachers use leT for tasks already carried out in school management and in the curriculum.

Schools at the applying approach phase adapt the curriculum in order to increase the use of ICT in various subject areas with specific tools and software such as drawing, designing, modelling and application specific tools. Infusing Stage: At

the third stage, the infusing approach involves integrating or embedding ICT across the curriculum, and is seen in those schools that now employ a range of computer- based technologies in laboratories, classrooms, and administrative offices. The curriculum begins to merge subject areas to reflect real-world applications.

In the infusing approach to ICT development, ICT infuses all aspects of teachers' professional lives in such ways as to improve student learning and the management of learning processes.

Transforming Stage: Schools that use ICT to rethink and renew school organization in creative ways are at the transforming approach. ICT becomes an integral though invisible part of daily personal productivity and professional practice. The

focus of the curriculum is now learner-centered that integrates subject areas in real-world applications. 2.5.2

Characteristics of schools related to ICT development Along with approaches to ICT development noted above, there are various characteristics of schools, or aspects of school leadership, that relate to a school's progress in ICT

development. Below are general descriptions of the more important of these characteristics of schools that have an

effect on ICT development within schools. Vision Vision refers to the aspirations and goals of both individuals within a school and the school system as a whole. As the school advances, the mission statements should become clearer and

provide a basis for decision-making. Mission statements should help individual members of the learning community visualize a school's aspirations for the future and act in harmony. Philosophy of learning and pedagogy Ways in which

teachers and students interact and how the school is managed for learning are part of what is meant by a school's philosophy of learning and pedagogy. These philosophies will necessarily characterize the ways in which ICT is

incorporated into a

82 school. A setting that is dominated by the teacher as the main provider of subject content is adopting a teacher-centred philosophy. The teacher controls the use of ICT in such a setting as well. A learner centred philosophy, by

contrast, describes a setting where content comes from a variety of resources, and where projects are chosen and designed by the students. ICT tools and resources are selected by students in ways that match the aims of a project best.

These contrasting approaches to pedagogy are sometimes referred to as instructivist and constructivist respectively.

Development plans and policies How a school's vision and teaching philosophies are carried out is translated into development plans and policies. In the detailed steps of such plans and policies, goals and objectives are further defined

providing interim and long-term targets. Policies are set, a budget is allocated, facilities are determined, roles are defined, tasks are delegated, and an evaluation plan is created to define the direction ICT development will take. Facilities and

resources The learning environment in which ICT is used requires certain facilities and resources. Facilities include basic infrastructure such as electrical wiring, Internet access, lighting, air-conditioning, and space. Decisions on inclusion or

lack of ergonomic design and choice of furniture impact not only on use of ICT, but also on the health and well being of users. Resources include various types of technological devices from computers with peripherals, video equipment, and

specialized tools like digital microscopes. Further resources include various types of software, as well as traditional tools like books, videos, and audiotapes. Understanding the curriculum An understanding of the curriculum affects the

progression of ICT in the curriculum in following various stages of development. First, is an awareness stage in which students become ICT literate with regard to what technology is available and how it might be used. Second, as students

learn basic skills, they begin to apply various ICT tools to their regular learning assignments and projects.

83 Third, as students become more capable and confident with ICT, they begin to integrate and overlap both subject areas and tools. Last, is the applied use of ICT in which students are now enabled to address larger, more complex, real-world professional issues. Professional development of school staff In parallel with the curriculum for students, there must be professional development of the staff within a school. The personal productivity and professional practice of teachers are enhanced with the use of ICT. First, is an awareness stage in which teachers and staff become ICT literate with regard to what technology is available and how it might be used. Second, as teachers and staff learn basic skills, they begin to apply various ICT tools to their regular tasks and projects Third, as teachers and staff become more capable and confident with ICT, they begin to integrate and overlap both subject areas and tools. Last, is a change in professional practice in which teachers are now enabled to design lessons to incorporate larger, more complex, real-world projects using ICT tools and resources. As ICT is introduced into school systems, there is a tendency to move from discrete skills training to reflective practice and integrative professional development. Budgetary allocation and provision for release time for teacher professional development seriously impact on the ability of a school system to incorporate ICT in a meaningful way. Community involvement Community involvement may include parents, families, businesses, industry, government agencies, private foundations, social, religious and professional organizations, as well as other educational institutions such as vocational schools and universities. Community involvement can come in the form of donations of equipment and resources, or may be in human resources provided for training and technical assistance. As a community contributes to a school, so the school can give back in many ways. For example, a school may decide to provide community members with evening access to computer labs, or have students offer training to parents. The use of ICT provides an opportunity for a school and its students to interact with both local and global communities. Interaction may range from building web sites for community organizations, to sharing projects with remote schools.

84 Assessment Assessment includes both assessments of students as well as overall evaluation of a school system, two aspects that are intricately interwoven. An improvement in the one should predicate an improvement in the other. Means of student assessment should reflect choices in learning pedagogy and an understanding of ICT in the curriculum. For example, in the emerging and applying stages of ICT, assessment may be linked to pencil and paper tests, whereas in the infusing and transforming stages project based portfolios may be more appropriate. Each part of a school system needs to be evaluated to determine its impact on learning. Assessment should inform practice and support the management of learning. Assessment should allow a system to determine whether outcomes have been met, and then reviewed and revised accordingly. Budget allocations, policies, and procedures for ICT should match vision, teaching philosophies, and curriculum choices.

2.5.3 Process of ICT development

Teaching and learning are best thought of, not as separate and independent activities, but rather as two sides of the same coin, interconnected and interrelated. Studies of teaching and learning in schools around the world identify four broad stages in the way that teachers and students learn about and gain confidence in the use of ICT.

Discovering ICT tools The first stage that teachers and learners go through in ICT development is of discovering ICT tools and their general functions and uses. In this discovery stage, there is usually an emphasis on ICT literacy and basic skills. This stage of discovering ICT tools is linked with the emerging approach in ICT development. Learning how to use ICT

tools Following on from the discovery of ICT tools comes the stage of learning how to use ICT tools, and beginning to make use of them in different disciplines This stage involves the use of general or particular applications of ICT, and is linked with the applying approach in ICT development.

Understanding how and when to use ICT tools The next stage is understanding how and when to use ICT tools to achieve a particular purpose, such as in completing a given project. This stage implies the ability to recognize situations where ICT will be helpful, choosing the most appropriate tools for a particular

85 task, and using these tools in combination to solve real problems. This stage is linked with the infusing and transforming approaches in ICT development. Specializing in the use of ICT tools The fourth and last stage involves specializing in the use of ICT tools such as occurs when one enters more deeply into the science that creates and supports ICT. In this stage students study ICT as a subject to become specialists. Such study concerns vocational or professional education rather than general education and is quite different from previous stages involving the use

of ICT tools. 2.6 Use of ICT in Developing Collaborative Networks for Sharing and Learning such as -internet, E-mail, Tele-teaching,

Teleconferance 2.6.1 ICT in developing collaborative network:

The potential of each technology varies according to how it is used.

Haddad and Draxler identify at least five levels of technology use in education:

presentation, demonstration, drill and practice, interaction, and collaboration.

Each of the different ICTs—print, audio/video cassettes, radio and TV broadcasts, computers or the Internet—may be used for presentation and demonstration, the most basic of the five levels.

Except for video technologies, drill and practice may likewise be performed using the whole range of technologies.

On the other hand, networked computers and the Internet are the ICTs that enable interactive and collaborative learning best;

their full potential as educational tools will remain unrealized if they are used merely for presentation or demonstration.

ICTs

stand for information and communication technologies and are defined, for the purposes

of this primer,

as

a "

diverse set of technological tools and resources used to communicate,

and to create, disseminate, store, and manage information." These technologies include computers,

the Internet, broadcasting technologies (radio and television), and

telephone

to be used and their modalities of use. 2.6.2

Teleconferencing and

its educational use:

Teleconferencing refers

to "interactive electronic communication among people located at two or more different places."

There are four types of teleconferencing based on the nature and extent of interactivity and the sophistication of the technology: 1) Audio conferencing;

86 2)

Audio-graphic conferencing, 3) Videoconferencing;

and 4) Web-based

conferencing.

Audio conferencing involves the live (real-time)

exchange of voice messages over a telephone network. When low-bandwidth text and still images such as graphs, diagrams or pictures can also be exchanged along with voice messages, then this type of conferencing is called audio graphic.

Non-moving visuals are added using a computer keyboard or by drawing/writing on a graphics tablet or whiteboard.

Videoconferencing allows the exchange not just of voice and

graphics but also of moving images.

Videoconferencing technology

does not use telephone lines but either a satellite link or television network (

broadcast/cable). Web-based conferencing, as the name implies, involves the transmission of text, and graphic, audio and visual media via the Internet;

it requires the use of a computer with a browser and communication can be both synchronous and asynchronous.

Teleconferencing is used in both formal and non- formal learning contexts

to

facilitate teacher-learner

and learner-

learner discussions, as well as to access experts and other resource persons remotely.

In open and distance learning, teleconferencing is a useful tool for providing direct instruction and learner support, minimizing learner isolation.

The audio-graphic teleconferencing network aims to provide continuing education and academic upgrading to nurses in parts of Tianjin municipality where access to nursing education has been extremely limited. Various higher education institutions using teleconferencing in their online learning programs include the Open University of the United Kingdom, UIN Ar-Raniry (Universiti Tun Abdul Razak) in Malaysia, Open University of Hong Kong, and Indira Gandhi National Open University. 2.6.3 Telecollaboration Online learning involving students logging in to formal courses online is perhaps the most commonly thought of application of the Internet in education. However, it is by no means the only application. Web-based collaboration tools, such as email, message boards, real-time chat, and Web-based conferencing, connect learners to other learners, teachers, educators, scholars and researchers, scientists and artists, industry leaders and politicians-in short, to any individual with access to the Internet who can enrich the learning process. The organized use of Web resources and collaboration tools for curriculum appropriate purposes is called telecollaboration.

Judi Harris defines telecollaboration as "an

87 educational endeavor that involves people in different locations using Internet tools and resources to work together. Much educational telecollaboration is curriculum- based, teacher-designed, and teacher-coordinated. Most use e-mail to help participants communicate with each other. Many telecollaborative activities and projects have Web sites to support them." The best telecollaborative projects are those that are fully integrated into the curriculum and not just extra-curricular activities, those in which technology use enables activities that would not have been possible without it, and those that empower students to become active, collaborative, creative, integrative, and evaluative learners (see Table 1). There are currently hundreds of telecollaborative projects being implemented worldwide and many more that have either been completed or are in development. 2.6.4 Use

of

radio and TV broadcasting in education:

Radio and television have been used widely as educational tools since the 1920s

and

the 1950s, respectively.

There are three general approaches to the use of radio and TV broadcasting in education: ●

direct class teaching, where broadcast programming substitutes for teachers on a temporary basis; ●

school broadcasting, where broadcast programming provides complementary teaching and learning resources not otherwise available; and ●

general educational programming over community, national and international stations which provide general and informal educational

opportunities. 2.6.5

Internet

The

Internet has introduced improvements in technology, communication and online entertainment, but it is also incredibly useful for education purposes as well. Teachers use the Internet to supplement their lessons, and a number of prestigious universities have opened up free online lectures and courses to everyone. It has even allowed retired teachers to read to and educate children in poorer countries. Widespread use of the Internet has opened up a substantial amount of knowledge to a much broader range of people than ever before. The development of Internet technologies has raised the education level in all countries and it has changed the way students are being taught at schools. That's why it is very important for the present generation that they provide internet education for their young generations.

88 Internet applications respond to students and other people questions in real time. Students are seeing Google as a new Teacher and the Internet as a school. That's why it is important for teachers to use information technology in education. The Internet has been crucial in the evolution of our education system in various ways. Teachers can use the internet as a modern tool for education. Education department should provide the infrastructure that teachers and student can use to get benefits of technology in education. Students are always curious and creative by nature. They are smart enough to know how they can use the internet to search for almost anything. It doesn't matter if they are studying at a private school or government school. But at the same time, there is a difference in the ways they use the internet for education in schools. In private schools, teachers will teach about computer and internet skills to students. The students note the homework that needs to be done related to that computer class. And do you know how some students do this? They are forced to go to a cyber cafe with their parents to collect data that they have to include in their assignments. This is not good. If students are taking the help of cyber boy to collect the data for their homework I don't think these students learned anything in this process. But the one thing they do learn is that money can work wonders anywhere. The teaching process that schools are following is not good and they need to use the internet as a tool, not the source. The source is a student. Teachers need to explore the creativity in their student's minds. And then students can learn and solve problems using their own creativity and innovative thinking and not by the direct work of parents/ tuition. If necessary the parents can help with encouragement but they should not do the homework themselves. Completing the assignment given is not as important as the learning process that a child goes through while doing it. It is essential for parents to provide computer and internet facilities to their children. It is not that easy for parents to pick up modern technologies as fast as their children but it is very important that parents also know about the importance of computers literacy and internet education. In government school especially in India, the level of computer and internet infrastructure is very low. I know government school or school in villages provide computer education only after 9th or 10th class. Within that little time too, a government school student barely gets to learn much because there are 5- 10 students who are assigned a single computer. It is very difficult to learn this way. I agree that this is the best time to teach them about the advanced computer skills but this is not the way to do it. The lack of Information technology infrastructure in schools is a big question mark against

89 Government policies towards computer education. It feels bad to see on the news that computer teachers are on strike again. This happens once a year. The government must think, how computer teachers can teach with low-quality IT infrastructure in government schools and a small salary? 2.6.6 Electronic Mail Electronic mail is a method of exchanging messages via computer networks and the Internet; the addressee receives the message virtually instantly. Using e-mail requires creating mailbox with an e-mail service provider. The mailbox is protected with a username and password. Advantages: An e-mail message can be sent to many recipients at once; A message can have one or several file attachments; Users can access their e-mail account from any computer connected to the Internet; No paper needed; Very low direct and indirect costs; Messages can be received on mobile devices. Disadvantages: The advantages of e-mail are also used by spammers and computer viruses; Attached files can contain viruses. 2.7

Use of ICT to Simplify Record Keeping: Information Management in Educational Administration in Special and Inclusive Setting 2.7.1 Role of ICT in record keeping and information management in school administration ICT makes dynamic changes in society. It is influencing all aspects of life. The influences are felt more and more at schools. Because ICT provides both students and teachers with more opportunities in adapting learning, teaching and managing the individual needs, society is forcing schools to aptly respond to this innovation. It provides newer and more effective ways of mitigating some of the challenges being faced by the educational system of the country. These technologies distinguish themselves by their

90 rapid evolution and revolution, continuously changing the modes of engagement with them. A decade long infusion of computers, and more recently ICT, has demonstrated varying impacts on learning. In the current information age, educational institutions are expected to play a crucial role as the engine for knowledge generation and learning environment. In this regard ICT becomes the vital means to facilitate this task. ICT has become an essential part of our everyday life, accordingly this integration in school improvement is not only for the purpose of teaching and learning, but also for educational management use, it has become one of the most effective factors in the school improvement. ICT plays a vital role in improving the functional effectiveness of school system. ICT can help the school administrators to improve administrative tasks such as school record keeping system and school information management system. 2.7.2

Record Keeping School records are books, documents, files and CD ROM in which is embodied information on what goes on in school (e.g. scholastic, co-scholastic, non-scholastic activities and important events etc), the school plant as well as other relevant information focusing on the growth and development of the school. The school records are official transcripts or copies of proceedings of actions, events, other matters kept by the school administrator, school records could be viewed as authentic registers or instruments or documents of official accounts of transaction or occurrence which are preserved in the school's office. Therefore, every school must keep certain specified records. Importance of school records: School records keeping includes the fact that school records tell the history of the school and are useful historical sources. 1. Tell the history of the school and are useful historical sources. 2. Facilitate continuity in the administration and management of a school. 3. Facilitate and enhance the provision of effective guidance and counselling services for students in the social, academic career domains. 4. Provide information about student's special educational or other needs, students current level of performance, students medical history etc. 5.

Provide information needed on ex-students by higher and other related institutions and employers of labour for admission or placement.

91 6. Facilitate the supply of information to parents and guardians for the effective monitoring of the progress of their children/wards in schooling or performance. 7. Provide data needed for planning and decision making by school heads, ministries of education and related educational authorities. 8. Provide a basis for the objective assessment of the state of teaching and learning in a school, including staff and student performance by supervisors and inspectors. 9. Provide information for the school community, the general public employers as well as educational and social science researchers for the advancement of knowledge. 10. Enable school heads to collate information on pupils and staff for decision making by higher authorities, the law courts security agencies and other related government agencies when occasion demands. 11. Provide a mechanism such as the school timetable for the productive management of time and coordination of school work and activities. 12. Serve as data bank on which both the school head and staff and even students can draw on. Some Important School Records • Admission and Withdrawal Register: This is a permanent record book into which is entered information regarding the entry and exit, including the details of the education and progress of each pupil that ever passes through the school. • Attendance Register: An attendance register is a book in which the presence or absence of students in a school is recorded on a daily basis. It is a statutory record that must be kept by every school. This record is kept on individual class basis. The class teacher is the custodian of this record. • Log Book: The log book is a historical record of events that have significant effects on the schools' activities. • The Visitors Book: The book is meant for recording the visits of important personalities, including officials and from the ministries of education or other related government agencies or any other school related visitors. • Staff and Students' Personal Files: It is necessary that the school should have as much information on every teacher and student as possible without violating their privacy.

92 • Cumulative Record Folder: Students' cumulative record folder is a storehouse of information on students' cognitive, affective and psycho-motor development. • Students' Report Sheet/Card' 1. It keeps data on students' academic performance. 2. It assists in monitoring students' academic progress. 3. It is a compliment to cumulative record folders. • Lesson Notes/Plan 1. It gives information on what a teacher plans to teach the students at a period of time. 2. It clearly shows the teachers' level of preparedness and their level of competence. 3. It challenges teachers for the task ahead. • Scheme and Record of Work Book: It reflects estimate of academic work which teachers expect to accomplish in each subject based on number of lessons they will have during each term. Pertinently it shows the ability of the teacher to organize the year's work and his/her resourcefulness and enthusiasm regarding the progress of the pupils. • Staff Time Book and Movement Book 1. They provide information on when staff report and or close at work. 2. They promote regular attendance and punctuality 3. They help checking truancy and gross indiscipline in staff. • Transfer and Leaving Certificate: Transfer and leaving certificate is the formal exit of the student after completion of study or leaving during the course of study in a school. • Library records: The library will have many records like stock register, issue register etc. Many of the routine function of the library can be automated using library management software. • Stock register: it is the record of all equipments and materials available in the school including the laboratories ●●●●● Cash Register 1. It is a record of financial transactions in schools.

93 2. It gives information about income and expenditures. 3. It promotes accountability and prevents corrupt practices. • Potential

of ICT in Record Keeping The usefulness of keeping school records with Information and Communication Technologies (ICT) is for the following reasons: ●●●● Administrative Efficiency:

One major setback in achieving the educational objective of the secondary education is inefficiency of the principal in keeping some

records. With the introduction of information and communication technologies such as computers, digital libraries, e-mail, internet and so on where information are stored and disseminated, principals can do better in keeping records, and become effective and efficient in performing their prescribed roles

as administrators. ● Availability of Information:

Information and Communication Technologies will help maintain adequate and accurate records in our schools and make it available with ease. ●

Easy Retrieval: It also leads to easy accessibility and dissemination of information on school records, will become available for national planning, financial budgeting, effective implementation of the educational programs and policies. School record keeping

is all about information collection, storage, retrieval, use, transmission, manipulation and dissemination for the purpose of enriching communication, decision-making and problem solving ability in the school system. It is therefore necessary that this process be as accurate and accessible as possible. Using ICT in keeping school records will help to facilitate and enhance the administration of the school towards achieving the goals of the secondary education. 2.7.3

Use of ICT in Information Management in Schools. E-mail: Schools can create and send out a classroom newsletter to keep parents up to date by e-mail. They can collect the e-mail addresses in the beginning of the school year or give parents the opportunity to sign in for the newsletter on the school website. Individual teachers can send e-mails when there are problems in the classroom or for giving parents good news about the learning process of their children. E-mails can be sent individually or in group. It is very easy to make groups of addresses in the most

94 common e-mail programs. Parents can read and respond to e-mails whenever they have time. E-mails are also available in the LMS and students contributions in terms of chats and forum postings get e-mailed automatically by the system. Website or Blog: On the school website all information of the school such as contact information, expectations, school rules, about the school and the teachers, how to use the internet at home, etc can be showed. The website can also have a calendar with useful information about school trips, parental evenings, and a map with pictures of activities with learners, etc. A school or class can make its own website on hired web space or can use free hosting web sites.

Many schools are using free blogging services from Google and word press to provide information to parents, students and public in general. Online Survey: Technology currently permits to get quick feedback from parents through online survey. Tools like Google form and survey monkey can be easily set up to get the information from parents and community members. These tools not only collect the information but perform the basic analysis and the outputs are

provided automatically for quick decision making. Virtual Learning Environments: A virtual learning environment (VLE) is a software system designed to support teaching and learning in an educational setting. A VLE will normally work over the Internet and provide a collection of tools such as those for assessment (particularly of types that can be marked automatically, such as multiple choice) or self-evaluation, communication through discussion boards, uploading of content, return of students' work, peer assessment, administration of student groups, collecting and organizing student grades, questionnaires, tracking tools, etc. New features in these systems include wikis, blogs, RSS and 3D virtual learning spaces. It can be seen that the VLE or the Learner Management Systems (LMS) have its own inbuilt communication

modules to interact with the learners which in turn can be monitored by parents at home. MOODLE is one of the popular open source LMS. You can review the features of MOODLE from its website at www.moodle.org Media Sharing: currently it is possible to share various kinds of media online. Most popular one is sharing of videos through online video sharing sites like You Tube. Schools can use this to communicate with parents by sharing school programme related videos, videos for training parents on child rearing practices, helping students manage stress, time etc. School related audio programme could be podcasted using online podcasting sites. Presentations by teachers and others could be shared with parents through slide sharing sites. Images can be shared using flicker.

95 Social Networks. It is possible to use social networks like Facebook, Twitter or MSN to communicate with parents. It is possible to make groups in Facebook and share information with the parents. Parents can communicate with each other of the class of their children. They can share pictures, important information, etc. Facebook is not so difficult to work with and a lot of parents already have a Facebook account. An interesting website to teach parents to use Facebook is <http://facebookforparents.org/> Online Groups and Forums: Communicating with parents are made easy using forum and e-mail groups like Google groups and Yahoo groups. The school can create specific group of parents using Google or Yahoo services to communicate each other and among parents. It is also possible to share files among the group members. SMS and Instant Messaging: School can send SMS to the parents when the child is not at school. So the parents will immediately know if their child is playing truant. When the school has to send an urgent message for parents, school can send a collective SMS, warn parents or an individual SMS to contact a specific parent. Now days instant messaging service like WhatsApp is very popular among teachers, students, and parents. The simplicity of this tool makes it easy for sending information to parents. Specific WhatsApp group could also be formed for taking up discussion on a specific issue.

2.8 Let us sum up • The integration of computers and communications offer unprecedented opportunities to the education system with its capacity to integrate and interact with each other over a wide geographic distance in a meaningful way to achieve the instructional objectives. •

The development of new broadband communication services, convergence of telecommunication with computers, recent developments in the field of communication protocol have fostered numerous proposals for the uses of leT to support the teaching and learning environment.

The growth of these communication and computer systems, their ease of use, the power and diversity of information transfer allow teachers and students to have access to a world beyond the classroom. • ICT development in education is a continuum approach along which an educational system or institution can be mapped depending on the stages of ICT development. These broad stages have been termed as Emerging, Applying, Infusing and Transforming stages of ICT development. •

ICT stands

for information and communication technology and is defined as a

96 "diverse set of technological tool and resources used to communicate, and to create, disseminate, store, and manage information." •

ICT encompasses both the internet-enabled sphere as well as the mobile one powered by wireless networks. It also includes antiquated technologies, such as landline telephones, radio and television broadcast - all of which are still widely used today alongside cutting-edge ICT pieces such as artificial intelligence and robotics. • ICT commonly means more than its list of components. It also encompasses the application of all those various components. It's here that the real potential, power and danger of ICT can be found. • The scope of ICT is not fixed, but is responsive to ongoing technological developments. This is evident in the emergence of advanced internet technology over the past few years and the resulting changes in the ways that students construct with others. • Student develop capability in using ICT for tasks associated with information access and management, information creation and presentation, problem solving, decision making, communication, creative expression, and empirical reasoning. This includes conducting research, creating multimedia information products, analyzing data, designing solution to problems, controlling processes and devices, and supporting computation while working independently and in collaboration with others. The scopes of ICT in various education sectors are: 13. Information Technology in Educational Management 14. Lifelong Learning 15. Distance Learning 16. IT-Professional and Vocational Education in Information Technology 17. Advancing community linkages 18. Improving policy planning and management 19. Establishing and sustaining lifelong learning 20. Facilitating skill formation 21. Lively teaching learning process. 22. Those students can find information, they need proper instructions, they need scope for creativity, and expectations of the teacher bring forth performance.

97 23. Helping the student learn. 24. Enhance teaching. • ICT is leveraged for economic, societal and interpersonal transactions and interactions. ICT has drastically changed how people work, communicate, learn

and live. • Studies of teaching and learning in schools

around the world identify four broad stages in the way the teachers and learners use ICT as a support to teaching and learning -

supporting work performance, enhancing teaching, facilitating learning and creating innovative learning environments. • Several attempts have been made to classify the functions of ICT in education in the literature, However, the most comprehensive and well defined classification describes the following functions of the use of ICT in education: (a) ICT as Object (b) ICT as Assisting Tools (c) ICT as Management of Learning and (d) ICT as Medium of Teaching & Learning. • An increasing body of evidence suggests positive results of the ICT integration with teaching and learning. The type, features, styles, usage and pedagogical base of these transformations from CAL to WBI has been described below. Type: Computer Assisted Learning (CAL) Features: Interactivity, Flexibility and Learner Centered Styles: Drill & Practice, Tutorials, Simulation and Instructional Games Usage: Self Paced Instruction Pedagogical Base: Primarily Behavioral Objectives Type: Multimedia Based Instructional Software Features: Interactivity & Multi model Instruction Styles: Drill & Practice, Tutorials and Simulation & Modeling Usage: Self-Paced Instruction Pedagogical Base: Primarily Behavioral Objectives & Constructivism Type: Web Based Instruction Features: Interactivity, Just in time & On demand Instruction Styles: Computer Supported Collaborative Learning Environment

98 Usage: Asynchronous & Synchronous Virtual Class Room Pedagogical Base: Primarily Constructivism • Learning and teaching whether it is through actual classroom settings or through technological applications utilizes many psychological principles knowingly or unknowingly. The most commonly used or heard Schools of Psychology are Behaviourism, Cognitivism and Constructivism. • ICT is used in education for supporting students' learning or for development of competences, in other words for helping to reach the goals of education. The quality of learning depends on how ICT is used in learning. • ICT could be used in education for supporting the development of students' motivation. • There are many concepts that can be used to describe motivational aspects of teaching and learning. • According to SDT, a student's way of thinking has an important role in the process of motivation. • Based on the UNESCO publication, a model has been presented that can be useful in determining the stage of ICT development reached by a country, a district, or even an individual institution. • Studies of ICT development in both developed and developing countries

identify at least four broad approaches through which educational systems and individual institutions typically proceed in their adoption and use of ICT. Sometimes, the number of stages identified varies, though there is a general consensus that the introduction and use of ICT in education proceeds in broad stages that may be conceived as a continuum or series of steps. These steps, termed Emerging, Applying, Infusing, and Transforming. •

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The Internet has introduced improvements in technology, communication and online entertainment, but it

is also incredibly useful for education purposes as well. • Electronic mail is a method of exchanging messages via computer networks and the Internet; the addressee receives the message virtually instantly. • ICT has become an essential part of our everyday life, accordingly this integration in school improvement is not only for the purpose of teaching and learning, but also for educational management use, it has become one of the most effective factors in the school improvement. ICT plays a vital role in improving the functional effectiveness of school system. ICT can help the school administrators to improve administrative tasks such as school record keeping system and school information management system.

2.9 Check your progress Define ICT What are the components of an ICT system? What are the scopes of ICT in various education sectors? What are the use of ICT in education from the point of view of learning? Explain ICT in developing collaborative network.

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Unit - 3 □ Use of Multimedia in Education Structure

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References 3.1 Introduction There has been a rapid growth in recent years in the uses of digital technologies in education, which mirrors the increasing importance of the use of these technologies in the world in general. In mainstream education in many parts of the world, the uses of digital technologies have been constantly increasing and we find ourselves in situations in which all teachers are being expected to demonstrate their ability to use such technologies as part of their teaching toolkit. With the advancement of technology in this world, we can see that the world that we live in is changing rapidly and the field of education are one of the field that are growing to be much better. The old day education where the learning environments are passive is long gone. We can see that the use of multimedia in education has grown a lot in this recent years and is looking to expand ever further in the future. The traditional education also known as conventional education is a long-established customs found in school that society has traditionally deemed appropriate. This type of education is more to teacher-centered that focused on rote learning and memorization. In the traditional learning, students are passive absorbers of information and authority. They are less active in class and lack in problem solving skills. Furthermore, the traditional ways of learning are much more linear with factual accumulation and skill mastery while the new approach with the help of multimedia are non-linear, with one idea linked to another, allowing the learner to choose the path that they want to learn.

104 The traditional approach of learning also lack in resource. Knowledge can only be absorbed through lecture and textbook. By using multimedia, there will be much more resource that can be attained especially through the use of the internet. The traditional approach of learning is also less creative. The students are more passive as they lack in material resource needed in order to express their creativity. Such loop hole can make children to be less passionate to learn. This is why multimedia use in education is vital in education. Multimedia is vital in our life. This is because it is packed with various elements such as text, graphic, sound, video and animation. All of this element can be seen in our surrounding. It is also used in various fields such as in education, training, business, games, science and technology. This is a proof that multimedia is important. In fact, multimedia is changing the ways of learning itself. Instead of just limiting with a linear presentation such as reading text from a book, multimedia makes many improvements in learning by bringing various elements in order to make it more dynamic. "Multimedia is a synthesis: a hybrid offering the advantages of the user-driven book with the wonders of electronic technology" -Robert Winter. A primary application of the interactive multimedia for instruction is in an instructional

situation where the learner is given control so that he/she may review the material at his or her own pace and in keeping with his/her own individual interests, needs, and cognitive processes. The basic objective of interactive multimedia material is not so much to replace the teacher as to change the teacher's role entirely. As such, multimedia must be extremely well designed and sophisticated enough to mimic the best teacher, by combining in its design the various elements of the cognitive processes and the best quality of the technology. With today's multimedia courseware, once a programme has been designed and built in with the appropriate responses, it should be flexible and permit change and alteration. Multimedia is a melody sung in harmony with multi-channel and multi-modal bits of knowledge and creation.

Multimedia facilitates mastering basic skills of a student by means of drill and practice. It helps in problem solving by means of learning by doing, understanding abstract concepts, provide enhanced access for teachers and students in remote locations, facilitate individualized and cooperative learning, helps in management and administration of classroom activities

and learning content, and simulate real life problem handling environments. Multimedia

Technology is used and experimented by various educational institutions of all levels all over the world in their own designed modes.

105 3.2

Objectives After going through this unit you will be able to ●

define multimedia and

discuss its meaning, nature, scope and approach. ● explain the different types of projected and non-projected aids along with their merits and demerits. ● discuss about the different

advantages and limitations of multimedia in education. ● discuss the recent trends in multimedia. ● Explain the implications of multimedia in teaching and learning. 3.3

Multimedia : Meaning, Nature, Scope, Definition and Approaches

Information which is stored in different forms could be combined and used in different combinations.

Multimedia can be recorded and played, displayed, dynamic, interacted with or accessed by information processing devices, such as computerized and electronic devices. Multimedia devices are electronic media devices used to store and experience multimedia content.

This process has given rise to the term 'Multi-media'.

This combination of different media for communication has influenced and changed all aspects of our life, including the teacher and the learner. Multimedia has become an inevitable part of any presentation. We have seen that it has found a variety of applications right from entertainment to education. The evolution of internet has also increased the demand for multimedia content. Multimedia is a term used to describe how multiple means of media like text, audio, graphics, animation, video, and interactivity are used to communicate information. It is also often used to describe any computer media. This helps us to understand information at a faster rate.

3.3.1 Meaning of Multimedia

Multimedia is defined in many ways.

Most of the definitions agree on the characteristic that multimedia contains texts, graphics, animations, video and sound in an unified way and the content can be structured and presented differently.

Let us explore some of the definitions given below. "

Multimedia is the

exciting combination of computer hardware and software that allows you to integrate video, animation, audio, graphics, and text resources to develop effective presentations on an affordable desktop computer" (Fenrich, 1997).

106 "

Multimedia

is characterized by the presence of text, pictures, sound, animation and video; some or all of which are organized into some coherent program" (Phillips, 1997).

From these definitions we see that Multimedia is a concept which sees the use of text, graphic art, sound, animation, and video in different combinations. This integration of Media into one whole and that which gives the user more benefits than any one of the media used individually is Multimedia. Interactive Multimedia: The Encyclopedia Britannica Online defines "Interactive Multimedia" as, any computer-delivered electronic system that allows the user to control, combine, and manipulate different types of media, such as text, sound, video, computer graphics, and animation. Interactive multimedia integrates computer, memory storage, digital (binary) data, telephone, television, and other information technologies. Their most common applications include training programs, video games, electronic encyclopedias, and travel guides. Interactive multimedia shift the user's role from observer to participant and are considered the next generation of electronic information systems.

Multimedia learning as learning from words and pictures (Mayer 2005), o The words can be printed (e.g., on-screen text) or spoken (e.g., narration). o The pictures can be static (e.g., illustrations, graphs, charts, photos, or maps) or dynamic (e.g., animation, video, or interactive illustrations). Multimedia instruction is intended to foster learning by presenting words and pictures. Figure : Visual Representation of the Cognitive Theory of Multimedia Learning (sources: http://www.ied.edu.hk/apfslt/v12_issue2/rias/image1.jpg)

107 3.3.2 Basic Assumptions and Principles Richard E. Mayer discusses twelve principles that shape the design and organization of multimedia presentations. Some examples are included: Coherence Principle - People learn better when extraneous words, pictures and sounds are excluded rather than included.

Signaling Principle - People learn better when cues that highlight the organization of the essential material are added.

Spatial Contiguity Principle - People

learn better when corresponding words and pictures are presented near rather than far from each other

on the page or screen. Segmenting Principle - People learn better from a multimedia lesson is presented in user-paced segments rather than as a continuous unit. Pre-training Principle - People learn better from a multimedia lesson when

they know the names and characteristics of the main concepts. Modality Principle - People learn better from graphics and narrations than from animation and on-screen text. Multimedia Principle - People learn better from words and pictures than from words alone. Personalization Principle - People learn better from multimedia lessons when words are

in conversational style rather than formal style 3.3.3 Definitions and Meaning of Multimedia

Multimedia is a burning topic in education because it represents the latest technology and introduces into the classroom whole new ways of thinking about curriculum, interactions with students and even the nature of learning itself. He elaborates that the meaning of multimedia has changed from meaning nothing to everything. Multimedia can mean any kind of file or document, either a text or spreadsheet that have audio or video effects or "an interactive information cafe". Whatever it is not, it certainly is the most promising technology in education. - WeidongXhang (2003) Packiam (1986)

had

referred
to the use of appropriate and carefully selected varieties of learning experiences which
when presented to the learner through selected teaching strategies will reinforce and strengthen one another
in such a way that the learner
will achieve predetermined objectives in an effective way.

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Education is defined as a means of providing systematic training and instruction and training is provided by instruction, discipline on drill. In terms of having training and instruction, Multimedia is a powerful tool which can provide individual and interactive instructions as well as motivation for practice in an entertainment environment. Multimedia also provides students with different learning styles, the opportunity to learn, share, communicate and grow using all their faculties.

3.3.4

Nature of Multimedia Multi - Many Media - Techniques /methods. Multimedia approach uses a number of media, devices, techniques, in the teaching learning process. Multimedia approach has come out of researches and experiments in educational technology that have been undertaken in order to improve the

process

of teaching learning.

Multimedia approach aims at providing meaningful learning experiences via a mix of media in order to achieve predetermined objectives. The choice of the media has to be done carefully so that one does not hamper or reduce the effect of the other i.e. each media must complement the
after. The media have to be used sequentially and judiciously. Only necessary ones are to be used. Then it would be possible to make optimum use of them in a most economical manner. In multimedia approach, several media and techniques are used as powerful means of communication. ●

Multimedia

approach uses a number of media, devices, techniques in the teaching learning process. ● Multimedia approach can convey vast information and provide many sources from which student can access the information. ● Multimedia approach will improve the teaching learning process. ● Multimedia approach is not restricted to a single type of learning style. It can provide the support of a wide range of activities. ●

Multimedia approach aims at providing meaningful learning experience via a mix of media in order to achieve predetermined objectives. ●

Multimedia approach provides the opportunity to gain mastery of competencies and skills. ●

The choice of the media has to be done carefully so that one does not hamper or reduce the effect of the other. That is each media must complement the other.

109 ● Multimedia approach will enable the learner to get access to information in dynamic environment. 3.3.5

Educational

Implications of Multimedia ● Multimedia enables students to represent information using several different media. Hypermedia links allow students to organize information in meaningful ways. ● Multimedia can take into account

different learning styles. Some students learn by interpreting text, while others require more graphical or aural representations. ● Multimedia allows for self-pacing and discovery, students can take the time they need and choose the path of learning making learning meaningful and pleasurable. ● Multimedia helps in development of higher order thinking skills. Interactive multimedia encourages student. ● Multimedia provided the students the flexibility of anywhere, 'any time' learning. ● Multimedia helps in developing group and interpersonal skills. Better communication between students via e-mail, chat sessions etc., can encourage collaborative learning and enhance student-teacher interaction. ● Multimedia helps students to learn the

content in a given discipline. It helps students to think effectively, practice problem solving and decision making. 3.3.6 Why

Use Multimedia in the Classroom?

Multimedia activities encourage students to work in groups, express their knowledge in multiple ways, solve problems, revise their own work, and construct knowledge.

The advantages of integrating multimedia in the classroom are many. Through participation in multimedia activities, students can learn:

- Real-world skills related to technology
- The value of teamwork
- Effective collaboration techniques
- The impact and importance of different media
- The challenges of communicating to different audiences
- How to present information in compelling ways
- Techniques for synthesizing and analyzing complex content
- The importance of research, planning, and organization skills

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The significance of presentation and speaking skills

- How to accept and provide constructive feedback
- How to express their ideas creatively

There are, however, some constraints to using multimedia in the classroom, including:

- Technological resources, both hardware and software
- Technological skills, for both the students and teacher
- Time required to plan, design, develop, and evaluate

multimedia activities 3.3.7 Role of Teacher in Multimedia Approach

Teacher has to adopt a number of methods and techniques.

Teacher has to aware of the different available media and their availability.

- Teacher should be physically competent to use and demonstrate the use of the different media.

Teacher should be skillful enough to make a judicious choice of media and competent enough to mix them sequentially and in an orderly manner.

- Teacher's role is that of a facilitator or manager of activities.
- Teacher has to lead his student for independent, individualized learning.

Prerequisites for developing a Multimedia Instructional device 3.3.8

Elements of Multimedia The different building blocks

of Multimedia are Text, Images and graphics, Audio, Video, and Animation.

Any multimedia application consists any or all of them.

Let us learn about each one

of them

- Text - ASCII/Unicode, HTML, Postscript, PDF
- Audio - Sound, music, speech, structured audio (e.g. MIDI)
- Still Image - Facsimile, photo, scanned image, photographs, drawings, maps and slides
- Video (Moving Images) - Movie, a sequence of pictures
- Graphics - Computer produced image
- Animation - A sequence of graphics images

111 1.

Text: Text and symbols are very important for communication in any medium. Using text in online training has many advantages: text files are small so they perform well at low bandwidth, the user can search for specific words or phrases, and text can be easily updated. You can create text directly within an authoring application or import it from external text files. Anti-aliasing enables you to create attractive text that blends into the background color without any jagged edges. Authorware, Director, and Flash all support anti-aliased text. Using anti-aliased text helps avoid having to create display text as a graphics file, which would make your overall course size much larger than if you simply entered text directly into the authoring tool. 2.

Images and Graphics: Images play a very important role in a multimedia. It is expressed in the form of still picture, painting or a photograph taken through a digital camera. The points at which an image is sampled are known as picture elements, commonly abbreviated as pixels. The pixel values of intensity images are called grayscale levels. There are different kinds of image formats like the Captured Image Format and the format when images are stored. The captured image Format is known by two main factors that is spatial resolution which is specified as pixels x pixels (eg. 640x480) and color encoding, which is specified by bits per pixel. Both factors depend on hardware and software for input/output of images. The Stored Image Format is when we store an image; we are storing a two- dimensional array of values, in which each value represents the data associated with a pixel in the image.

These images can be edited with the help of few of the software like general drawing programs, JASC Paint Shop Pro, Corel Photo Paint, Macromedia Fireworks ,Art Rage: free (NZ) paint program simulating, Corel Draw, and Open Office / Libre Office Draw, GIMP, and Mypaint.

Graphics Formats: Most Web browsers can display GIF and JPEG graphics files. Web browsers that are version 4.0 or later can use the JPEG format for continuous-tone images, such as photographs and images that use color gradients. The PNG format was

112 developed as a patent-free replacement for the GIF format. PNGs can use an alpha channel to define transparency in a graphic. Import PNG files into any of the Macromedia tools as an alternative to GIF files, especially if you need 24-bit graphics or graphics with transparency. Use this format in Web-native content only when delivering to newer browsers; some older browsers do not support the PNG format also display PNG graphics files.

The two most popular graphic formats for online training and Web pages in general are GIFs and JPEGs. Both are bitmap files that are relatively small in size. The two formats compress images differently, each excelling at compressing different types of graphics. Using software such as Macromedia Fireworks, you can compare the file size of your graphics with various optimization settings to help you pick the best file format. Use the GIF format for line art and graphics that have large areas of a single color. Graphics saved in the GIF format can have one transparent color where JPEG graphics cannot. There are applications like format factory which helps us in converting graphics from one format to other. 3.

Audio: Audio can enhance learning concepts and reinforce ideas presented as text or graphics on the screen. Using audio may be essential to the teaching of topics such as a foreign language or music appreciation. There are three types of audio assets that are commonly used in e-learning: • Music • Narration (voice-overs) • Sound effects Music demands a higher-quality and a wider sound-frequency range than narration and therefore produces larger files. Narrations generally have a smaller sound frequency range so it can be compressed more than music and still retain good sound quality. Sound effects are generally short so they don't have a large impact on the overall file size of an online course.

Audio Formats: The WAV and AIFF audio formats, popular on Microsoft Windows and Macintosh systems respectively, usually create files that are too large to use in an online course. Use one of the compressed formats with the goal of balancing small file size with acceptable quality audio. You have different options depending upon which authoring software

you use. Both Shockwave Audio (SWA) used by Authorware and Director, and MP3, which is used by Flash are popular compressed formats useful for all three types of audio used in e-learning.

The open source audio editing software like

113 Audacity is very popular tool for audio editing. 4. Video: Although video requires lots of bandwidth to download, it is very useful for conveying certain information. Using video in e-learning helps realistically demonstrate equipment and processes among other things. For instance, an e-learning course in botany might show a video of a sprouting seed. A course about the features of an airplane might show a video of a crewmember properly closing and securing a door for takeoff. The intricate level of detail visible in video is also ideal for illustrating subtle, nonverbal information.

For example, to teach sales skills you could use a video to demonstrate an interaction between a salesperson and a customer, then have the learners analyze the body language of the people involved in the transaction.

Video Formats: There are three standard digital video formats: Quick Time, Video for Windows, and MPEG. Video files tend to be large so they really aren't appropriate for delivery on modem connections. You may choose to include video in your e-learning course if you are delivering it over an intranet or to users with relatively high bandwidth connections.

There are many open source video editing tool and open shot is one such popular tool. 5. Animation: Animation illustrates concepts with movement, shows processes, or draws attention to a region or elements of a screen. Since animations usually involve graphics, they are highly dependent upon the size and file type of the graphics that are being animated.

Animation Formats: There are many ways you can create animations. Authorware, Dreamweaver, Director and Flash can all create animations. An animation created within an authoring program is usually smaller and more efficient than an animation created in another tool and then imported in your authoring program. This is particularly true when an animation is based on shapes created with the software's drawing tools rather than with imported bitmaps. For example, Flash excels at creating vector graphics and animations. Although Flash can animate bitmap graphics, animations made predominately with vector graphics in Flash are considerably smaller than animations created with bitmap graphics.

Simple 2D animations can be created using open source tools like pencil and more advance tools like blender. 3.3.9

Types of Multimedia

Multimedia may be broadly divided into Linear and Non-linear

Multimedia.

In

Linear Multimedia the active content progresses without any navigational control 114 for the viewer. The viewer interacts with the multimedia application in which the content is sequentially arranged. The viewer does not control the progress of the content. In other words, the viewer is a passive receiver of the multimedia content most of the time. For example a movie uses a combination of audio, graphics and animations, but the viewer has no control over the sequence of events. Non-linear Multimedia uses interactivity to control progress as with a video game or self-paced computer based training.

It allows one to use the content according to ones wants. It is a two way communication. This communication can be controlled by using buttons, links and hypertext. Hypermedia is an example of non-linear content. It connects to different media elements such as audio and video. Multimedia presentations which are live or recorded are also Non-linear.

A recorded presentation may allow interactivity via a navigation system. A live multimedia presentation may allow interactivity via an interaction with the presenter or performer. 3.4

Types of

Instructional Aids: Projected and

Non-projected Aids, Projector, Radio, Tape Recorder, Television, Films, Computer, White Board, Smart Board, E-Flash, Cards, Educational Toys 3.4.1

Instructional Aids The word instructional aid refers to any material or device used to assist the instructor in: Preparation of the lesson(s) Presentation (teaching) of the lesson(s) Facilitates trainees' learning 3.4.2 Importance of Instructional Aids Instructional aids assist to reinforce and supplement the instructor's communication during the presentation of the lesson. This is done by: - clarifying the concept or idea - making the communication channel more explicit - helping the learners to develop a good conceptual understanding of the content or skill taught. For example an idea which would be difficult (abstract) can easily be simplified when an instructional aid is used to present it. Therefore learners are able to relate an idea to their common reality or environment with the use of aids.

115 3.4.3 Types of instructional aids There are many types of instructional aids. Each instructional aid, however, may have inherent advantages and disadvantages (or limitations). Essentially types of instructional aids are determined by: The instructor/teacher. The instructor's ability either to create (improvise) and use aids or select from the readily made and suitably available aids is crucial. This squarely depends on the instructor's prowess, ability or experience. Objective of the lesson. By virtue of the objective(s) of a lesson, the use of certain instructional aids may be more desirable or otherwise. For example if a lesson involves the demonstration of a particular skill, then the use of demonstrational aids becomes inevitable. Nature of subject matter. The subject matter or content to be taught will underline the type of aids (if any) to be used. For example, if the material is considered comparatively difficult or abstract, then instructional aids have to be carefully selected and used. Generally, instructional aids can be grouped in four main categories: (a) Visual aids These appeal to sight. They include the blackboard, posters, charts, displays, models, pictures etc. (b) Auditory aids These type of instructional aids appeal to learners sense of hearing. They include radio and many types of audio recording. (c) Audio-Visual Aids Audio Visual aids appeal to both hearing and seeing. They include sound motion pictures, slides on sound and television. (d) Stimulation devices These are the actual representation of the real objects or process, but reduced in size. They include devices built to stimulate the action or function of the real device. Their purpose is to develop the 'feel' of the actual functioning of the real objects. 3.4.4 Characteristics of good instructional aids Instructional aids are essential to effective instruction. The instructor should know

116 how to prepare and use instructional aids and should recognize their value in fostering good instruction. The greatest value of instructional aids lies in: • Their appeal to trainees senses and perceptions • Their ability to attract and hold trainees attention and interest. • The ability in developing understanding of the material to be learned • Helps the trainees to learn faster and save instructional time • Helps trainees to understand the relationships between different concepts or ideas. A good instructional aid should promote certain desirable results. It should stimulate interest, command attention, be easily understood and promote a positive reaction on the part of the trainee. An instructional aid should be complete, have some explanation in the form of a label, and finally be as simple as possible. 3.4.5 Objectives of Instructional Aids 1. To enhance teachers skills which help to make teaching-learning process effective 2. Make learners active in the classroom 3. Communicate them according to their capabilities 4. Develop lesson plan and build interest 5. To make students good observer 6. Develop easy and understandable learning material 7. Follow child cornered learning process 8. Involve intimation in objectives 9. To create interest in different groups 10. To make teaching process more effective 3.4.6 Advantages of Instructional aids 1. Its helps to make learning process more effective and conceptual. 2. It helps to grab the attention of students 3. It builds interest and motivation teaching students learning process 4. It enhance the energy level of teaching and students 5. It is even better for over burden classrooms 6. It provides students a realistic approach and experience

117 3.4.7 Limitations in Instructional aids 1. Technical Problems 2. Students Distractions 3. Expensive 4. Time consuming 5. Need Space 6. Convenience 3.4.8 Audio Visual Aids Audio visual material must be seen in their relationship to teaching as a whole and to the learning process as a whole, until the teacher understands the relationship between audio visual material and teaching learning process. Audio visual materials are produced, distributed and used as planned components of educational programs. It helps the process of learning that is motivation, classification and stimulation. A.V. aids are multisensory materials which motivate and stimulate the individual. It makes dynamic learning experience more concrete realistic and clarity. It provides significant gains in thinking and reasoning. Audio visual aids are sensitive tools used in teaching and as avenues for learning. These are planned educational materials that appeal to the senses of the people and quicken learning facilities for clear understanding. Definitions: 1. According to Kinder S. James: Audio visual aids are any device which can be used to make the learning experience more concrete, more realistic and more dynamic. 2. According to Burton: audio visual aids are those sensory objects or images which initiate or stimulate and reinforce learning. 3.

According to Carter.V.Good: audio visual aids are those aids which help in completing the triangular process of learning that is motivation, classification and stimulation. 4. According to good's dictionary of education: audio visual aids are anything by means of which learning process may be encouraged or carried on through the sense of hearing or sense of sight. 5. According to Edger Dale: audio visual aids are those devices by the use of which communication of ideas between persons and groups in various teaching and

118 training situations is helped. These are also termed as multi-sensory materials. 6. According to McKean and Roberts: audio visual aids are supplementary devices by which the teacher, through the utilization of more than one sensory channel is able to clarify, establish and correlate concepts, interpretations and appreciations. 7. According to KP. Neeraja: an audio visual aid is an instructional device in which the message can be heard as well as seen. Purpose of A-V aids: • To supplement and enrich teachers own teaching to make teaching-learning more concrete. • To serve an instructional role in itself. • To create interest among the group. • To make teaching as an effective process. Advantages of AV aids: 1. A.V.Aids helps in effective perceptual and conceptual learning. 2. A.V.Aids helpful in capturing and sustaining attention of students. 3. A.V.Aids arouses interest and motivates students to learn. 4. A.V.Aids is helpful in new learning. 5. A.V.Aids helps in saving energy and time of both the teachers and students. 6. A.V.Aids provides near realistic experience. 7. A.V.Aids can meet individual demands. 8. A.V.Aids is useful in for education of masses. 3.4.9 Classification of A.V. Aids: Various classifications are given for Audio visual aids according to the type of projection by various authors. A) Classification of A.V.Aids I) Audio aids Audio materials are those which can be heard. Ex: - radio, tape recorder, walkman, Headphones. II) Visual aids: these are helpful to visualize the things. Ex: - graphic aids, 3d-aids, display boards, and print material.

119 III) Audio visual aids: these aids can be heard and seen simultaneously. Ex: - projected aids, TV, films. B) Classification of A.V.Aids I) Simple A.V.Aids: It includes graphic aids, display boards, 3d-aids, print material...etc. II) Sophisticated A.V.Aids: includes audio-visual aids. 3.4.10 Principles to be Followed for the Effective Use of A.V. Aids: Audio visual materials should function as an integral part of the educational program. A.V. aids should be centralized, under specialized direction and leadership in educational programs. An advisory committee consisting of representative from all areas of curriculum should be appointed to assist in selection and coordination of A.V. materials. An education program should be flexible. A.V. material should be carefully located to eliminate duplication, easy accessibility and convenient use. A.V. material should be available whenever and wherever they needed for effective utilization as an integral part of curriculum Budget appropriations should be made regularly for A.V. education programs. Periodic evaluation to be done to assess the function of, utilization and expenditure of the program. 3.4.11 Projected Audio Visual Aids: OVER HEAD PROJECTOR: The over head projector is the most used in all a.v. aids. It projects transparencies with brilliant screen images suitable for use in a lighted room. The teacher can write or draw diagrams on the transparency while he teaches; these are projected simultaneously on the screen by the OHP. During presentation: Keep the screen above the heads of the participants. Keep the screen in full view of participants

120 Make sure you are not blocking any ones view when presenting. Darken the room appropriately by blocking out sunshine and dimming nearby. Turn the screen off between slides if you are going to talk for more than two. Talk to the audience, not to the screen Purposes: To develop concepts and sequences in a subject matter area. To make marginal notes on the transparencies for the use of the teacher that can carry without exposing them to the class. To test students performances, while other classmates observe. To show relationships by means of transparent overlays in contrasting color. To give the illusion of motion in the transparency. Advantages: It permits the teacher to stand in front of the class while using the projector, thus enabling her to point out features appearing on the screen by pointing to the materials at the projector it self and at the same time, to observe the students reactions to her discussion. Gains attention of the student OVER HEAD TRANSPERENCIES: Transparencies are popular instructional medium. They are simple to prepare and easy to prepare and easy to operate with the overhead projector which is light weight. A 10*10 inches sheet with printed, written or drawn material is placed on the platform of the projector and a large image is projected on a screen behind you. The projector is used from near to the front of the room with the teacher standing or sitting beside, facing the student. Guidelines for making effective transparencies: ● Have one main idea an each transparency. ● Include only related figures and diagrams. ● Use simple lettering style in writing. ● Use diagrams in proposition to its lettering. ● Keep the message clear and simple.

121 ● Emphasize the key messages. ● Use color and lettering with discretion. Advantages: ● Permits face to face interaction with the students. ● Can be used in daylight conditions. ● Can present information in systemic developmental sequences. ● Requires limited planning and can be prepared in variety of inexpensive methods. ● Easily available. THE OPAQUE PROJECTOR Opaque projector is the only projector on which you can project a variety of materials ex: - book pages, objects, coins, postcards, or any other similar flat material that is non- transparent The opaque projector will project and simultaneously enlarge, directly from the originals, printed matter, all kinds of written or pictorial matter in any sequence derived by the teacher. It requires a dark room, as projector is large and not reality movables. Advantages: ● Stimulates attention and arouses interest. ● Can project a wide range of materials like stamps, coins, specimen, when one copy is available. ● Can be used for enlarging drawings, pictures and maps. ● Does not require any written or typed materials, hand-written material can be used. ● Helps students to retain knowledge for longer period. ● Review instructional problems. ● Test knowledge and ability. ● Simple operation. Disadvantages: ● Costly equipment. ● Needs to use it with care. ● Needs a dark room for projection

122 SLIDE PROJECTOR A slide is a small piece of transparent material on which a single pictorial image or scene or graphic image has been photographed or reproduced otherwise. Slides are a form of projected media that are easy to prepare. They are still pictures on positive film which you can process and mount individually yourself or send to a film laboratory. The standard size of the slides is 2" X 2" any 35mm camera will make satisfactory slides. Types of slides 1. Photographic slides: 2" X 2" 3" X 4" a) Black and white b) Colored 2. Handmade slides: can be made with a) Acetate sheet b) Cellophane c) Etched glass d) Plain glass e) Lumarith Slides can be made from photographs and pictures by teachers and pupils taking photographs and snapshots when they go on fieldtrips for historical, geographical, literacy or scientific excursions. The arrangement of slides in proper sequence, according to the topic discussed, is an important aspect of teaching with them. Advantages: 1. Requires only filming, processing and mounting by self or laboratory. 2. Results in colorful, realistic, reproduction original subject. 3. Preparation with any 35mm camera for most uses. 4. Easy to revise and up-date. 5. Easily handled, stored and re-arranged for various uses. 6. Can be combined with tape narration or can control time for discussion.

123 7. May be adapted to group or individual use FILMSTRIPS Film strips are sequence of transparent still pictures with individual frames on 35mm film. A tap recorded narration can be synchronized with film strip. Each strip contains from 12 to 18 or more pictures. It is a fixed sequence of related stills on a roll of 35mm film or 8mm film. PRINCIPLES 1. Preview filmstrips before using them and selected carefully to meet the needs of the topic to be taught. 2. Show again any part of the filmstrip needing more specific study. 3. Use filmstrip to stimulate emotions, build attitudes and to point up problems. 4. It should be introduced appropriately and its relationship to the topic of the study brought out. 5. Use a pointer to direct attention, to specific details on the screen. TYPES OF FILMSTRIP: 1) Discussion filmstrip: it is continuous strip of film consisting of individual frames arranged in sequence usually with explanatory titles. 2) Sound slide film: it is similar to filmstrip but instead of explanatory titles or spoken discussion recorded explanation is audible, which is synchronized with the pictures. ADVANTAGES OF FILM STRIPS: 1) Are compact, easily handled and always in proper sequence. 2) Can be supplemented with recordings. 3) Are inexpensive when quantity reproduction is required. 4) Are useful for group or individual study at projection rate are controlled by instructor or user. 5) Are projected with simple light weight equipment. RADIO Radio is a device with which the whole mass can be contacted at a time, efficiently and economically. Now-a-days, which increase in rural electrification, the number of radio sets in India is increasing greatly. Moreover, people are purchasing battery sets

124 and they have realized that it is a good thing to have one in the house. Radio sets have been provided in the common meeting places by the C.D. Organization. Radio is a good source of communication of idea. It gives news-bulletins, special programmes for rural people, housewives and children. It is a good source of disseminating information for health workers, farmers etc. In case of audio-aids, the message has to be simple so that the people can understand and act. The broadcaster has to get and hold the attention of the audience, otherwise the message is lost. The All India Radio stations publish a Journal 'Akashvani' which gives the meters and frequency in Kilo cycles on medium and short waves. The radio receiving set receives only one selected programme at a time, and conveys the same through its speaker. The station is selected by a tuner of the receiving set, which tunes the set to the frequency of the station. The movement of the tuner over the dial of the radio set is controlled by a knob. The entire broadcast frequency of the tuner is divided into a number of bands, each band including a small range of frequencies or wave-lengths. A band selector switch or knob is incorporated in the Cabinet of the radio. There is also an on and off switch and volume control are incorporated in a single knob. A radio can be operated by dry battery wet battery or electricity. For rural areas with no electricity, dry battery sets are generally used. Uses of Radio Radio is a popular, pleasing and a fast medium. However, it cannot be used to convey heavy, detailed knowledge. It uses are for: * Announcements-meetings, demonstrations etc. * Intimation or information- regarding availability of material, prices, places etc. * Warnings-relating to weather, outbreaks of diseases. * News reviews-about farmers etc. * Interviews. * Questions & Answers. * Short talks. * Play, skits, etc. * Features and Documentaries. Advantages of utilizing Radio i) In-expensiveness - Radio instructions costs 1/5 or 1/6 that of T.V. instructions,

125 hence this is quite a suitable audio aid for reaching the masses, especially in the interior of villages, where means of communication and facilities are very few. ii) Easy availability - There has been a lot of production of radio sets, with the result that their cost has been considerably reduced and therefore, radio is available these days with almost all families, even in the rural areas. iii) A radio leaps barrier of time and space - A historical event can be reproduction on a radio set as well as a live broadcast can be transmitted from one corner of the world to another. iv) Upto-date and Immediate - All the latest data as well as the current information can be transmitted and that too immediately. v) Emotional Impact - A radio can bring a dramatic feeling in the group. It has the warmth of a drama, can create personal feeling of actor's presence and inspite emotions. vi) Can bring realism - Voices of various experts can be brought right into the classroom. vii) It can reach more people more quickly than any other means of communication. viii) It can reach illiterates also. ix) It inspires to form some action. x) It is portable. Disadvantages i) It is a one way communication and audience reaction is not known. ii) It requires concentrated attention of the listeners as only aural sense is used. iii) Time-the learners have to adjust their time to the particular programme timing. iv) Prehearsing is not possible. v) Radio set should be in a working condition. vi) Frequently loses out in competition with entertainment. TAPE RECORDERS Tape recorders have become very common now-a-days and their use in education is gradually increasing. Tape recording, especially cassette tape recordings may be

126 prepared for group or individual learning. Advantages * Pre-rehearsing is possible. * Information can be stored & used repeatedly. * No problem of time. * Communicator can present programme made by him. * It can facilitate editing also, i.e. shortening, eliminating or adding of materials from different sources. Disadvantages * Many or may not be up-to-date. * More expensive. * One way communication. Features to look for in a tape-recorder i) Simplicity: It should be easy to operate. ii) Portable: The recording equipment should be as light as possible. iii) Cost: the amount of money available should be carefully considered before buying the equipment. However, expensive equipment generally is durable and as a result is may prove cheaper in the long run. iv) Speed: The higher the speed used, the better will be the quality. v) Size of the Tape Reels: Different machine will use different sizes. vi) Frequency Range: In fact one of the two important points to be considered in making the selection is sound frequency range of the equipment and the programmes you plan to record. For high fidelity recording, the frequency range of the equipment should be similar to the frequency range of the sounds in the programme. TELEVISION Michael J. Apter says, "Television is the most powerful medium of mass communication which has ever existed and it has revolutionized our lives in many ways." Television is already being used to spread health and nutrition messages.

127 Television shows the actual picture, figure or diagram, along with the hearing sound. So, it has an advantage over radio, where the audience is only listening. The movements of the pictures hold the attention of the audience. Most of the homes in cities have a T.V. set. Now-a-days with increase in electrification, they are available in villages also. Uses of Television Radio is a popular, pleasing and fast medium. However, it cannot to be used convey heavy, detailed knowledge. Its uses are for:- * Announcements - meetings, demonstrations etc.; * Intimation or information - regarding availability of materials, prices, places, etc.; * Warnings - relating to weather, outbreaks of diseases; * News reviews - about farmers etc.; * Interviews; * Questions & Answers; * Short talks; * Plays, skits, ballads etc.; * Features and Documents. Advantages i) T.V. can be used to broaden and enrich the experience of the audience. ii) It can create a genuine interest in a subject or topic which then gives the teacher something on which he can build. For example one can really see the result of malnutrition due to lack of food etc. iii) If a scientific experiment is mentioned, then it can be shown. iv) T.V., if it is not used for a disproportionate amount of time, provides a welcome element of variety from the normal routine of group teaching etc. v) It overcomes the barrier of time and space and to some extent of the language due to its visual effects. Evaluating the T.V.Programme Edger Dale suggests a simple method evaluating education television programmes by the following questions: i) Whether the purpose of the presentation made clear to both audience and teacher?

128 Did the audience have something to watch for? ii) Was the audience prepared for the telecast by reading etc? iii) Did the audience understand the material? iv) Did the receiver/audience find the presentation interesting? v) Was the programme well organized? vi) Was opportunity given to become involved, to participate? vii) Were the key points emphasized by means of repetition and review? viii) Did the telecast add certain experiences not easily available in the usual classroom situation or day-to-day life? 3.4.12 Non-Projected Aids CHALK BOARD DEFINITION A chalkboard or blackboard is a reusable writing surface on which text or drawings are made with chalk or other erasable markers. Blackboards were originally made of smooth, thin sheets of black or dark grey slate stone. Modern versions are often green or brown and are thus sometimes called a green board or brown board instead. A blackboard can simply be a piece of board painted with matte dark paint (usually black or dark green). A more modern variation consists of a coiled sheet of plastic drawn across two parallel rollers, which can be scrolled to create additional writing space while saving what has been written. The highest grade chalkboards are made of rougher version porcelain enameled steel (black, green, blue or sometimes other colours). Porcelain is very hard wearing and chalkboards made of porcelain usually last 10-20 years in intensive use. Blackboards have disadvantages: • They produce a fair amount of dust, depending on the quality of chalk used. • Some people find this uncomfortable or may be allergic to it, and there has been speculation about links between chalk dust and respiratory problems. • The dust also precludes the use of chalk in areas shared with dust-sensitive equipment such as computers. However, these alternative methods of displaying information have drawbacks of their own.

129 • The scratching of fingernails on a blackboard is a sound that is well-known for being extremely irritating. Blackboards are also used in many establishments (typically public houses) as a form of advertising often for upcoming events and menus - as well as to keep the score in darts matches. FLANNEL BOARD Sometimes called a flannel graph. This teaching tool is called by different names: Visual Board, Frick Board, Slap Board, Felt Board, Coherograph, Video graph Flannelgraph is a storytelling system that uses a board covered with flannel fabric, usually resting on an easel. It is very similar to Fuzzy felt, although its primary use is as a storytelling medium, rather than as a toy How to use The principle involved is the interlocking of fibers of two rough or bairy surfaces, so that the pieces pressed on to a background which is hard and vertical will stay. It can be illustrated on a larger scale by pressing two tooth brushes or hair brushes together, so the bristle inter-look. In case of flannel graph similar principle of friction helps an object to cling to the surface of the board. The flannel board is usually painted to depict a background scene appropriate to the story being told. Paper cutouts of characters and objects in the story are then placed on the board, and moved around, as the story unfolds. These cutouts are backed, either with flannel, or with some other substance that adheres lightly to the flannel background, such as coarse sandpaper. Advantages 1) Permits numerous and varied arrangements of visual materials. 2) Permits the use of either chart or small pieces of material Materials can be packed and transported complete notes. 3) Permits the development of a complete story. 4) Promotes conscientious planning, which must precede the development of the material in the first place. 5) Challenges one to develop symbols to portray such things as abstractions. 6) Easier to construct materials for flannel board than to make slides or movies.

130 Disadvantages: 1) Transportation and storing of boards and materials is a problem. Suitable tables to support boards must be available. 2) Time and cost of making material for presentation present a problem. 3) Cost of boards themselves can't be overlooked. 4) Presentation is limited a new idea involves a lapse of time before the new material can be added 5) Might tend to deter one from using other more effective methods and techniques when it is evident that other methods might be more appropriate. 6) To tell a complete story it often takes either too much board space or smaller designs and materials some of which cannot be seen well. BULLETIN BOARD DEFINITION It is a soft board which will hold pins or tags almost suitable. Simple device placed either indoor or outdoor. Items generally displayed are photographs, publications, posters, newspaper cut outs. Advantages Explains important events Reports special activities Disadvantages Not effective for illiterate group. Takes lot of preplanning and preparation A bulletin board (pinboard, pin board or notice board in British English) is a place where people can leave public messages, for example, to advertise things to buy or sell, announce events or provide information. Dormitory corridors, well-trafficked hallways, lobbies, and freestanding kiosks often have cork boards attached to facilitate the posting of notices. At some universities, lampposts, bollards, trees, and walls often become impromptu poster sites in areas where official boards are sparse in number. PEG BOARD It is a type of board which contains small holes to fix certain letters into the holes

131 which is used especially in the offices to display certain items, name of the personal or faculty member. **MAGNETIC BOARDS** It is a framed iron sheet carrying porcelain coating in some dark color generally black or green. It can be used to display pictures, cutouts and light objects with disc magnets or magnetic holders. Advantages Movement of visual material is easy. **SMART BOARDS** SMART boards put simply, are a sophisticated replacement of the traditional overhead projector. Over the years, this cutting-edge technology has proved popular for students of all ages. The interactive board turns a typical classroom into a fun learning environment. It enriches classrooms in several ways by providing hands on collaboration and creating the perfect learning setting. There are several advantages of bringing in a SMART interactive whiteboard into a classroom setting. Here are the top 8 advantages of this state-of-the-art technology in the education industry. Reasons why SMART Boards are an essential component in the modern day classroom: 1. Provides Flexibility: Interactive whiteboards allow many different forms of media - including photos, illustrations, maps, graphs, games, and video, to be displayed. These tools not only enrich the classroom experience but also help to expand the nature of content that can be used in learning. In addition, SMART Boards makes learning to be more dynamic owing to the different forms of presenting information. 2. Enhanced teaching/learning experience: SMART Boards provide new ways for teachers to teach, and student to learn. These tools support a wide variety of learning styles. For instance, visual learners can watch as their tutors use the whiteboards to project visual elements, whereas audio learners can listen and have discussions. On the other hand, the Boards come with touchscreen capabilities that allow tactile learners to touch and interact with the board. 3. Interact and share: The interactive nature of SMART boards offers learners an opportunity to share and participate in the instructional process. Interactivity

132 provides a platform for students to demonstrate their grasp of the subject through touching, drawing, and writing. Every learner has an opportunity to participate or contribute to the presentation and/or discussion via notebooks and tablets. In addition, the boards provide for rapid assessment whereby learners can receive immediate feedback. Teachers and students are able to identify individual strengths and weaknesses in various subject areas and isolate areas/topics that need more focus or review. 4. Low-Maintenance: SMART Boards are neat and easy to use. There are no hassles cleaning or maintaining whiteboards. The data on the screen can be modified using a specialized highlighting tool or pen. There is no need for using unhygienic chalk or marker pens. 5. Access to online information & tools: SMART boards allow learners to easily access a rich database of online resources. Teachers can use the wide variety of online information sources such as knowledge databases, online video and news items to reinforce their lessons. Learners can also quickly access the wide range of powerful tools and resources to conduct research and supplement their usual study material. 6. Going Green: Interactive boards are also environmentally friendly. They offer teachers an entirely different way of presenting information to students, which eliminates the need for writing, printing or photocopying. Which, contribute to eliminate waste and pollution, from over-utilization of paper and ink. 7. Technology Integration: SMART boards allows for integration of various technologies in order to improve the learning experience. For instance, it is possible to attach tools such as microscopes, document cameras, cameras or video cameras to a whiteboard to aid in instruction. It is also possible to integrate the interactive learning tools with a wide range of software applications. 8. Communication: Interactive whiteboards allow for connectivity in different locations; making ideal collaboration and distance learning environments. When using SMART boards, student show to increase student-to-student collaboration and increase overall participation in the lesson. Overall, incorporating SMART Boards to the classroom environment is likely to change the way teachers impart knowledge to students and at the same time simplify

133 the learning process for students. Students will find it easy to engage with lessons and gain a better understanding of the overall lesson. COMPUTER AS A TOOL IN MODERN TEACHING Computers have become of the most important learning aids of the modern times. Today's education is considered incomplete without computers. This is the basic machine on which all other electronic medias of learning depend. These can be bought in various forms like desktops, lap tops, notebooks and simply e-readers. Computers are used to play the computer based educational games which can now be played also through television screens. The computers have been playing an important tool for teaching from the last few years of the 20th century and since then it has brought about a revolution in the methods of teaching which our future teachers will be using. The computers make use of multimedia programme which include attractive colours, clear graphics, wonderful sounds, the fascinating animations and enjoyable videos discharging to the students the various elements of their subjects of study. Some critics of computers as a teaching aid may point out that the conventional methods of teaching in the hands of an enthusiastic, creative and industrious teacher could also do the job as well if not better than a computer. To such critics, I would say that the computers are not there to undermine the role of the efficient teachers. The computers are only a tool in the hands of a teacher to make the teacher's job easy and fast and make the teacher more efficient. A computer or any other teaching tool cannot work at its own; it definitely needs mediation from an enterprising teacher. No one would feel like to do away with the blackboard where it is necessary to use a blackboard or any other conventional tool. The computer has brought about a tremendous change the way the world looks at the teaching aids. With the advent of internet technology, the use of a computer as part of today's educational aids has become inevitable. Just think of a simple situation where you want to teach a student the word 'trumpet' used for the sound produced by an elephant and expect the student to describe the sound which the elephant makes. Obviously, you cannot bring the elephant to the classroom other than showing its picture. Even if you take the class to the zoo park where is the guarantee that the students can listen to the sound of an elephant trumpeting. But you can play the recorded sound of the elephant through a computer and can also show its picture or even live video of an elephant. For this purpose I have loaded the sound files of all animals, birds and insects to enable 134 the children to hear the sounds of these living beings through computer in their classrooms. We can make the young students practice their language lessons including regional languages through computers. I have practically done it for my computer virtually turning the computer lab as a language lab. You can see the image above where the students of a primary class are seriously engaged in learning Hindi through computers. Computers bring to the students a world of entertainment along with learning by providing computer based educational games for learning various subjects through computers. Many websites on the internet provide these games free for the students and parents and a few also charge nominally for the educational games made available to their members. INTERACTIVE ELECTRONIC WHITE BOARD AS A TOOL IN MODERN TEACHING o Interactive electronic white boards of today also known as smart boards are the latest tools in the methods of modern teaching. These need a computer, an overhead projector and preloaded educational software. o These are very costly equipment and require a lot of investment and can be afforded by only by schools who charge a very high rate of fees from the students. For this reason, these have not become very popular with ordinary schools. It is not only the heavy initial investment if purchased outright which has to be kept in mind but also the day to day costs of running the equipment which should be thought of by the end users. These costs are the high power bills and the replacement of lamps of the projectors which should be given attention to while buying this costly equipment. o Some companies supplying the white boards like the Edu comp, Smart Boards etc. make offers to the institutions to pay on monthly basis for the equipment and also appoint the support staff for running the system. They charge the institutions monthly charges ranging from Rs.50 to Rs.100 per student dependent upon the school strength. Here also these companies do not apprise the schools about the hidden costs in the form of higher power bills and replacement of projector lamps which the schools have to incur. o Of course, the electronic white board has many user friendly offering a lot of interaction to its user. It is a colourful tool in the hands of the teachers. Its inter-

135 activity features are beyond description. But the biggest disadvantage of the electronic white board is that it has to be fixed on the wall and does not leave the place for use of your ordinary blackboard to be used in case of emergencies like the power failure. It is more so if the classroom does not happen to be very big. The projector and the computer has to be always on if you want to use the electronic board. FLASH CARDS Definition: • Flash cards are a set of pictured paper cards of varying sizes that are flashed one by one in a logical sequence." • Flash cards can be self-made or commercially prepared and are made up of chart or drawing paper, paper using colors or ink on them for drawings." Purposes: 1. To teach the students. 2. To give health education. 3. Useful for small group. 4. Used in group discussions. Principles: • The messages can be brief, simple line drawing or photographs, cartoons and the content will be written in few lines at the back of the each card. • 10" X 12" or 22" X 28" is commonly used size. • 10-12 cards for one talk can be used. It should not be less than 3 and more than 20. • Prepare a picture for each idea which will give visual impact to the idea. • The height of writing on the flash card is to be approximately 5cm for better visualization. Using the flashcards: For class room instruction, the flash cards is to be properly used. The following steps are used while displaying flash cards.

136 1. Give brief introduction about the lesson to students. 2. Give instructions to students about their actions while you flash the cards. 3. Flash the card in front of the class by holding it high with both your hands so that all the students can see it. 4. Let the student respond as per instructions already given. 5. Review the lesson by selectively using flash cards. Advantages: • Flash cards can be used to introduce and present topics. • It can be used to apply information already gained by students to new situations • It can be used to review a topic. • Can be used for drill and practice in elementary classes • To develop the cognitive abilities of recognition and recall of students. • It can work as a useful supplementary aid and can be effectively used with other material. Disadvantages: • Cannot be used for a large group • Prone to get spoiled soon • Preparation is time consuming. E-FLASHCARDS An extensive selection of images listed according to theme that helps learners to understand basic vocabulary. These images may be printed out or used with an interactive digital whiteboard. The audio option also tells students how each word is pronounced. EDUCATIONAL TOYS Toys are usually used in small classes for teaching the children the names of various fruits, vegetables, animals, birds, insects etc. Toy models of these objects are easily available in the market. o Children in lower classes are also given some objects like marbles and beads to learn numbers. o Toy clocks and watches are used in schools to teach children the concept of time.

137 3.5 Advantages, Limitations and Challenges of Using Multimedia in Education By incorporating multimedia in their instruction, teachers can capture attention, engage learners, explain difficult concepts, inspire creativity, and have fun. However, there are many tools available and many ways to use those tools. "

Multimedia is characterized by the presence of text, pictures, sound, animation and video; some or all of which are organized into

some coherent program" (Phillips, 1997). 3.5.1

The Advantages of using Multimedia in Education 1.

Deeper understanding According

to research, a benefit of multimedia learning is that it takes

advantage of

the brain's ability to make connections between verbal and visual representations

of content,

leading to a deeper understanding, which in turn supports the transfer

of learning

to other situations. All of this is important in today's 21st century classrooms, as we are preparing students for a future where higher-level thinking; problem

solving and collaborative skills will be required. 2. Improved problem solving A

large percentage of the human brain dedicates itself to visual processing. Thus, using images, video and animations alongside a text stimulates the brain.

Student attention

and retention increase. Under these circumstances, in a multimedia learning environment, students can identify and solve problems more easily compared to

the scenario where teaching is made possible only by textbooks. 3. Increased positive emotions According

to psychologist Barbara Fredrickson, experiencing positive emotions makes people see more possibilities in their lives. Using multimedia during instructions impacts student's mood during the learning process. With a positive attitude they learn better and tend to be more proactive. 4. Access to a vast variety of information
With computers, tablets, smartphones and the internet, students are today better equipped than ever to search and find the information they need.

A study revealed that 95% of students who have access to internet, use it to search for online information. Sharing the information and participating in class discussions is done in a more confident way when access to information is as easy as today.

138 5. World exploration

There is no surprise here.

With the help of multimedia children can explore and learn

about places they would never been to. In a geography class, students can explore different

cities of the world, the tallest mountains and the most dangerous jungles. In a science

class, space and planets exploration is now possible. In a biology class, the dissection

of rare animals and different habitats exploration are like a walk in a park for students benefiting

of a multimedia learning environment. Altogether, multimedia learning environments have a direct effect on learning and even on

growing as a person. An effect that differs and can't be achieved as easy whilst using traditional education materials.

Therefore, it is no wonder the edutech business

is increasing and schools desire more and more to create multimedia learning environments for their students.

Multimedia is very helpful and fruitful in education due to its characteristics of interactivity, flexibility, and the integration of different media that can support learning, take into account individual differences among learners and increase their motivation. The provision of interaction is the biggest advantage of the digital media in comparison with other media. It refers to the process of providing information and response. Interactivity allows control over the presented content to a certain extent: learners can change parameters, observe their results or respond to choice options. They can also control the speed of applications and the amount of repetition to meet their individual needs. Furthermore, the ability to provide feedback tailored to the needs of students distinguishes the interactive multimedia from any other media without a human presence. However, many aspects need to be taken into account when using multimedia in education. Even though multimedia is offered worldwide, access to learning materials and computing equipment differs from country to country. The use of multimedia by students needs to be supported by very skilled teachers. They must guide students through the learning process and provide them with appropriate and effective learning strategies. Like the use of textbooks, the use of educational multimedia fosters teaching strategies, where the teacher's role is not just that of information provider but

the

one of guide, supporter and facilitator. Multimedia offers a variety of media usually combined in a meaningful manner.

This gives an opportunity to use the computer for the presentation of ideas in different ways, including by means of: ● Images, including scanned photographs, drawings, maps and slides;

139 • Sounds, e.g. recordings of voice, noise and music; • Video, including complex procedures and 'talking heads'; • Animation and simulations; • Discussions among learners (social networks, online discussions, blogs, etc.). Often, presentations supported by attractive images or animations are visually more appealing than static texts, and they can support the appearance of emotions to complement the information presented. Multimedia can appeal to many types of learning preferences - some students profit more from learning by reading, some by hearing and some by watching, etc. In addition, the use of multimedia allows for different ways of working - students can decide on their own how to explore the materials as well as how to use interactive and collaborative tools. Moreover, students can adjust their own learning processes according to their abilities and preferences. They can work according to their interests, repeat material as much as they want reducing embarrassment concerning their learning outcomes. The use of multimedia can thus be tailored to the students' differences in interests, social and cultural backgrounds, learning preferences and rates, etc. Individual learning can promote active, self-directed learning. In addition, multimedia applications can be used to facilitate group work. Small groups of students can work through multimedia applications together - in order to learn from each other as well as to improve their dialogue skills. The interactive opportunities of multimedia lead to high flexibility, which can be very helpful for students with special needs: • Dyslectic students can use synthetic speech in order to become familiar with the content of digital texts. • Autistic children show an increase of phonologic awareness and word reading by using multimedia (Heimann et al. 1995). •

Students with severe speech and physical impairments gain from learning with multimedia, because the computer is flexible enough to meet individual needs - they can repeat as often they want, can hear it loud, etc. (Steelman, 1993). •

For deaf students, the visual presentation of content improves their motivation to learn (Voltena et al., 1995).

The computer can noticeably improve student access to information. Such delivery platforms as the World Wide Web provide 24-hour access to information. Moreover, it is relatively easy to update web-based educational materials, i.e. to change design, content, instruction methods, etc.

140 3.5.2

Limitations of Using Multimedia

Multimedia requires high-end computer systems. Sound, images, animation, and especially video, constitute large amounts of data, which slow down, or may not even fit in a low-end computer. Unlike simple text files created in word processing, multimedia packages require good quality computers. A major disadvantage of writing multimedia courseware is that it may not be accessible to a large section of its intended users if they do not have access to multimedia-capable machines. For this reason, courseware developers should think very carefully about the type of multimedia elements that need to be incorporated into applications and include only

those that have significant value. Multimedia has other weaknesses too. While proponents of this new technology are very enthusiastic about its potential, they often leave the financial and technical issues unattended. Developments in multimedia are very high and the process of developing effective multimedia takes time.

Further, if the prerequisites for using multimedia include computers with related software, the user must possess a minimum level of computer literacy in

order to exploit the capabilities of this medium for learning. And finally, of the educator who is unfamiliar with the production and design of multimedia courseware or packages can be equally complicating.

The critical question, then, is: How do we overcome some of the identified barriers and begin the process of multimedia implementation alongside the instructor, textbook, and blackboard? It is the barriers rather than the technologies which we must address before multimedia, or for that matter, any media technology becomes

as accepted as the printed text or guidebook. Following are a few limitations of using Multimedia

- Information overload. Because it is so easy to use, it can contain too much information at once.
- It takes time to compile. Even though it is flexible, it takes time to put the original draft together.
- It can be expensive. Multimedia makes use of a wide range of resources, which can cost a large amount of money.
- Too much makes it impractical. Large files like video and audio has an effect of the time it takes for a presentation to load. Adding too much can mean that we have to use a larger computer to store the files.
- In case we want to upload it onto the Internet, there are a few factors to keep in mind, for example bandwidth and the user's abilities.

3.5.3 Some Disadvantages of Multimedia in Education Self-regulated learning: Some learners are not able to handle the freedom provided by hypertext-based multimedia.

141 Distraction: Often, confused presentations of the material can cause distraction due to conflicting messages. Non-linear structured multimedia allows the user to follow the supplied links, which can distract from the topic to be learned. The massive amount of information provided by multimedia applications may distract our attention during learning. The human short-term memory is limited; usually it can hold around 7 pieces of information. When several media presented at the same time, the learner can only concentrate on some of them and ignore others. This could result in ignoring important information. Human beings cannot use all channels available simultaneously, and this can prevent us from realizing the full potential of multimedia. Low interactivity: Even though the interactivity between the learner and multimedia applications is increasing, it is still considered restricted compared to the elaborated human-human interactivity. No selective feedback: Feedback is generally very limited within computer-assisted learning packages. Generally, computers can't substitute for person-to-person teaching, only enhance it. Often, the feedback provided is limited to right/wrong, and it does not support in learning strategies or further content explanations. Multimedia applications cannot identify individual needs or problems of the learner, so they cannot respond like people. Simulations are often not enough: It may be important for students to have true hands-on experience. For example, for studying insects in biology it is necessary to go out in nature, to see insects living in their natural environments. Lack of skills - pupils and teachers: Students, particularly mature-age students, may not be ICT literate. Also teachers may lack some personal skills, which are needed to teach effectively with multimedia. Difficult to do: Creating audio, video and graphical materials can be more challenging than creating ordinary texts. Time consuming: Using multimedia can be time consuming. Especially the production of multimedia takes much time. Access: Not all students have appropriate access to proper hardware and the Internet. This may limit the scope of teaching. Social in/exclusion: Not all members of a society can be involved in the use of

142 multimedia technology due to lack of access to the Internet or lack of hardware to make full use of the educational material on the web. Equipment problems: Hardware and software needs to be configured in a way that their usage is as simple as straight forwarded as possible. Bandwidth issue: Limited bandwidth means slow performance for sound, graphics and video, interrupting streaming and causing long waits for download that can affect the ease of learning. Multimedia is portable: Paper-based notes can be read everywhere, on the bus, at the beach, etc., but web-based materials or multimedia materials require specific hardware devices. Computer screens aren't paper: The content on screens may not be as easy to read as the content on paper. If there are large chunks of information that need to be read from top to bottom, it is probably best to view such a document on paper. Books and journal articles may still be better to read in paper. End users often prefer to use technology to search for information, but when it comes to reading, they tend to read from print-outs. In summary, multimedia products can be used to represent and process various types of knowledge. They can be used as means of representation and communication of knowledge. The use of these products can foster students' construction of their own knowledge. They can construct knowledge and develop skills related to various subjects by accessing or producing digital representations of knowledge. In particular, they can develop literacy and other core competencies. For example, they can develop motivation for learning activities, communication abilities, social competencies as well as learning competencies, values and ethics. 3.6

Recent Trends in Multimedia

The technological advancements have made society take a leap towards success. Every technological reform is a small step towards advancement. Every new invention in technology is a step towards progress of mankind. Centuries ago, hardly anyone would have even dreamt of working on a computer. Generations of the yester years would have hardly imagined being able to communicate with people on the other side of the globe. But there were some intelligent minds who dared to dream of such revolutionary discoveries and they made the impossible possible.

143 Since several years ago, education experts had been proposing a new style of education involving using multimedia, which differs radically from the traditional ways. Changing the education systems as a new ways is towards a new paradigm for teach (Rosenberg, 2001).

The development of multimedia technologies for learning offers new ways in which learning can take place in education areas. In last decades, there has been a growing interest in the creation and use of multimedia technologies throughout the education world. There have been many experiments and innovations in the field of education and training regarding knowledge delivery (Tally, 2002). From face to face to virtual education, different technologies have played great roles at different times.

In the last decades, due to the advent of multimedia technologies has got new meaning (Del, 1998; Moreno, 2000). Development, access, and transfer of text, sound, and video data gave given a unique face to education centers, in the form of multimedia learning. The development of multimedia systems can be very rewarding. So interest and investment in this technology are increasing and multimedia technologies are the need of the day (Bransford, 1990; Mayer, 1990).

Multimedia Technologies as an Educational Tool

throughout the 1980s and 1990s,

the concept of multimedia took on a new meaning, as the capabilities of satellites, computers, audio and video converged to create new media with enormous potential. Combined with the advances

in hardware and software, these technologies were able to provide enhanced learning facility

and with attention to the specific needs of individual users (Fenrich, 1997; Meyer, 2001; Mayer, 2003).

Multimedia is a term frequently heard and discussed among educational technologists today.

Now multimedia technologies these called "new media," "hypermedia," "integrated media," or more commonly "multimedia" have been defined in a number of ways. Actually the term "multimedia" covers a lot of territory.

"Multimedia", in its broadest sense, means graphics, music, sound effects, voice, video, and animation, in any combination, in the same program or presentation (Blumenfeld, 1991. Fensham,, 1990).

It

can be defined as an integration of multiple media elements (

audio, video, graphics, text,

animation, etc.) into one synergetic and symbiotic whole

that results in more benefits for the end user than any one of the media elements can provide individually.

Multimedia

can be defined generically as any combination of two or more media such as sound, images, text, animation, and video. For educational technology purposes,

144 multimedia refers to computer-based systems that use associative linkages to allow users to navigate and retrieve information stored in a combination of text, sounds, graphics, video, movies, music, lighting and other media as for education (Meyer, 2001; www.wps.prenhall.com; Sandholtz, 1997; Vanbuel, 2006). When the term is used with computer technology, multimedia refers to a variety of applications that combine media and that use CD-ROM, video, audio, DVD, and other media equipment. As it seen multimedia is the combined use of media, such as images, video, audio, CD/DVD-ROMs, the internet and interactive applications such as applets and flash for education and entertainment (Chang, 2004; Finn, 2002).

Multimedia hardware requirements include a basic computer system with the standard input devices, central processor, and output devices, CD-ROMs or DVDs, sound boards or cards, speakers, video boards, highspeed central processors, extensive secondary storage or hard disk (Lieshout, 2001; Millar, 2005). Multimedia's basic technologies include

text, maps, graphic images, electronic presentations, animation, videoconferencing, digital audio and video, web learning environment, videoconferencing systems (Lieshout and etc, 2001; Phillips, 1997; Behrens, 1996, 1997; Bijnens 2004, 2005; Cleveland, 1998).

Multimedia combines five basic types of media into the learning environment; text, video, sound, graphics and animation,

thus providing a powerful new tool for education (Duke, 1993). These are to demonstrate abstract concepts, to accommodate students with a variety of learning styles, to engage students, to enable active learning, by incorporating multimedia into learning, activities, students can manipulate, create and interact with material rather than just absorb representations created by others (Kearsley, 1998; Person, 2003).

Multimedia technologies have a lot of advantages such as;

widely available, reusable, multimedia, and decrease pressure on lecturer, better individual student engagement, globality (Repman, 1993; West, 2006). These are fun and interesting, provide a pre question, and make description a narration, no need to include an image or video of the narrator, unless there's some demonstration. Do not include explanation in both text and narration styles, Give students chance to pause the video/audio and ask questions, Make the multimedia interactive, Provide pre training on key components, concepts in the multimedia to enhance students' understanding of the multimedia resource,

Presenting more materials may result in less understanding (Mayer, Heiser, and Lonn, 2001; Mayer, Dow and Mayer, 2003; Wallace, 2006).

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E-LEARNING E-Learning is the use of technology to enable people to learn anytime and anywhere.

E-Learning can include training, the delivery of just-in-time information and guidance from experts.

It is a new education concept by using the Internet technology, it delivers the digital content, provides a learner-orient environment for the teachers and students. The e-learning promotes the construction of life-long learning opinions and learning society. Delivery of the digital content is the main characters of e-learning. E-Learning is an important consideration in education for several reasons: 1. Implemented correctly, it can reduce some of the costs associated with education 2. It allows schools to educate people they could not previously (e.g. people that work for a living, people geographically dispersed, etc.) 3. Many students communicate better in a web based environment than in the traditional classroom. Studies have shown that students who would not raise a hand in class will be very active in posting to discussion boards for example. E-Learning is a challenge for educational institutions because the technology involved can be difficult to manage and use. A lot of training or practice is required to get proficient in e-Learning solutions. For example, Flash based applications need to target customers that have a large learning audience to justify the expense. Virtual classrooms are often a more cost efficient solution in many cases. E-Learning is an active and growing industry. It may take a hit with the economy being like it is but it will reemerge very strong. 3.7 Implications of Multimedia in Teaching and Learning Education encounters, in modern times, challenges in all aspects of social, economic & cultural life; the most important of which are over-population, over-knowledge, education philosophy development & the change of teacher's role, the spread of illiteracy, lack of the staff & the technological development & mass media (Aloraini, 2005, p. 30- 32). This drove the teaching staff to use the modern teaching technologies to face some of the main problems, which education & its productivity encounter, by increasing the learning level which may be achieved through providing equivalent opportunities for all people whenever & wherever they are, while taking into account the individual differences between learners (Wilkinson, 1986, p. 13 & Abd El-Halim Said, 1997, p. 19). To improve the educational productivity, some of the teaching staff sought to mainstream technology within education, developing traditional techniques & using new educational methods (Al-A'ny, 2000).

146 Mainstreaming the technological media within what is called "Multimedia" is the pattern which led to infinite applications of computer technologies. The concept of this technology came into being with the appearance of sound cards, then compact disks, then came the use of digital camera, then the video which made computer an essential educational tool. Nowadays, multimedia expanded to become a field on its own. Interaction is the main element in multimedia technology as most of its applications are characterized by interaction. Consequently, multimedia programs may provide a more effective & more influential experiment than using each technology separately. Multimedia is one of the best educational techniques because it addresses more than one sense simultaneously, as it addresses the senses of sight & hearing. Multimedia programs provide different stimuli in their presentations which include a number of elements some of which are (Aloraini, 2005, p. 55-75): Texts Spoken words Sound& music, Graphics, Animations and Still pictures Some of the potential advantages of multimedia programs are: 1. They make the reading process a dynamic one instead of the written presentation of the texts printed in the book (Zaitoun, 2002, p. 259). 2. Presenting different drawings & pictures supports the clarification of ideas & communication of information. 3. Moving easily from a presented subject to another provides a good chance for questions & discussions. 4. Using different presentations like video clips along with maps or other kinds of presentations help to get the information closer to reality. Adding music makes the idea clearer and it attracts the attention of the learners (Aloraini, 2005, p. 73). 5. They rise the attention & interaction between students & the educational subject (Qandeel, 1998, p. 1625). 6. They comprise the elements of amusement & suspense (Qandeel, 1998, p. 1625).

147 7. They are graded according to the learner's abilities from easy to difficult ones (Qandeel, 1998, p. 1625). 8. They provide teachers with a new educational style & encourage curiosity (Holsinger, 1995, p. 9). 9. They help teachers & learners look into topics from a broader perspective as each topic comprises enormous information (Holsinger, 1995, p. 9). 10. They guide learners to peer learning (Alfar, 2009, p. 123). 11. They are concerned with providing simultaneous feedback (Qandeel, 1998, p. 1625). 12. They help learners remember & transfer their knowledge (Alfar, 2009, p. 123). 13. They support the user's work & innovation, which makes the possession of a computer a necessity for both the student & the teacher. Teaching and learning are two complementary aspects of education. Within learning, there are two key elements: content, which forms the "what" of learning; and skills, which describe the application of content to specific tasks, or the "how." These two elements are mirrored in teaching by the curriculum and syllabus (the "what") and the teaching methodology (the "how"). Multimedia technology affects both aspects of teaching and learning. It does this in three ways: in how it presents information; in how students interact both with the medium and through the medium with the teacher and other learners; and in how knowledge is structured within multimedia. Multimedia can represent knowledge in more ways than text or speech can. Multimedia combines text, audio, visual, graphic, and dynamic elements, such as animation and video. This presents learners and teachers with unique learning resources that can be used in a wide variety of ways to stimulate various forms of learning. The most significant feature of the multiple forms of media is that they allow for the presentation of knowledge in numerous ways. Thus students can learn about abstract principles through text and can see the application of those principles through an animation or a video example. This presents the opportunity for deeper levels of understanding, particularly if the presentational qualities are fully and deliberately exploited to achieve this purpose and are combined with the potential for learner interaction. Well-designed applications of multimedia then can do two things: they can enable learners to come to understandings more quickly than through more conventional classroom or textual media; and perhaps more significant, they can change how we come to know or to understand and hence what we know and understand. In other words, a

148 learner may have an image or a mental "construction" that is far richer than an abstract verbal understanding. From an educational perspective, it is essential that learners can move confidently between concrete and abstract understandings and not become locked into one or the other. This does not happen by accident. Multimedia needs to be carefully designed to facilitate the development of this kind of thinking. Thus the role of the teacher is by no means diminished; indeed, such design requires highly skilled teachers working in teams with multimedia producers. 3.8 Let Us Sum Up 1. Multimedia is the encompass of all media used in electronics, particularly with computers. The use of computers to present text, graphics, video, animation, and sound in an integrated way. Long touted as the future revolution in computing, multimedia applications were, until the mid-90s, uncommon due to the expensive hardware required. With increases in performance and decreases in price, however, multimedia is now commonplace. Nearly all Personal Computers are capable of displaying video, though the resolution available depends on the power of the computer's video adapter and microprocessor. 2.

Technology does not necessarily drive education. That role belongs to the learning needs of students. With multimedia, the process of learning can become more goal oriented, more participatory, flexible in time and space,

unaffected by distances and tailored to individual learning styles, and increase collaboration between teachers and students. Multimedia enables learning to become fun and friendly, without fear of inadequacies or failure. 3.

Interactive Multimedia is the means to interface with these media typically with a computer keyboard, mouse, touch screen, on screen buttons, and text entry allowing a user to make decisions as to what takes place next. 4.

Specific uses of multimedia include: Drill and practice to master basic skills

the development of writing skill

problem solving understanding abstract mathematics and science concepts simulation in science and mathematics manipulation of data

acquisition of computer skills for general purposes, and for business and vocational training access and communication to understand

populations

and students access for teachers and students in remote locations individualized and cooperative learning management and administration of classroom activities. 5.

Role of Teacher in Multimedia Approach •

Teacher has to adopt a number of methods and techniques.

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Teacher has to aware of the different available media and their availability. • Teacher should be physically competent to use and demonstrate the use of the different media. •

Teacher should be skillful enough to make a judicious choice of media and competent enough to mix them sequentially and in an orderly manner. • Teacher's role is that of a facilitator or manager of activities. • Teacher has to lead his student for independent, individualized learning. 6.

Advantages of the multimedia Approach • Multimedia approach enables the student to represent information using several different media. • Can arouse the curiosity among the learner and provide them vivid impressions. • Multimedia can take into account

different learning styles - some pupil learn by interpreting text, while others require more

graphical representations. • Can develop a positive attitude among the learners towards the teaching-learning process. •

Multimedia Approach allows for self-pacing • Technique of simulation can be effectively applied through the multimedia

approach. • Helps in development of higher order thinking skills. • Multimedia approach provides the student the

flexibility of 'anywhere', 'any time' learning. • Helps in developing group and interpersonal skills. • Effective remediation

programmes can be implemented through the multimedia approach. • Multimedia approach can bridge language

barriers since audio is not the only means of communication. 7. Disadvantages of the multimedia Approach • Requires highly sophisticated infrastructure facilities, which may lead to heavy financial burden. • Expertise and skill are required to operate the multimedia devices, which will lead to the problem of non-availability of human resources. • Not feasible in the all topics of study.

150 8.

With a multimedia approach, the student could also access Web sites on the Internet to get more information. The student could then add film clips on these animals in their natural habitat (all may be from the same CD-ROM) and blend them into a report. Then by adding titles and credits, the student now has a new and original way of

communicating his/her own individual perspective. 9. With multimedia simulation technique can be effectively applied. By using simulation, student can grasp a better understanding about the step and producer to make or do a certain project. This can improve their understanding and also help improving their skills. 10. Multimedia possessed a lot of advantages to make learning interesting. With the help of its elements, it can invoke creativity in both teacher and students so that they can apply it in order to teach or learn. Learning also becomes much easier with the help of multimedia. Multimedia can help improve our educational system.

3.9 Check Your Progress 1. Define Multimedia. Briefly discuss the advantages of multimedia learning over traditional learning. 2. Comment on the recent trends in Multimedia teaching and learning process. 3. How had multimedia changed the educational scenario? Explain. 4. Give a comparative study on the advantages of smart board over blackboard.

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Unit 4 □ Technology Based Instruction Structure 4.1 Introduction 4.2 Objectives 4.3 Enhancing Technology Friendly Practices among Teachers 4.3.1 Technology and Teaching Practice 4.3.2 Role of Technology in School Management to enhance learning. 4.3.3 An Overview of Teacher Managerial functions in the classroom. 4.3.4 Benefits of Technology in the Classroom 4.3.5 Teacher Technology Competencies 4.3.6 Importance of ICT Competencies for Teachers. 4.3.7 Basic Technology Competencies. 4.3.8 Strategies for preparing teachers to use technology 4.4 Computer-Assisted & Computer Managed Instructions, Cybernetics, E- learning, Use of Net Search and Websites 4.4.1 Computer Assisted Instruction 4.4.2 Computer Managed Learning 4.4.3 Cybernetics 4.4.4 E-Learning 4.4.5 Importance of Internet and Web searches in the Modern Education 4.5 Disability Friendly Technology - Punarjani, and e-learning Framework developed by C-DAC 4.5.1 Punarjani 4.5.2 E-Learning Framework by C-DAC 4.6 Developing Technology Integrated Lessons 4.7 Implications of Technology based instruction in Inclusion 4.8 Let us sum up 4.9 Check your progress 4.10 References for further readings.

153 4.1 Introduction The

effective Use of Technology in Education has changed the face of education and it has created more educational opportunities. Both teachers and students have benefited from various educational technologies, teachers have learned how to integrate technology in their classrooms and students are getting more interested in learning with technology. The use of technology in education has removed educational boundaries, both students and teachers can collaborate in real time using advanced educational technologies. Technology has helped in the growth of mobile learning and long distance learning. The use of internet technology has enabled teachers to reach students across borders and also students from developing countries have used internet technology to subscribe for advanced educational courses. Many universities and colleges have embraced online education by creating virtual classrooms. Online education is flexible and affordable, students can attend classrooms during their free time, and they can also have a chance to interact with other students virtually. Recent advancements in educational technologies have yielded positive results in our education sector. This new educational technology is supporting both teaching and learning processes, technology has digitized classrooms through digital learning tools like, computers, iPads, smartphones, smart digital white boards; it has expanded course offerings, it has increased student's engagement and motivation towards learning. The teaching strategies based on educational technology can be described as ethical practices that facilitate the students' learning and boost their capacity, productivity, and performance. Technology integration in education inspires positive changes in teaching methods on an international level. Benefits of Technology in a Special Educational Classroom

1. Most students are drawn to technology and special education teachers often find that these students are then more motivated to work because they get to use a technology device in the classroom.
2. Teachers can work with more students at one time more effectively, such as using a phonetic ear so that more students can hear or a clicker response system to engage all of the students at once.
3. Technology is an equalizer and parents even report that when their children with challenges or disabilities uses technology that they are seen as more capable by peers.

154 4. Children learn valuable technology skills that can translate into marketable skills. 5. Children with physical disabilities have more opportunities for engaged learned with modified assistive technology such as touch screens and assistive wands. 6. Students who spend time in mainstream classes and special education classrooms can use technology to bridge the expectations and demands of each, such as by using a device to record lectures for playback later. 7. Technology can help build confidence in children. They are finding more success academically and they are also feeling more like their classmates who utilize technology every day, too. Even though there are many other tools that are valuable to special education teachers, technology can be counted as a beneficial resource that can turn special education classrooms into launch-pads for learning - and life. 4.2

Objectives After going through this unit you will be able to ●

discuss how to enhancing Technology Friendly Practices among Teachers. ●

discuss about the importance of

Computer-Assisted & Computer Managed Instructions, Cybernetics, E- learning, Use of Net Search and Websites ●

discuss about

Disability Friendly Technology - Punarjani, and e-learning Framework developed by C-DAC 4.4

Developing Technology Integrated Lessons - Individual and Group ● discuss the implications of Technology based instruction in Inclusion 4.3

Enhancing Technology Friendly Practices Among Teachers 4.3.1 Technology and Teaching Practice Thomas Edison once said, "Books will soon be obsolete in the public schools...our school system will be completely changed inside of ten years." Amazingly enough, however, one of our nation's most important inventors was proven quite wrong. The education system has a remarkable resistance to innovation and the classroom experience has changed very little in the 100 years since Edison's prediction. Advances in information technology have revolutionized how people communicate and learn in nearly every aspect of modern life except for education. The short school

155 day and the break in the summer were meant to allow children to work on family farms. Schools have an enduring industrial mentality placing students in arbitrary groups based on their age regardless of their competencies. Technology has failed to transform our schools because the education governance system insulates them from the disruptions that technology creates in other organizations. The government regulates schools perhaps more than any other organization. Rules govern where students study, how they will learn, and who will teach them. To overcome these obstacles, we must persuade teachers that technology will empower them and help their students learn. There are five strategies for successful teacher adoption of education technology and that these principles will help fulfill the potential that Edison saw a century ago: Schools must use technology that empowers teachers. Teachers rightly reject education technologies that divert their attention from instruction. The best education technologies enable teachers to do more with fewer resources. Communication platforms like Twitter and Facebook enable dynamic communication with students. Teacher-empowering technologies include mobile apps that grade written student work and provide lesson plan databases. School systems need to aggressively track what works for their teachers and put all other unworkable technologies aside. Teachers should treat the adoption of technology as part of lesson planning. Teachers can incorporate technology directly into their practice and insulate their students from the deleterious effects of policy churn. Systematic adoption of technology at the classroom levels limits the damage of shifting policy maker priorities. Teachers should not fear open-source technologies. Many mistakenly believe that education technologies are expensive and complicated to use. Open-source technologies are stable, secure, and compatible with other platforms. Organizations both small and large use open source devices every day. Many businesses use open-source servers for their efficiency and costs savings. They often have large communities that provide high quality customer support. Best of all, open-source technologies often cost less than proprietary products. Use online education portfolios to evaluate students. Educators have known about the benefits of paper based portfolios for generations. Portfolios allow students to express creativity for difficult to assess subjects. Teachers can choose from a variety of online portfolio providers tailored to the needs of their classroom. They also serve as a platform for students to demonstrate growth. Online portfolios have many advantages over paper based options because they cost less and allow for more robust outreach. Online

156 portfolios are also amenable to a wider variety of formats including video, music or other interactive features. Teachers should embrace the Common Core State Standards. Common standards make teaching simpler. Teachers have to write lessons that comply with district, state, and national standards (e.g. NCTM or NCTE). Having a single set of standards eliminates redundancy and conflicting guidelines. Furthermore universal adoption of common standards will support future technological innovations that aid teachers. From a technical perspective, standards facilitate the development of new technologies. Innovators can focus on developing tools that better serve students rather than solving technical challenges of interoperability created by multiple sets of standards. Undoubtedly weak financial support inhibits the adoption of education technology. Despite this obstacle, teachers working together have tremendous potential to reform education. Every day teachers face choices about how to implement the curriculum and instruct students. Those moments are opportunities for teachers to engage in education reform that has a real impact on students. Teachers should use education technologies that are inexpensive, easy to use, and improve student learning.

4.3.2 Role of Technology in School Management to Enhance Learning: India has one of the largest networks of schools in the world. During the last five decades the system has grown manifold in size both in terms of institutions and enrolment. Some say, that the nature of Indian education system shifted from an elite system to a system of mass education. For instance, the number of primary schools was around 200,000 in 1950, which is at present more than 600,000. If one were to take into consideration the number of alternate schools that have sprung up in recent years, and include the upper primary and secondary schools, the network consists of more than a million schools. Traditionally, school education acquired immense importance in the post-Independence period and with the consequent expansion of the system, the role of the school teacher also underwent a significant transformation. An important consequence of the expanding system of schools, with ever increasing enrolment and acquiring of mass character, has been the increase in complexity of school management.

The changing pace of technology development like ICT and knowledge revolution has made the job of the teacher more demanding. They are required and should be encouraged to assume the new roles and responsibilities for ICT to improve the quality of education and access to education by learners

in an informal and non-formal education setting. (Govinda, 2002) The system demands new knowledge and skills from the teacher and head teachers. It also demands greater capability at the school level to respond to the emerging diversity in the student population and among those entering the teaching

157 profession. In effect, changes in the characteristics of the system have made the role of the school teacher even more critical than what it was earlier. Has the State, which is the main provider of education in the country, responded to the changed reality? Has the teacher become more empowered? Have adequate efforts been made to equip the teacher to face the emerging challenges? What is the current reality with respect to status, roles and functions of the teacher and the head teachers in India? And how can we come out from this challenge? These are few issues which need attention especially now when the country is moving towards becoming a knowledge center and quality education has become determinate in such process.

4.3.3 An Overview of Teacher Managerial Function in the Class Room

Historically, most of teachers restricted their role to teaching. The different government organizations and departments provided a guide line for the role and responsibility of the teacher. The teacher plays multiple roles in the school. The role of teacher is assessed in terms of his/her attendance in the class, completion of the course and interpersonal relation in the school. Till now, hardly any indicator is developed to assess the performance of teacher on the basis of learning achievement of the student. The critical managerial functions of a teacher in elementary education are similar to those in other sectors. These are: (i) Administration. Administration refers to the direction, control, management and organization of human and material resources for educational growth and development. (ii) Personnel management. Planning and managing human resources is personnel management. It includes recruitment, transfer and redeployment; promotional opportunities and performance appraisal systems, grievance redressal mechanisms and professional development issues. (iii) Planning. Planning is a systematic exercise of determining a future course of action in accordance with identified objectives, needs, priorities and existing/likely capacities, within a given time frame, reflecting cost-effective choices. (iv) Financial management. Financial management refers to mobilization, deployment and efficient use of financial resources as per stated objectives and strategies. (v) Supervision, monitoring and support. Monitoring and facilitation of teaching- learning processes, and other school development activities, for enhancing their

158 quality through suitable tools, methods and mechanisms. The focus is on school, because this is the unit where primary learning takes place, and any effort to improve the quality of processes should ultimately be reflected here.

4.3.4 Benefits of Technology in the Classroom

As we sail through the 21st century, technology in the classroom is becoming more and more predominant. Tablets are replacing our textbooks, and we can research just about anything that we want to on our smartphones. Social media has become commonplace, and the way we use technology has completely transformed the way we live or lives. Educators, too, have seen firsthand the benefits of technology in the classroom. Educators also recognize the importance of developing these technological skills in students so they will be prepared to enter the workforce once they complete their schooling. The impact that technology has had on today's schools has been quite significant. This widespread adoption of technology has completely changed how teachers teach and students learn. Teachers are learning how to teach with emerging technologies (tablets, iPads, Smart Boards, digital cameras, computers), while students are using advanced technology to shape how they learn. Here are a few benefits of using technology in the classroom.

Technology in the Classroom Makes Learning More Fun

Students prefer technology because they believe that it makes learning more interesting and fun. They especially like laptops and tablets. Subjects that students deem challenging or boring can become more interesting with virtual lessons, through a video, or when using a tablet.

Technology Prepares Students for the Future

Using technology in the classroom would help prepare them for the digital future. These 21st-century skills are essential in order to be successful in this day and age. Jobs that may not have had a digital component in the past, may have one now. Education isn't just about memorizing facts and vocabulary words, it's about solving complex problems and being to collaborate with others in the workforce. Ed-tech in the classroom prepares students for their future and sets them up for this increasing digital economy.

159 Improved Retention Rate Technology helps them retain information better. Technology indeed helps students remember what they learn. Technology Helps Students Learn at Their Own Pace Today's technology enables students to learn at their own pace. For example, almost all apps allow for individualized instruction. Students can learn according to their abilities and needs. This form of teaching is also great for the teacher because it gives him/her the time to work individually with students who may be struggling. Technology Connects with Students Technology occupies an important place within students' lives. When they are not in school, just about everything that they do is connected in some way to technology. By integrating technology into the classroom, teachers are changing the way they used to teach and providing students with the tools that will take them into the 21st century. Technology changes by the minute, and as educators we need to keep up with the times in order to best prepare our students for this ever-changing world that we live in. While we just saw how integrating technology into the classroom has its benefits, it's important to note that traditional learning processes are just as essential. 4.3.5 Teacher Technology

Competencies Teachers need to improve knowledge and skills to enhance, improve and explore their teaching practices. Many of the studies on competencies of teachers focus on the teaching role of teachers in the classroom rather than teachers' competencies. Competencies are defined as "the set of knowledge, skills, and experience necessary for future, which manifests in activities" (Katane et.al. Gupta defines competencies as "knowledge, skills, attitudes, values, motivations and beliefs people need in order to be successful in a job." ICT competencies are based on using tools and technical equipment for the reaching, disturbing and transferring the knowledge. They include any technology that helps to produce, manipulate, store, communicate, and/or disseminate information. It means that the ICT competency is very important to improve the communication in the learning and teaching process. The ICT Competencies are a set of technology standards that define

160 proficiency in using computer technology in the classroom. The competencies consist of computer-related skills grouped into four general domains: (1) Basic Technology Operation, (2) Personal and Professional Use of Technology Tools, (3) Social, Ethical, and Human Issues, and (4) Application of Technology in Instruction. 4.3.6

Importance of ICT Competency for Teachers Teaching is a complex activity. Competent teachers apply broad, deep, and integrated sets of knowledge and skills as they plan for, implement, and revise instruction. Technology proficiency (including technical skills and instructional applications) is but one dimension of teacher competence. The acquisition of technology knowledge and skills must be connected with the development of a broader array of competencies. Early attempts to develop technology standards for teachers were isolated from the broader teacher competencies and were focused primarily on technology skills. Consequently these competencies were largely ignored by teacher-training institutions. Typically, colleges of education simply required a single media course to satisfy accreditation requirements; often, colleges were reluctant to insert yet another course into an already overloaded curriculum. The International Society for Technology in Education (ISTE) has actively addressed the technology isolation problem and has recently released a set of revised teacher technology standards. Developed through a rigorous process of expert and lay-person input, the NETS-T Project (National Educational Technology Standards for Teachers) explicitly describes what competent teachers should know and should be able to do with technology in the context of broader teacher competencies. The NETS-T standards are categorized as follows: 1. Technology operations and concepts, 2. Planning and designing learning environments and experiences, 3. Teaching, learning, and the curriculum, 4. Assessment and evaluation 5. Productivity and professional practice, 6. Social, ethical, legal, and human issues.

161 4.3.7

Basic Technology Competencies Fundamental skills come first - like managing electronic files, using computerized databases and spreadsheets, sending and receiving e-mail messages, and creating documents with graphics. These skills are prerequisites for more advanced skills, such as accessing online resources, creating desktop publishing documents, developing multimedia presentations, selecting and customizing instructional software to fit students' needs, streamlining recordkeeping and other administrative procedures with electronic tools, and observing the correct protocols in sharing intellectual property. The competencies are organized into five aspects: productivity, communication, research, media and presentation.

1. Productivity

- Produce and manage learning documents. This includes composing standard educational publications such as parent newsletters and handouts for students and class lists; teaching students how to prepare their own documents on a computer.
- Analyze quantitative data. This includes administrative work such as putting student test scores into a spreadsheet and analyzing them, as well as preparing curriculum materials with digital tables and graphs of curriculum content.
- Organize information graphically. He or she can use specialized graphic organizer programs, as well as general tools such as word processors or presentation programs, to create digital representations of educational information.

2. Research

- Use effective online search strategies. In their professional preparation, as well as in their classroom assignments, the teacher chooses the most appropriate research tools and databases, and applies the most effective search techniques, to produce useful and safe online resources in the classroom.
- Evaluate and compare online information and sources. Once located, the teacher knows the difference between authoritative and untrustworthy sources, how to ascertain authorship, and how to find sources with different points of view. And can teach these skills to students.
- Save and cite online information and sources. The teacher knows a variety of methods for bookmarking and saving valuable online resources so that they may easily be found later and employed in learning materials.

3. Communication

- Communicate using digital tools. These include email, instant messaging, mobile colleagues, and knowing how to organize and manage these tools in the classroom.
- Collaborate online for learning. Takes advantage of the tools listed above plus blogs, wikis, chats, audio and videoconferencing to bring outside resources into the classroom and to encourage academic collaboration among students.
- Publish learning resources online. From a simple teacher's web site to a complex curriculum wiki to the online posting of student projects, to podcasting, the teacher has mastered an array of tools and techniques for publishing learning materials online.

4. Media

- Differentiate instruction with digital media. This includes an awareness of assistive technologies for disabled students as well as the ability to use a computer to prepare and present academic ideas in a variety of forms for better learning by all students.
- Capture and edit images, audio, and video. The teacher can use digital still and video cameras, edit their output on a computer, and produce learning materials that range from simple slide shows to the archiving of student presentations and performances.
- Produce digital multimedia educational experiences. The teacher can combine media from a wide array of sources into a useful presentation of academic content, and can teach this skill to students.

5. Presentation

- Create effective digital presentations. Using common tools for preparing slide shows, videos, and podcasts, the teacher can create presentations that follow the principles of communication, and can apply these design principles to the evaluation of students' digital work.
- Deliver digital multimedia presentations. Using common devices such as computers, projectors, and screens, the teacher can set up classroom presentations and arrange for students to do the same.
- Employ new media devices for learning. From large Smart Boards to tiny iPods to science probes, the teacher can incorporate a variety of digital devices into the instruction in the classroom.

163 Those are the skills that just about every teacher needs, no matter the subject or grade. Beyond these are the more specific technical skills required of a high school math teacher or a teacher of visually-impaired students, competencies that would be embedded into specialized courses and programs.

4.3.8 Strategies for Preparing Teachers to Use Technologies

Given the importance of well-trained teachers for technologies to be effective in enhancing learning, what might education policy makers do to support and encourage appropriate strategies for training teachers? No single approach to professional development will meet the learning needs of all teachers seeking to develop skills and knowledge in the integration and application of technology. Teachers' progress through a series of five predictable stages as their expertise in technology adoption and integration evolves. It is likely that within a school, and certainly within a district, teachers will exhibit varying levels of expertise and therefore a variety of different professional-development opportunities will be required. In contrast, learning that occurs outside the confines of programs provided by institutions is considered informal learning. Informal learning, sometimes referred to as self-directed learning, typically occurs in the learner's "natural setting" and is initiated and conducted independently (Merriam & Caffarella, 1999). Policy makers may want to consider both kinds of approaches. A brief overview of the kinds of possible training strategies is as follows:

Encouraging Teachers to Acquire Necessary Skills:

For many teachers, having access to technologies is not viewed initially as a benefit. Teachers may consider technologies yet another demand on their time, a set of tools they did not ask for and do not know how to use. Some teachers feel they are already doing a good job in the classroom and wonder how technologies will contribute to improvements. Still other teachers, of course, welcome the technologies and are eager to learn how to use them. Policies that either mandate or provide opportunities will cost money, but without the establishment of policy that mandates or provides professional-development opportunities (or, ideally, both), teachers are unlikely to acquire the skills they need to use the technologies available to them, thus negating the potential benefits of the investment that has been made in infrastructure. Providing sustained support for Teachers' use of Technologies: It is very important for teachers to acquire knowledge and skills in how to use technologies. But once teachers

164 begin to acquire such skills and begin to use technologies, there is a need to provide means of continuing support to teacher use of technologies. That is, initial training of teachers is not likely to guarantee that the technology infrastructure will continue to be used.

Evaluating Teacher Use of Technologies:

The issue for education policy makers here concerns the extent to which a teacher uses technologies effectively, which can or should be an important criterion in evaluating a teacher's performance. This is a complicated issue for policy makers. This general issue is complex in part because of divided opinion on how important technology use is to the future well-being of individual citizens in a given entity, or to the entity as a whole. There are many writers who make the argument that neither an individual nor a state or nation can hope to survive or prosper unless they are very familiar with technologies. Others dispute this claim and worry about the survival of traditional cultural values in a technological age. Given this deeply-rooted controversy, establishing policy according to which teacher performance will be judged is of critical importance.

Teachers are central to the effectiveness of technology infrastructures that serve education. How teachers acquire the skills they need to use technologies and how the technology is actually used and to what ends, are critical policy domains that must be carefully explored. Hopefully, issues of this nature will be considered as decisions are made about technology and as educators make decisions about the future shape of their schools.

4.4 Computer Assisted and

Computer Managed Instructions, Cybernetics, E- Learning, Use of Net Search and Websites

4.4.1 Computer Assisted Instruction (CAI)

A self-learning technique, usually off line/

online, involving interaction of the student with programmed instructional materials. Computer Assisted Instruction (CAI) is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place. CAI uses a combination of text, graphics, sound and video in enhancing the learning process.

The computer has many purposes in the class room,

and it can be utilized to help a student in all areas of the curriculum. CAI

refers to the use of the computer as a tool to facilitate and improve instruction. CAI programs use tutorials, drill and practice, simulation, and problem solving approaches to present topics and they test the students understandings.

165 Typical

CAI Provides 1. Text or

multimedia content 2. Multiple-choice questions 3. Problems 4. Immediate feedback 5. Notes on incorrect responses 6. Summarizes students' performance 7. Exercises for practice 8. Worksheets and tests.

Types of Computer Assisted Instruction 1. Drill-and-practice Drill and practice provides opportunities or students

to repeatedly practice the skills that have previously been presented and that further practice is necessary for mastery. 2.

Tutorial Tutorial activity includes both the presentation of information and its extension into different forms of work, including drill practice, games and simulation. 3.

Games

Games software often creates

a

contest to achieve the highest score and either beat others or beat the computer. 4. Simulation Simulation software can provide an approximation of reality that does not require the expense of

real life or its risks. 5.

Discovery Discovery approach provides

a large database of information specific to a course or content area and challenges the learner to analyze, compare, infer and evaluate based on their explorations of the data. 6. Problem solving This approach helps children develop specific problem solving skills and strategies.

Advantages of Computer Assisted Instruction *One to one interaction

166 *Greater motivator *Freedom to experiment with different options *Instantaneous response/immediate feedback to the answers elicited *Self-pacing allow

students

to proceed at their own pace *Helps teacher can devote more time to individual students *Privacy helps the shy and slow learner to learn *Individual attention *

Learn more and more rapidly *

Multimedia helps to understand difficult concepts through multi-sensory approach *Self-directed learning-students can decide when, where, and what to learn. Limitations of Computer Assisted Instruction *May feel overwhelmed by the

information and resources available *Over use of multimedia may divert the attention from the content *Learning

becomes too mechanical *Non availability of good CAI packages *Lack of infrastructure. 4.4.2

Computer Managed

Learning Computer Managed Learning (CML) is not to be confused with Computer Assisted Instruction (CAI), Computer Based Instruction (CBI), or Computer Based Learning (CBL). It is however, often referred to as Computer Managed

Instruction (CMI).When discussing computers and education, if one remembers that learning and instruction generally refer to the same thing, a good deal of the confusion between different terms is often eliminated. CMI has both a broad

and narrow meaning. In the broader sense, CMI refers to the following definition; CMI in its most sophisticated levels

provides the following instructional functions; (1) Assesses the learners present level of knowledge (2) diagnoses

weakness in the students learning (3) prescribes learning activities to remediate the identified weaknesses , and (4)

continuously monitors progress of the learner

167 CML can save time, money, and bureaucratic headaches, special educators are likely to continue developing and

using microcomputer management tools for; • Storing demographic and educational information on students and their needs • Recording, monitoring, and reporting students' progress • Listing incomplete information on student records •

Recording contacts with parents and supporting agencies/personnel • Recording, monitoring and reporting student due process status • Generating reports on referrals, meeting, evaluation, placement, programming and review for each

student. • Locating, describing, and recommending appropriate materials based on individual student need • Generating IEP objectives from a large data base and • Issuing reminders for when reports are due. 4.4.3 Cybernetics: Cybernetics is

not a new invention but its potential for application has not exhausted even after nearly seventy years of its origin. It

started with idea of automation and control in the electrical and mechanical systems, but later on extended to biological, social systems and learning systems.

Cybernetics means 'to steer', 'to navigate' or 'to govern' for taking the system to desired goal. Here in classroom teaching-learning process is a system and the goal is success of the learner and learning process. Classroom cybernetics is constituted by Constructivism, Conversation theory and a feedback system. Constructivism resulted in five E's namely- Engage, Explore, Explain, Elaborate and Evaluate.

Conversation theory necessitates interaction between teacher and learner. Feedback is another essential element of cybernetics which is an instrument for controlling the system to maintain equilibrium, move forward or even reverse it. The aims of Cybernetics divided into three classes as follows:- 1. To construct an effective theory, with or without actual hardware models, such that the various aspects of human and other sorts of behaviour can be simulated. 2. To produce models and theories of human behaviour which present these functions of human beings and other systems in the same manner in which they are performed by human beings or other such systems as are considered. In other words, it is not enough merely to produce the same end result; we want to produce the same end result by similar or even identical means.

168 3. Finally, to produce, or simulate, the whole of human or animal behaviour by models which in their construction are identical with human beings or animals. That is, they should in the end be chemico-colloidal systems, or protoplasmic systems. 4.4.4 E-Learning Use of computers and new technologies has become a crucial part of learning as well as teaching. E-learning today has been a key factor in various industries and teaching is one among them; especially teaching language. E-learning has redefined some strategies and concepts of teaching that have enabled the teaching community to perform better.

E-Learning

is learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom. In most cases, it refers to a course, program or degree delivered completely online. There are many terms used to describe learning that is delivered online, via the internet, ranging from Distance Education, to computerized electronic learning, online learning, internet learning and many others. We define eLearning as courses that are specifically delivered via the internet to somewhere other than the classroom where the professor is teaching.

It is not a course delivered via a

DVD or CD-ROM, video tape or over a television channel. It is interactive in that you can also communicate with your teachers, professors or other students in your class. Sometimes it is delivered live, where you can "electronically" raise your hand and interact in real time and sometimes it is a

lecture that has been prerecorded. What is

e-learning? Is it important in education?

When it comes to online learning in education, the model has been pretty straightforward - up until the early 2000s education was in a classroom of students with a teacher who led the process. Physical presence was a no-brainer, and any other type of learning was questionable at best. Then the internet happened, and the rest is history.

E-learning is a rapidly growing industry, the effects of which we can trace back to the 1980s and even well before that (in the form of distance learning and televised courses) -

these will be discussed later in this ebook.

Now that affordable e-learning solutions exist for both computers and internet, it only takes a good e-learning tool for education to be facilitated from virtually anywhere. Technology has advanced so much that the geographical gap is bridged with the use of tools that make you feel as if you are inside the classroom. E-learning offers the ability to share material in all kinds of formats such as videos, slideshows, word documents

169 and PDFs. Conducting webinars (live online classes) and communicating with professors via chat and message forums is also an option available to users.

There is a plethora of different e-learning systems (otherwise known as Learning Management Systems, or LMSs for short) and methods, which allow for courses to be delivered.

With the right tool various processes can be automated such as a course with set materials and automatically marked tests. E-learning is an affordable (and often free) solution which provides the learners with the ability to fit learning around their lifestyles, effectively allowing even the busiest person to further a career and gain new qualifications.

Some of the most important developments in education have happened since the launch of the internet. These days' learners are well versed in the use of smartphones, text messaging and using the internet so participating in and running an online course has become a simple affair. Message boards, social media and various other means of online communication allow learners to keep in touch and discuss course related matters, whilst providing for a sense of community. In the fast-paced world of e-learning the available technologies to make a course new and exciting are always changing, and course content can and should be updated quickly to give students the very latest information. This is especially important if the e-learning training is being given to employees in a sector where keeping up-to-date on industry developments is of the utmost importance. This is one of the reasons why many businesses are now offering training via e-learning - other reasons includes low costs and the ability for employees to study in their own time and place. Overall, traditional learning is expensive, takes a long time and the results can vary. The importance of E-learning is now a given fact and it can offer an alternative that is much faster, cheaper and potentially better.

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The history of e-learning The term "e-learning" has only been in existence since 1999, when the word was first utilized at a CBT systems seminar. Other words also began to spring up in search of an accurate description such as "online learning" and "virtual learning". However, the principles behind e-learning have been well documented throughout history, and there is even evidence which suggests that early forms of e-learning existed as far back as the 19th century. An e-learning history timeline Long before the internet was launched, distance courses were being offered to provide students with education on particular subjects or skills. In the 1840's Isaac Pitman taught his pupils shorthand via correspondence. This form of symbolic writing was designed to improve writing speed and was popular amongst secretaries, journalists, and other individuals who did a great deal of note taking or writing. Pitman, who was a qualified teacher, was sent completed assignments by mail and he would then send his students more work to be finished using the same system. In 1924, the first testing machine was invented. This device allowed students to tests themselves. Then, in 1954, BF Skinner, a Harvard Professor, invented the "teaching machine", which enabled schools to administer programmed instruction to their students. It wasn't until 1960 however that the first computer based training program was introduced to the world. This computer based training program (or CBT program) was known as PLATO- Programmed Logic for Automated Teaching Operations. It was originally designed for students attending the University of Illinois, but ended up being used in schools throughout the area. The first online learning systems were really only set up to deliver information to students but as we entered the 70s online learning started to become more interactive. In Britain the Open University was keen to take advantage of e-learning. Their system of education has always been primarily focused on learning at a distance. In the past, course materials were delivered by post and correspondence with tutors was via mail. With the internet the Open University began to offer a wider range of interactive educational experiences as well as faster correspondence with students via email etc. Online learning today With the introduction of the computer and internet in the late 20th century, e-learning tools and delivery methods expanded. The first MAC in the 1980's enabled individuals to have computers in their homes, making it easier for them to learn about particular subjects and develop certain skill sets. Then, in the following decade, virtual learning

171 environments began to truly thrive, with people gaining access to a wealth of online information and e-learning opportunities. By the early 90s several schools had been set up that delivered courses online only, making the most of the internet and bringing education to people who wouldn't previously have been able to attend a college due to geographical or time constraints. Technological advancements also helped educational establishments reduce the costs of distance learning, a saving that would also be passed on to the students - helping bring education to a wider audience. In the 2000's, businesses began using e-learning to train their employees. New and experienced workers alike now had the opportunity to improve upon their industry knowledge base and expand their skill sets. At home individuals were granted access to programs that offered them the ability to earn online degrees and enrich their lives through expanded knowledge.

The benefits and drawbacks of online learning Whether you're a high-school teacher looking to engage your students in a more interactive way, or a corporate trainer hired by a large company to design training curricula, e-learning packs a punch when it comes to benefits that make the creation and delivery processes easier and hassle-free. Important benefits are outlined below: No Boundaries, No Restrictions Along with locational restrictions, time is one of the issues that learners and teachers both have to face in learning. In the case of face-to-face learning, the location limits attendance to a group of learners who have the ability to participate in the area, and in the case of time, it limits the crowd to those who can attend at a specific time. E- learning, on the other hand, facilitates learning without having to organize when and where everyone who is interested in a course can be present. More Fun Designing a course in a way that makes it interactive and fun through the use of multimedia or the more recently developed methods of gamification (further discussed in later chapters) enhances not only your engagement factor, but also the relative lifetime of the course material in question. Cost Effective This is directed to both learners and teachers, but there is a good chance that 172 whatever your role you had to pay exorbitant amounts of money at some point to acquire updated versions of textbooks for school or college. While textbooks often become obsolete after a certain period of time, the need to constantly acquire new editions is not present in e-learning. It Just Fits! As companies and organizations adopt technologies to improve the efficiency of day-to-day operations, the use of the internet becomes a necessity. As multinational corporations expand across the globe, the chances of working with people from other countries increases, and training all those parties together is an issue that e-learning successfully addresses. And that's a great advantage of online learning! Let's blend all of that together and apply it in a real-life scenario: In an effort to enhance the credibility of course material, oftentimes a professor will summon a field specialist to give a lecture relevant to the topic at hand. In the traditional model of education, the professor would have to extend an invitation to said expert, and incur the costs of his flight, stay and training. With e-learning: With e-learning the professor has the ability to host a guest lecture without having to spend much money. It can be done virtually, with cameras for both the lecturer and the students, and with the use of microphones to facilitate the same level of interaction that would be possible if the lecturer were physically present in the room. The added benefit comes in when we are able to replay the lecture and gain even more out of it. Students that missed out can view the recording, or students that attended can watch it again to further their understanding. Concerns that arise with e-learning Even given all the benefits of e-learning, one cannot deny there are some drawbacks. A good example of a disadvantage of online learning is that practical skills are somewhat harder to pick up from online resources. For example, although building a wooden table is something you can easily share information about, record videos of and explain, the practical experience is essential. Pottery and car engineering are examples of skills that require hands-on experience. Isolation Though e-learning offers ease, flexibility and the ability to remotely access a 173 classroom in the student's own time, learners may feel a sense of isolation. This is because learning online is a solo act for the most part, which may give the learner the feeling that they are acting completely alone. As technology progresses and e-learning benefits from the advancements being made, learners can now engage more actively with professors or other students using tools such as video conferencing, social media, and discussion forums amongst others. Health Related Concerns E-learning requires the use of a computer and other such devices; this means that eyestrain, bad posture and other physical problems may affect the learner. When running an online course it's a good practice to send out guidelines about correct sitting posture, desk height, and recommendations for regular breaks. 4.4.5 Importance of

Internet and Websearches in the Modern Education Things are changing rapidly as the world is progressing. In this modern world people are using advanced machines to do their work. Computer is the most advanced machine that people use to do their work. This particular machine is used in every field of life. Advanced techniques are used with help of computers to diagnose dangerous diseases. Advanced manufacturing techniques are used with the help of computers to manufacture the products. Computers are extensively used in the field of engineering. In past one machine was used to perform only a single task but now-a-days with the help of computers you can perform different tasks at one time. In modern business environment computers have special importance. A huge amount of time is saved due to multitasking. In business terms time is money, so if you are saving time you are saving money as well. Due to multitasking the costs of businesses have reduced. What is the meaning of multitasking? It means that running several programs simultaneously. Since modern computers typically execute instructions several orders of magnitude faster than human perception, it may appear that many programs are running at the same time even though only one is ever executing in any given instant. Multitasking may slow down a computer that is running several programs at one time. Many advanced computers are designed to share their work across many CPUs. This process is called multiprocessing. This technique is generally used in powerful computers such as super computers, mainframe computers and servers. Thus, the entire world is fully dependent on computers. Due to this factor demand of computers has been increased. Computers have changed the way we work, be it any profession. Therefore, it is only but natural the role of computers in education has been given a lot of prominence in the recent years. Computers play a vital role in every field.

174 Importance of Educational Websites In this technology era, the passion of internet is boosting among the students. For any search they usually like to use the Google to collect the information. Similarly in the case of education, it is often helpful to use education websites as a means of collecting the relevant information about the concerned subject. Well, it has become very necessary for any new business to promote over the web. If we want to put up and enlarge your business in worldwide then it's vital for you to make a good web site, so that people can easily understand the mission and vision of your business and liberally enjoy the various services. Today the many institutes and colleges in India are developing their own sites to offer the clear concepts to the students. With the help of these education websites student can search any colleges across the country just by entering the few relevant keywords like best law colleges in India, medical colleges in India. It is well said "Action Speaks Louder than Words"; in the same way education website will speak volume for students. At present there are some great education websites are available which directly conveys the useful information. Suppose you want to find the list of best law colleges in India these education websites help you out and shows the all best law colleges in India in the form of list even it can also mentioned the complete details of the colleges including courses offered, fee details, duration of the course and contact details of the colleges. The concept of education websites is still new in India but owing to its growing need, it is gaining popularity at a fast pace. Students have become more conscious about their career so that picking right course is necessary as it is the merely way that ensures their good professional life. In this regard, they visit education websites and openly discuss their areas of interest and seek all significant info. Students also visit these education websites to get the information about the various college or institute; they want to take admission in like medical colleges in India. These education websites are especially best for those students who live in the remote areas and don't able to reach the colleges. They can add their request by mailing these education websites and fetch the instant responses. 4.5

Disability Friendly Technology - Punarjani and E-Learning Framework Developed by C-DAC 4.5.1

Punarjani:

Punarjani is an assessment tool for the children with Intellectual disabilities. CDAC

175 Trivandrum is engaged in developing an assessment tool named Punarjani. The system will collect a lot of data about a particular child with intellectual disabilities like developmental history, school history, home environment, social environment etc. and will be capable of suggesting a long term goal for the

child. This is an assessment tool for teachers who work with children with intellectual disabilities. This tool frees the teacher from time consuming activities like preparing reports. Doing manual assessment etc. and thus gives the teacher more time with the children. The teacher can override the assessment data generated by Punarjani but then has to give sufficient reasons why the result has been overridden. The software has built in learning capability based on the teacher's input.

4.5.2 E-Learning Framework developed by C-DAC Centre for Development of Advanced Computing (C-DAC) is the premier R&D organization of the Ministry of Electronics and Information Technology (MeitY) for carrying out R&D in IT, Electronics and associated areas. Different areas of C-DAC, had originated at different times, many of which came out as a result of identification of opportunities.

- The setting up of C-DAC in 1988 itself was to build Supercomputers in context of denial of import of Supercomputers by USA. Since then C-DAC has been undertaking building of multiple generations of Supercomputer starting from PARAM with 1 GF in 1988.
- Almost at the same time, C-DAC started building Indian Language Computing Solutions with setting up of GIST group (Graphics and Intelligence based Script Technology); National Centre for Software Technology (NCST) set up in 1985 had also initiated work in Indian Language Computing around the same period.
- Electronic Research and Development Centre of India (ER&DCI) with various constituents starting as adjunct entities of various State Electronic Corporations had been brought under the hold of Department of Electronics and Telecommunications (now MeitY) in around 1988. They were focusing on various aspects of applied electronics, technology and applications.
- With the passage of time as a result of creative echo system that got set up in C-DAC, more areas such as Health Informatics, etc., got created; while right from the beginning the focus of NCST was on Software Technologies; similarly C-DAC started its education & training activities in 1994 as a spin-off with the passage

176 of time, it grew to a large efforts to meet the growing needs of Indian Industry for finishing schools. C-DAC has today emerged as a premier R&D organization in IT&E (Information Technologies and Electronics) in the country working on strengthening national technological capabilities in the context of global developments in the field and responding to change in the market need in selected foundation areas. In that process, C-DAC represents a unique facet working in close junction with MeitY to realize nation's policy and pragmatic interventions and initiatives in Information Technology. As an institution for high-end Research and Development (R&D), C-DAC has been at the forefront of the Information Technology (IT) revolution, constantly building capacities in emerging/enabling technologies and innovating and leveraging its expertise, caliber, skill sets to develop and deploy IT products and solutions for different sectors of the economy, as per the mandate of its parent, the Ministry of Electronics and Information Technology, Ministry of Communications and Information Technology, Government of India and other stakeholders including funding agencies, collaborators, users and the market-place.

C-DAC has developed a number of indigenous solutions for content management, evaluation and assessment, virtual classroom, collaboration for e-learning domain. Some of the solutions are listed below.

- e-Shikshak is a learning management system with rich support for Indian languages.
- National Online Examination System (NOES) is an examination system primarily aimed at conducting recruitment.
- Online Labs (Olabs) for school lab experiments provides students with the ease and convenience of conducting experiments over the Internet.
- Veda is a general purpose online testing and question banking system, primarily supporting multiple choice questions (including its variant forms such as match the following).
- Video conferencing solutions for building virtual classrooms supporting synchronous lectures are also available from C-DAC.
- e-Saadhya (SaraAnukulaneyAdhyayan) an Adaptable and Accessible e-Learning framework for the children with mild mental retardation and Autism, is being developed with the domain support from National Institute for the Mentally Handicapped (NIMH) with local language support in three Indian languages Hindi, Telugu and Kannada.

177 • An Academic Networking portal for the faculty members, students, and academic institutions to network and share information about courses, academic events, projects, etc. has been created through a portal called SEEKHA (www.seekha.in)

e-Sikshak - Learning Management System

Salient features of e-Sikshak: 1. Course Organizer 1. Support for 3-level course organization with a hierarchy of Course, Module and lesson 2. Create and modify courses 3. Course Reports 2. Online Assessment 1. Question bank creation 2. Multiple-choice single answers 3. Multiple-choice multiple answers 4. True or False questions 5. Uploading of assignments by instructor 6. Uploading solutions by student 7. Student performance reports 3. Whiteboard 1. Synchronous communication between student and instructor 2. Graphical interface to simulate real world Whiteboard 3. Facilitates drawings with color; all drawing tools like rectangle, circle, free- hand etc. 4. Text with desired color font etc 5. Shared discussion area between student and instructor 4. Bulletin board 1. Creates forums for subject discussions 2. Thread based discussions 3. Search

178 5. Chat 1. Real-time communication between instructor and learner 2. Public chat between student and instructor 3. Blocking/unblocking chat users by the instructor 6. e-Mail 1. Asynchronous communication tool 2. Facilitates offline interaction with instructor or among the student community 3. Attachment facility 7. User Management 1. Portal efficiently handles user management in successful implementation of the course. The different users involved are : 1. Administrator Can • Manage users • Create and update courses • Assigns learners to the courses 2. Instructor Can • Upload course material • Maintain question bank • Evaluate assignments • Activate discussion forums 3. Learner Can • Register into multiple courses • Access course material and download • Get the performance report • Take online test e-Sikshak is a Multi-lingual e-Learning framework Features: 1. Unicode based multilingual solution 179 2. Customizable Graphical User Interface 3. Supports multi media content 4. Portable to mySQL and Oracle 5. Servlet based serve side technology

e-Sikshak is right now used by : 1. Information Security and Education- CDAC Hyderabad 2. Indian Law Institute- New Delhi 3. National Institute Of Agricultural Extension Management- Hyderabad 4. India Development Gateway - CDAC Hyderabad. 5. Two online courses are being offered by CDAC Hyderabad on esikshak portal (www.esikshak.in) • Core Competency in Software Process Management [CCSPM] • Certificate Course on Cyber Security [CCCS] • C-DAC Certified Cyber Security Professional [CCCSP] • C-DAC's Certified Professional in Linux System Programming [CCP-LSP] • C-DAC's Certified Professional in Linux Kernel Programming & Device Drivers [CCP-LKPDD National Online Examination System National Online Examination System (NOES) is a robust, fault tolerant, secure and scalable examination system through which examinations can be delivered on an "on demand" basis in selected examination centers spread across the country. The system can be used by educational institutes and organizations for registration, examination and multi-level interviews.

180 Architecture The system has been developed using Adobe Flex, Spring, and Hibernate framework and is highly secure and fail safe. It utilizes the following framework across its various tiers namely Adobe Flex at the Presentation tier, Blaze DS at the Remoting tier, Spring at the Business tier, Hibernate at the Object Relational Mapping tier and Terracotta for providing JVM Level Clustering for high availability and better throughput. Functionality The main functionalities provided by the system include: • Online Registration Process through which candidates can provide their demographic details, choose their examinations, select exam slot timings and make payments (either through payment gateway or demand drafts) • Question Entry and Verification system through which questions can be entered under various subject headings and subsequent verification of those questions. • Exam Administration which provides the facility for creating examination, generation of question paper, result generation etc. • Exam Conduct system which presents the question paper to the candidate and captures the response submitted by the candidate. It supports both static and adaptive mode of examination. • Interview Conduct process comprising of Interviewer & Interview controller module. Interviewer module is used by interviewer for grading an eligible candidate. Interview controller module is used for assigning the candidate to a particular Interview Panel. Salient Features: • Authorized user based access control. • Online registration process with provision of exam scheduling and making payment (either through payment gateway or demand draft. • Automatic generation of admit cards. • Automatic generation of question paper by the system using input criteria like subject, number of questions and difficulty level. • System provides end to end security as question papers are encrypted. • AIR sandbox environment for the examination screen. • Highly fail safe with the ability to resume exam on the last saved state.

181 • Supports both static and adaptive modes of examination. • Multi-level interview process • Immediate result generation. MySikshak (personalized e-Learning framework) MySikshak (personalized e-Learning framework) which extends the learning environment with personalized e-Learning services assisted by instructor through web. It mainly focuses on needs and aspirations of individual learners. This model recognizes that every student is an individual, with a distinct learning style, learning pace, learning path, and learning aspiration. It is also dedicated for building individualized learning programs whose intent is to engage learner continuously in the learning process in the most productive way to optimize learner's learning potential and success Salient Features • Interoperable Services • Standards Compliant • User interface with rich interaction • Intelligent filter mechanism to group the learners • Collaborative activity/course building environment for Instructors • User interface with rich interaction • Platform independent Services provided by MySikshak: User Registration • Online registration • Updating user profile • Necessary user reports for instructor and learner • Provides the learning style • Request for a course Course Organizer • Add and Delete courses • Folder hierarchy based conversion into SCORM compliant standard course

182 • Collaboration among the instructor to upload the content into the course Learners' Information in dashboard • Dashboard provides assistance to instructor in analyzing the learning styles of the student cluster • Cluster management tool provides the facility of creating/deleting/ modifying the student clusters and their corresponding characteristics Learning Path Editor • Provides facility to instructor to design the SCORM compliant learning path template based on learner's prior knowledge and learning style • Provision for instructor/expert to add and modify the e-Learning activities like quizzes, examples and/or case studies within template, specific to the group identified • Leads to the creation of personalized learning path template comprising of learning content and activities Personalized Content and Activity Delivery • Takes the SCORM compliant learning path template assigned for learners • Use Run Time Environment (RTE), to deliver and track the learners' activities according to SCORM complaint learning path template Adaptive Assessment • Pre, Formative and Summative Assessments • Formative assessment using Computerized Adaptive Testing (CAT) • Summative assessment using Computerized Classification Testing (CCT) • æpQuestion Repository conforming to standards (IMS QTI) Query Handler with semantic web technology • Query Handler capable of semantically identifying the queries and supervised with expert rating mechanism • Ontology editor provides facility to create subject specific ontologies with help of experts

183 • Provides assistance to instructors for replying the queries with additional multimedia support from web. 4.6 Devolving Technology Integrated Lessons- Individual And Group When technology integration in the classroom is seamless and thoughtful, students not only become more engaged, they begin to take more control over their own learning, too. Effective tech integration changes classroom dynamics, encouraging student- centered project-based learning. The first step in successful tech integration is recognizing the change that may need to happen inside of yourself and in your approach to teaching. When any teacher brings technology into the classroom, he or she will no longer be the center of attention. The level of refocused attention will, of course, depend on the amount and the type of technology (e.g., mobile device, e-reader, laptop, interactive whiteboard) being brought into the classroom. However, this does not mean that the teacher is no longer essential to the learning process. While students may be surrounded by technology at home, it is dangerous to assume that they know how to use it for learning -- this is commonly referred to as the "myth of the digital native," Lesson Development Using Technology Lesson development refers to all the activities that teachers do as they create, teach, and evaluate lessons with students. Lesson development involves a teacher's decisions about three interrelated elements of teaching lessons: • Academic content (what to teach) • Teaching goals, methods, and procedures (how to teach) • Learning assessments (how to know what students have learned) Lesson development using technology involves how teachers use electronic resources to facilitate these processes. Academic Content (What to Teach) Every time they teach, teachers make choices about academic content-the facts, concepts, ideas, skills, and understandings they intend to share with students. Clearly, school system guidelines and state and national curriculum frameworks define and in some cases mandate "what to teach." Lesson development must be connected to local curriculum frameworks, which are aligned to state and national standards. However, because no local

184 curriculum or national standard spells out everything to teach about any given topic, classroom teachers must make choices about what will be explored or explained to students each day. Technology plays an essential role in assisting teachers to answer the academic content or "what to teach" question. Digital content available on the Internet includes a vast collection of curriculum resources and information. Using Internet search engines, electronic databases, online encyclopedias, blogs, wikis, and other technology tools, teachers and students have access to powerful new ways to research and retrieve information. Teaching Goals, Methods, and Procedures (How to Teach) As they answer the "what to teach" question, teachers simultaneously decide the teaching goals, methods, and procedures they will use in their classes. Goals are the reason why a lesson is being taught. Methods are the instructional strategies—large groups or small groups, discussions, lectures, role-plays, simulations, case studies, inquiry-based activities, creative writing, learning and reflection journals, drill and practice exercises, online tutors, or learning games—that teachers use to convey academic content to students. Procedures are the scheduling and grouping of students by teachers during a lesson, including how much time each activity has allotted to it. Teachers combine goals, methods, and procedures into formats for daily learning. Sometimes curriculum content dictates these processes; sometimes the goals, methods, and procedures dictate the choice of content. Either way, content, goals, methods, and procedures mutually support each other in a dynamic process of lesson development, which technology can support in a variety of ways, such as the following:

- Presentation software
- Visual thinking software
- Web-based diagram- and flowchart-making tools
- Teacher-developed websites
- Threaded discussions and email
- Web Quests
- Intelligent tutoring systems
- Digital cameras and movie-making software
- Assistive technologies

Learning Assessments (Knowing What Students Have Learned) Learning assessments occur before, during, and after teaching lessons and enable teachers

185 to evaluate student knowledge, understanding, and performance. They can be summative (summarizing what students have learned at the end of a lesson), formative (happening as a lesson unfolds), or diagnostic (preceding a lesson as a way to measure what students already know) (McTighe & O'Connor, 2005). Assessment tools include multiple-choice and short answer tests, essays and other written tasks, oral discussions, teacher observations, class participation, and student projects, portfolios, and performances, all of which provide evidence of what students have learned and are able to do as a result of the teaching. Technology tools that support the assessment and evaluation process include

- Electronic tests and quizzes
- Digital portfolios
- Personal response systems
- Online surveys
- Online evaluation rubrics

When technology integration in the classroom is seamless and thoughtful, students not only become more engaged, they begin to take more control over their own learning, too. Effective tech integration changes classroom dynamics, encouraging student learning.

4.7 Implications of Technology Based Instruction In Inclusion

Inclusion or integration

is an important part of equal opportunity in education. Demands for inclusive education have increased and fostered major changes to schooling and education. Students with disabilities are educated alongside their peers within the local community therefore mainstream schools are required to adapt to accommodate a diverse group of students with a variety of needs (O'Gorman, 2005, p. 377).

Approaches to the inclusion of children and young people into mainstream classrooms, and the identification and recognition of special educational needs, is an integral part of daily school work.

The wellbeing and actualization of developmental and learning potential within a diverse student population is challenging

the organization of learning settings.

Educational Technology for Inclusive Classroom: Integrating Technology into Instruction in an Inclusive Classroom for Diverse Learners is a welcome step to overcome the challenges. Inclusive Education is based on the concept of multiple intelligence and

186 individual difference. There is evidence to say that all individuals are different from each other and no two individuals can be completely alike even if they have been brought up in the same environment. Teachers should also realize that having high scholastic ability is not the only measure of child's intelligence. What is important is to develop flexible student centered pedagogy capable of educating all students, including those who are disabled or disadvantaged. In an inclusive setting we expect greater participation of students with special educational needs in the culture and curricula of mainstream schools. In this context we have to think of some techniques that permit all students who are different from each other to learn together in the same classroom.

Major Teaching Strategies: To make inclusive education a success and to teach students having diverse abilities in the same class the following teaching strategies may be used: 1. Use of Multimedia and computer assisted instruction 2. Team teaching 3. Cooperative learning 1. Use of Multimedia and computer assisted instruction One major factor to enhance learning in the inclusive classroom is the use of technology. Technology provides ways for children with disability to communicate and interact on a more equal level with other children. Adaptive technologies can open a new world to children with physical limitations and therefore children often feel better about themselves as active learners. Computer programmes can be individualized and automatically adjusted to the student's instructional level. This is more evident in the case of individuals with hearing and vision impairment. Multimedia approach of instruction (audio, video, graphics, internet, animations etc.) is essential for effective and efficient learning because in any learning situation, the more the senses are stimulated, the more the person learns and the longer he retains. Multimedia in the classroom also includes Power Point presentations that are created by the teachers.

Multimedia activities encourage students to work in groups, express their knowledge in multiple ways, solve problems, revise their own work, and construct knowledge.

The advantages of integrating multimedia in the classroom are many. Through participation in multimedia activities, students can learn: ● Real-world skills related to technology ●

The value of teamwork

187 " Effective collaboration techniques ● The impact and importance of different media ● How to present information in convincing ways ●

Techniques for synthesizing and analyzing complex content ● The importance of research, planning, and organization skills ●

The significance of presentation and speaking skills ● How to accept and provide constructive feedback ● How to express their ideas creatively 2.

Team Teaching: The special education teacher may brief the regular teacher on the IEP (Individual Educational Plan) of the learning disabled students. The two teachers can develop instructional plans and worksheets weekly. They share the task of grading student worksheets. In actual practice, the regular education teacher assumed most of the responsibility for the overall instruction and classroom management while the special education teacher give individual support to both special and regular students. Throughout the year the two teachers can refine their team teaching skills and can become a finely tuned instrument of education serving all the students in an enhanced classroom organization. For eg. if a blind student writes his/ her answer in Braille the general teacher may require the help of specialist to correct the answers. 2. Cooperative Learning: A working definition of

Cooperative Learning is the use of small groups through which students work together to maximize their own and each other's learning.

In cooperative learning, students work with their peers to accomplish a shared or common goal. The goal is reached through interdependence among all group members rather than working alone. Each member is responsible for the outcome of the shared goal.

Cooperative learning

is the instructional use of small groups so that students work together to maximize their own and each other's learning (

Johnson & Johnson, 1989). Cooperative learning

makes sense in inclusive classrooms because it builds upon heterogeneity and formalizes and encourages peer support and connection. However, cooperative learning is not of value only to children with disabilities, it is equally important for the normal children. Important skills such as critical thinking, creative problem solving, and the synthesis of knowledge can easily be accomplished through cooperative group activities

188 in inclusive classrooms. Not only can students get to know each other's abilities within a cooperative process, but teachers can as well. A general education teacher and a special education teacher planning together often find that they have unique skills and ideas to contribute to the process. The general education teacher may have a broader perspective on the curriculum and on curriculum integration, whereas the special education teacher may have special skills in modifying instruction and developing adaptations that benefit many children. General education teachers who are used to working with larger groups of children often can contribute important classroom management and organizational strategies to balance some of the individualized approaches proposed by the special education teacher. Cooperative learning is a strategy used by group/ number of students to achieve a common goal with mutual collaboration and support. In cooperative learning groups, students have two responsibilities: 1. To learn the assigned material 2. To make sure all other members do likewise. When learning situations are structured cooperatively, regular and special education students can work together in pairs or teams to accomplish their common goals. 4. Peer -tutoring: This involves one-to-one instruction from one student in the tutoring role to another student. In this method, students teach each other on one-to-one basis. Peer is defined as the individual of the same social gathering. For example, in a class a fellow student would be a peer. Therefore, when a student from the same class provides instruction to another student of the class the technique is called peer-tutoring. Sometimes peer tutoring may prove to be quite effective and both the student and the peer tutor may gain from the process. The push for technology in the classroom is not a new initiative. In the past there have been many attempts to incorporate technology in the classroom. In some cases school districts did not have funding to support technology while in others schools with technology and resources do not have the personnel and the know how to implement it effectively. In some cases teachers are not provided with the support needed to successfully integrate technology into the classrooms. In today's ever changing world, technology has found its way into every facet of our lives. The internet, mobile devices, you tube videos, social networking, I-pads and android all comprise the world our students are living and learning in. As educators, we must be able to embed this

189 technology into our practices and allow our children to benefit from these technological advances. Although this may seem like a difficult venture it really isn't. The reality is that most kids do not need instruction on how to operate a computer; we instead need to focus on learning how to teach content with and through technology. Teachers need to understand how technology can benefit student learning. Technology can allow a teacher to access each and every child's individual learning style while providing a platform where students can work at their own pace. Technology can help teachers balance the limited instruction time by providing activities, project-based learning, and one-on-one coaching and peer support all while making learning interactive and fun. Well employed use of technology in the classroom can allow teachers to tailor learning to students' individual needs while freeing up classroom time, leaving teachers more time for projects, one-on-one coaching, and more creative activities. 4.8 Let Us Sum Up

Today's generation of students are growing up in a digital world. Using digital devices is a huge part of their everyday experience out of school. Through Google they have access to a wide wealth of digital information, content and resources. With all of this so intrinsic to their 'outside school' experience, the challenge for the teaching profession is how to harness all this for learning within the classroom and at home. This generation of 'digital natives' has much lower need for libraries of physical content for example, the traditional resource used by students half a generation ago. Learning styles are changing and teachers need to adapt their teaching styles accordingly. One crucial question is will this new technology actually improve education? The impact of ICT on learning outcomes has been inconclusive, billions of pounds/euros spent - but is generally difficult to evaluate effectiveness in terms of improved results. Nonetheless there are outcomes that are conclusive, and which indirectly impact on learning outcomes. These include improvements in: • Engagement • Motivation • Independent learning • Parental engagement • Student and staff attendance and punctuality • Extending the children's learning time

190 With the change in learning styles, the role of the teacher is changing too; as well as being a presenter of lesson material; they also assume the role of facilitator/coach in an increasingly collaborative learning environment. These two key styles of learning; presenting and collaborating; link directly to some of the different types of technology employed in the classroom. Interactive White Boards have been the base of the presenting style of learning, where the teacher is at front of class, and all students are involved in interactive learning. For the more personalized learning, laptops, netbooks and tablets are increasingly pervasive in the classroom. Globally 2% of students have a mobile computing device supplied by the school, forecast to increase to 7% by 2016. The crucial point is that the teacher will still want and need to be in charge of the classroom, they may decide to let students use technology for some parts of a lesson but they will still want to be the centre-point of attention and control. This may be at the front of the classroom or, as is becoming more relevant, to be able to move around the classroom and still remain in control. In these styles of classroom environment clearly the ability of devices to talk to each other ie the seamless connectivity between student tablets and front-of-class display, becomes increasingly key.

Currently 13% of the 34 million classrooms globally have an interactive display, leaving a massive 87% without Individual 1:1 teaching equipment is not new, in its most basic format many schools use small simple hand-held whiteboards for children to write on, allowing each to write an answer or create a picture which can be held up for the teacher or class to see. The first individual student communication technology was the voting system, allowing each student to answer questions which could then be automatically collated and attributed to them. Teachers would often start the lesson with a couple of short questions to assess understanding of the previous lesson and if they needed to go back and recap - much more precise than just a show of hands. However mobile PCs (laptops, netbooks, tablets) truly unleash the full potential of 1:1 learning, allowing a fully personalised learning experience for each student. The concept of the "Flipped Classroom" is a method of teaching which is turning the traditional classroom on its head. Students do not need a teacher there when they are just viewing a lecture which can be done at home, perhaps by watching a video created by the teacher, or when they are completing an assignment.

191 Teachers do need to be present to help understand issues and work through problems and answer questions. The teacher then becomes a facilitator, tutor or guide and can spend more time one on one with the students. Teachers are finding that they can start to introduce this concept and slowly build on it and does not need to start as a complete radical change The transition to digital within education is leading to a raft of new exciting opportunities for education. The key factors for schools when considering technology investments are: ● Carefully consider technology investments in the context of their impact on pedagogy ● A need for a clear vision as to how the devices would be utilised and add value to the learning experience. ● Some concepts can be introduced, and slowly built on, without having to start with a complete radical change e.g. the flipped classroom. ● Take a broad approach to investment, considering both presentation style and collaborative style learning, and how the relevant devices communicate and interconnect. ● Consider the student's holistic learning experience, both in-class and at home and how these can feed into each other. ● Recognise the impact on teachers and the amount of training that will be needed to maximise the benefit of the technology. 4.9

Check Your Progress 1. Prepare a poster on Technology and Inclusion. 2. Comment on the recent trends in Technology for teaching and learning. 3. Compare technology integrated lesson with conventional method of teaching. 4. Develop technology supported lesson plans for PwID 4.10 References for further Readings 1. Bates, A. (1995) Technology, Open learning and distance education. London: Routledge.

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Unit - 5: Application of Technology Structure 5.1 Introduction 5.2 Objectives 5.3 Application of Technology in Lesson Planning, Worksheet Preparation, Report Writing and Evaluation. 5.3.1

Technology and Classroom Learning 5.3.2 Technology Integration Lesson Planning Process 5.3.3 Assistive Technology Tools & Resources for Students with Disabilities 5.4 Application of Technology in Assistive Devices 5.4.1 Assistive devices and technologies 5.4.2 Technology Areas 5.4.3 JAWS Screen Readers 5.4.4

Smart Phones 5.4.5 Screen Readers 5.5 Application of Technology in Instruction: Individual, Small Group and Large Group 5.5.1

Enhancing Small Group Instruction through Technology 5.5.2 Enhancing Large Group Instruction through Technology

5.6 Advantages, Merits and Demerits of Application of Technology 5.6.1 List of the Advantages of Technology in Education 5.6.2 List of Disadvantages of Technology in Education 5.7 Implications for Inclusion 5.8 Summary 5.9 Check your Progress 5.10 Assignments/ Activities 5.11 Points for Discussion / Clarification

195 5.1 Introduction

Today's generation of students are growing up in a digital world. Using digital devices is a huge part of their everyday experience out of school. Through Google they have access to a wide wealth of digital information, content and resources. With all of this so intrinsic to their 'outside school' experience, the challenge for the teaching profession is how to harness all this for learning within the classroom and at home. This generation of 'digital natives' has much lower need for libraries of physical content for example, the traditional resource used by students half a generation ago.

Learning styles are changing and teachers need to adapt their teaching styles accordingly. One crucial question is will this new technology actually improve education? The impact of ICT on learning outcomes has been inconclusive, billions of pounds/euros spent - but is generally difficult to evaluate effectiveness in terms of improved results.

Nonetheless there are outcomes that are conclusive, and which indirectly impact on learning outcomes. These include improvements in:

Ø Engagement Ø Motivation Ø Independent learning Ø Parental engagement Ø

Student and staff attendance and punctuality Ø Esxtending the children's learning time With the change in learning styles, the role of the teacher is changing too; as well as being a presenter of lesson material; they also assume the role of facilitator/coach in an increasingly collaborative learning environment. These two key styles of learning; presenting and collaborating; link directly to some of the different types of technology employed in the classroom. Interactive White Boards have been the bastion of the presenting style of learning, where the teacher is at front of class, and all students are involved in interactive learning. For the more personalized learning, laptops, netbooks and tablets are increasingly pervasive in the classroom. Globally 2% of students have a mobile computing device supplied by the school, forecast to increase to 7% by 2016. The crucial point is that the teacher will still want and need to be in charge of the classroom, they may decide to let students use technology for some parts of a lesson but 196 they will still want to be the centre-point of attention and control. This may be at the front of the classroom or, as is becoming more relevant, to be able to move around the classroom and still remain in control. In these styles of classroom environment clearly the ability of devices to talk to each other ie the seamless connectivity between student tablets and front-of-class display, becomes increasingly key.

Technology in education plays an important role in improving the educational skills and knowledge of the people. This is very important especially those who need improve their knowledge in order for them to achieve a successful life in the future. Technology in education is manifested through the use of computers. This is also a great help for teachers since they can already enhance their teaching skills and strategies every time they are facing their class. This technology is very essential for both the students and the teacher but there are some instances wherein this technology is seen to be disadvantageous for both of them as well.

Information technology in education has improved and has also brought about an easy access to different learning resources. They help to improve teaching skills and learning abilities of students. These learning resources include audio and visual education. Students are taught with projectors in classrooms or lectured through class speakers. Students and teachers can also easily download eBooks from the internet which can be read from anywhere through your phone or tablet. 4.2

Objectives After going through this unit you will be able to

Ø discuss about application of technology in

lesson planning, worksheet preparation, report writing and evaluation.

Ø discuss about the assistive devices. Ø discuss about the advantages and disadvantages of technology. Ø discuss the implications

of technology in Inclusion 5.3 Application of Technology in Lesson Planning, Worksheet Preparation, Report Writing and Evaluation. 5.3.1

Technology and Classroom Learning Technology integration is an important way to create meaningful learning experiences.

197 Lesson planning for teachers can be overwhelming when incorporating the use of computers in activities. Technology has revolutionized the way humans interact and connect with each other, and modern classrooms, homes, and offices are drastically different from how they were just 20 or 30 years ago. Students today need to prepare for a workplace more exposed than ever to social media, television, video games, and other technological advancements. By bringing technology into the classroom, teachers help prepare students to handle the professional world of the future. Here are seven ways teachers can leverage the Internet and other technologies to enhance classroom learning.

1. The amount of information available When using the Internet, teachers and their students have the opportunity to access seemingly limitless information. School projects are no longer confined to the reach of textbooks within their local libraries. Students can use Google to learn more about topics in far less time. Teachers can use the information students have at their fingertips to challenge them and encourage them to delve deeper into subjects and master the information.
2. The modern languages opportunities Modern language skills are extremely valuable in the professional world. Allowing students to communicate with native speakers of that language is just one of the uses of technology in education. Students are able to hear the language, practice speaking skills, and enhance their overall understanding.
3. The chance to learn geography, history, and culture With a world that is increasingly defined by global trade and intercommunication, the opportunity to meet and speak with students in other countries is a valuable experience in itself. Geography, international history, languages, and cultures take on a much greater meaning when students can interact with people from that country rather than just learn about them in a textbook. Students can interview other children about their local customs and cultures to get first hand experiences.
4. Access to new norms of education Large classrooms with disproportionate student-to-teacher ratios make it challenging for a teacher to give individualized attention to each student. While the Internet is not a substitute for personal interaction, it does offer a wide range of resources for teachers to use to help some students gain understanding of the material. There are study guides, interactive diagrams, explanations, and videos all available on the Internet.

198 The Internet can be extremely helpful for students who have different learning styles. There may be some who will learn a subject the best when they can read the material, taking time to digest it. Others may learn better through videos or interactive instruction. These methods can all be taught simultaneously through the Internet.

5. Individualized lessons With the Internet, not only will students have the opportunity to study using their preferred means of learning, they will also be able to better set the pace. In every classroom there are some students who grasp material quickly and become bored with subsequent repetition. On the other hand, there are students struggling to keep up. Technology can help teachers create lessons that will allow the quickly moving students to delve deeper into the subject or explore related topics while allowing the slower students more time to understand the material.
6. Adding new meaning to student projects Students enjoy finding meaning to their work. While in the past they could create reports and projects that would be viewed only by their teacher and fellow students, their work can now be easily displayed online. They can create materials to be used by other students and get feedback on their ideas from students in other schools all over the world. This will help students take pride in their work and find meaning in their assignments.
7. Student collaboration opportunities Along the same lines, students can collaborate on projects with students from around the world. They can work with students from the school across the street or across the country. There is a full range of technology, such as the recent popularity in cloud technology, which will allow the students to speak and work together with ease without ever meeting in person. Technology presents teachers the opportunity to open doors for their students. They have access to limitless information and students are better prepared to enter the workforce because integrating technology into their educational lives better prepares them for the global world.

5.3.2 Technology Integration Lesson Planning Process When designing computer-based activities, you must

give consideration to how technology can be used to acquire, organize, demonstrate, and communicate information. The planning process for technology integration is similar to planning a curriculum unit. The main differences are HOW the students acquire the knowledge and skills,

199 HOW they demonstrate and apply the knowledge and skills, and HOW learning will be assessed or evaluated. These differences have a major influence on the structure of a lesson plan as they incorporate the use of the computer. In addition to the skills and knowledge that must be taught as part of the curriculum, consideration must also be given to the technology skills students need to learn. Often teachers assume that the students will figure it out on their own. However, this can waste instructional time. It is a good idea to plan ahead, so that the time in the computer lab is well spent.

Step 1: Examine Curriculum Documents

- Ø select the topic

∅
identify learning objectives within a subject Step 2: Determine Knowledge and Skills
∅ determine students' background knowledge and existing technology skills ∅ decide how students will acquire new knowledge and skills ∅
gather resources required to achieve instructional goals Step 3: Select a Technology Product to Apply Learning ∅ choose a technology-based product for students to create ∅ outline the content it will contain
∅
select the software program(s) needed ∅ list the technology skills required to complete the task Step 4: Select a Method of Assessment and Criteria for Evaluation
∅ determine the method of assessment ∅
set the criteria to evaluate the technology product with a focus upon content, quality of information, layout and design, and technology skills demonstrated. 5.3.3
Assistive Technology Tools & Resources for Students with Disabilities One tool to help students with disabilities even in the face of a special education teacher shortage is assistive technology. Today, assistive technology can help students with certain disabilities learn more effectively. Ranging in sophistication from "low" technologies such as a graphic organizer worksheet to "high" technologies including cutting-edge software and smartphone apps, assistive technology is a growing and
200 dynamic field. Several areas of assistive technology and sample products may be found in any given classroom, making a difference in how students of all abilities learn. Text-To-Speech Assistive Tools As an assistive technology, text-to-speech (TTS) software is designed to help children who have difficulties reading standard print. Common print disabilities can include blindness, dyslexia or any type of visual impairment, learning disability or other physical condition that impedes the ability to read. However, other students can benefit from TTS technology, such as children that have autism, attention deficit hyperactivity disorder (ADHD) or an intellectual disability. The technology works by scanning and then reading the words to the student in a synthesized voice, using a large number of speech sounds that make up words in any given context. With the advances in speech synthesis, TTS technology is more accurate and lifelike than ever. Intel Reader The Intel Reader is a mobile handheld device that uses TTS technology to read printed text aloud. It features a high-resolution camera that captures printed text, converts it to digital text and reads it to the user. During playback, words are highlighted as they are read aloud, and the user can pause and have the device spell out highlighted words. The available Intel Portable Capture Station functions as a stand for the Intel Reader to easily and quickly capture text from books and other documents. At about the size and weight of a paperback book, the Intel Reader is mobile enough to use in any environment. Students can also transfer content from a home computer, or save generated audio versions of printed materials to a computer. Available voices vary in gender, pitch and speed. Kurzweil 3000 The Kurzweil 3000 is a leader in TTS software for individuals that struggle with literacy. In addition to a range of TTS features, the full-featured software program integrates abilities that can help students in other areas, potentially appealing to those who may have a non-print disability or those who may not typically consider a TTS program. Some of the features include: ∅ Multiple TTS voices ∅ Support for 18 languages and dialects ∅ Talking spell-checker

201 Ø Picture dictionary graphics for more than 40,000 words Ø Text magnification Ø Tools for test taking, essay writing, note taking, reference and more The Kurzweil 3000 strives to provide students with a multi-sensory approach to literacy learning. It is available for Windows and Macintosh. Graphic organizers can be effective in helping students to organize their thoughts during the writing process. As an assistive technology, graphic organizers can be a strong choice for students with dysgraphia or disorders of written expressions - particularly the conceptual aspects of writing. Graphic organizers work by helping the student map out a course of action. Depending on the type of writing, the graphic organizer can prompt the writer to describe an object, chart out a course of events or perform some other task that can help in planning the piece. Graphic organizers vary by type and technological sophistication. Low-Tech Handouts Graphic organizers do not need to be technologically advanced; in fact, they can exist in simple handout form. Sample handouts can be found at the Houghton Mifflin Harcourt Company. The sandwich chart can assist students with paragraph writing. The sequence chart can help with narrative writing and the ordering of events. The sense chart is designed for descriptive writing, where writers are prompted for terms that characterize and express an item. Dozens of other sample charts exist and can help students with virtually any type of writing. Draft:Builder Draft:Builder is a writing tool that integrates outlining, note taking and draft writing functions to break down the writing process into three steps. Using a graphical organizer, the program helps the student visualize the project and insert information into the appropriate place without having to conceptualize the whole process. It then automates the process of creating the paper, where the student can drag and drop what is written in each note to the rough draft. Other features include a talking spell checker that uses TTS technology, a bibliography tool, a dictionary and the ability for teachers to add locked text into the program for further guidance. Draft:Builder is available for Windows and Macintosh.

202 Assistive Listening Systems A variety of assistive listening systems, or hearing assistive technology, can help students who are deaf or hard of hearing, as well as those with other auditory and learning problems. According to the National Association for the Deaf, assistive listening systems can be used to enhance the reach and effectiveness of hearing aids and cochlear implants, or by children who do not need those tools but still need help hearing. Assistive listening systems use a microphone, a type of transmission technology and a device for capturing and bringing the sound to the ear. The specific transmission technology used in the system is typically what contrasts one type of assistive listening system from another. FM Systems According to the American Speech-Language-Hearing Association (ASHA), FM systems are the best choice for children with sensorineural hearing loss. The most common type of hearing loss for all ages, sensorineural hearing loss occurs when the inner ear (cochlea) or nerve pathways from the inner ear to the brain are damaged. FM systems work using radio broadcast technology. With a transmitter microphone and a receiver, the teacher and student can maintain a consistent sound level regardless of distance and background noise. Additionally, ASHA notes that the hearing aid microphone can be turned off, so the student can concentrate on the teacher alone. Sound-Field Systems Sound-field systems are a strong choice for classrooms that need to assist listening for all children in the class. ASHA notes that these systems benefit not only children that have hearing loss, but those that have other auditory and learning problems, such as language delays, central auditory processing disorder, articulation disorders and development delays. Additionally, sound-field systems can be used for students who are learning English as a second language. Sound-field systems use a microphone that projects sound through mounted speakers around the classroom. In classrooms that have good acoustics, sound is able to travel evenly throughout space, eliminating problems of distance between the speaker and each listener. Sip-and-Puff Systems Sip-and-puff systems are used by students who have mobility challenges, such as paralysis and fine motor skill disabilities. These systems allow for control of a computer, mobile device or some other technological application by the child moving the device

203 with his or her mouth. Similar to a joystick, the child can move the controller in any direction and click on various navigational tools using either a sip or a puff. An on- screen keyboard allows the child to type using the same movements. Sip-and-puff systems are a type of switch device, which refers to the technology used to replace a computer keyboard or mouse. Other switch devices include buttons or other objects that a student can touch, push, pull, kick or perform some other simple action that can then control the device. Jouse 3 The Jouse3 is a sip-and-puff system that allows children to control a device using any part of the mouth, cheek, chin or tongue. Due to its accuracy and quick response, home users can use it for drawing or computer games. It can mount to the desktop, a bedframe or any other type of structure; it does not require a headpiece or placement on the body of the user. The product supports Windows, Macintosh, Linux and Unix based computers, in addition to Android and iOS mobile devices. It can support one or two external switches, and has two types of mouthpieces. Sip-and-Puff Systems from Origin Instruments Origin Instruments offers a range of sip-and-puff products that students can use to control an electronic device. Using a head mounted or gooseneck user interface or available tubing for a custom solution, the child can control a mouse, joystick or keyboard with ease. The primary system is powered using USB technology. The product supports Windows, Macintosh and Linux based computers. Two pressure switches connect the system to the user interface solution for use on electronic devices. Proofreading Software Proofreading software is a branch of assistive technology that goes above and beyond the typical proofreading features found in a word processing system, such as correcting words frequently misspelled by students with dyslexia. A number of other features offered within this category can help students work on his or her English skill set to become a more effective and accurate writer. Although primarily geared towards individuals with dyslexia, proofreading software can be helpful to those with any type of learning disorder that makes writing and reading challenging.

204 Ginger Ginger offers several features that can help students with dyslexia and other learning disorders with writing. It is also designed for speakers of languages other than English. Some of the features include: Ø Grammar checker that analyses context to determine any errors or misspellings. For instance, Ginger can recognize whether "there," "their" or "they're" should be used in a sentence, which is a common mistake in writing. Ø Word prediction and sentence rephrasing tools that can be helpful for students learning how to construct sentences properly. Ø TTS functionality so students can hear what they've written. Ø A personal trainer that provides practice sessions based on past mistakes made by the student. Ginger is available for Windows and Macintosh systems, as well as for use on iOS and Android mobile devices. Ghotit Ghotit is specifically designed for students with dyslexia and other learning disorders who have difficulties with writing. The name is inspired by the word "Ghoti," which is a constructed term that illustrates irregularities in the English language. And since many spellings are counterintuitive - especially for those with dyslexia - Ghotit dedicates itself to assisting children and adults who struggle with writing accurately. It features the ability to learn from the user's past mistakes, personalizing suggestions for spelling and grammatical errors. Ghotit can predict words, check passages of text contextually, read text aloud using TTS technology and recognize split and merged words. It also includes an integrated dictionary for students to quickly look up a word. Math Tools A range of technology and tools can help students that have trouble with math, most commonly found in a learning disability called dyscalculia. Dyscalculia makes it difficult to grasp numbers and it is characterized by a general lack of understanding in the field of math. Assistive technology in math is not just for those with dyscalculia. It can also help students with blindness, fine motor skill disabilities or some other type of disability that makes it difficult to perform math-related work.

205 MathTalk MathTalk is a speech recognition software program for math that can help students with a range of disabilities. From prealgebra to Ph.D. level mathematics, students can perform math problems by speaking into a microphone on their computer. The program works with Dragon NaturallySpeaking programs for voice-to-text functionality, making it ideal for students who have fine motor skill disabilities. Students with blindness or vision disabilities can use the integrated braille translator. In addition to these audiences, MathTalk also appeals to students with dyscalculia. The program functions as an electronic math worksheet, allowing the child to organize, align and work through problems on the screen, making it helpful for students who have difficulties performing math problems on paper. Math Simulations Math simulations can help students with dyscalculia visualize math problems and concepts. As a result, students can better understand the application of a particular type of problem, since many students struggle with the conceptual aspects of math.

5.4 Application of Technology in Assistive Devices

5.4.1 Assistive devices and technologies

Assistive devices and technologies are those whose primary purpose is to maintain or improve an individual's functioning and independence to facilitate participation and to enhance overall well-being. They can also help prevent impairments and secondary health conditions. Examples of assistive devices and technologies include wheelchairs, prostheses, hearing aids, visual aids, and specialized computer software and hardware that increase mobility, hearing, vision, or communication capacities. In many low-income and middle-income countries, only 5-15% of people who require assistive devices and technologies have access to them.

5.4.2 Technology Areas

Academic and Learning Aids: Many students with disabilities use assistive technology to enhance their participation and achievement in their educational programs. There are a range of assistive technology solutions to address student needs in all academic areas including reading, writing and spelling, math, and study and organization.

Aids to Daily Living: Many students with disabilities use assistive technology to enhance their participation and achievement in their educational programs. There are a range of assistive technology solutions to address student needs in all academic areas including reading, writing and spelling, math, and study and organization.

Assisted Living Devices and Environmental Aids: Students who are hard of hearing or deaf often need assistive technology to access information that is typically presented verbally and accessed through the auditory modality. A variety of technology solutions are available that amplify speech and other auditory signals or that provide an alternative to the auditory modality. These include assistive listening devices that amplify sound and speech both in the classroom and home environment, text telephone (TTY), closed captioning devices, real time captioning, and environmental aids that support independent living skills.

Augmentative Communication: Students with severe expressive communication impairments have difficulty communicating with peers and adults within their environments. Many of these students need a means of supplementing their communication skills. These students frequently use augmentative communication technology. A range of low technology to high technology solutions are available including: object based communication displays, picture communication boards and books, talking switches, voice output communication devices and computer based communication devices.

Computer Access and Instruction: A variety of technology solutions are available to adapt the classroom computer for students with disabilities. Some computer access technology offers a method of input other than the standard computer keyboard and mouse. Other computer adaptations include software and hardware that modifies the visual and sound output from the computer. Varieties of devices are available and include the following: adaptive pointing devices, keyboard adaptations.

Environmental Control: High technology environmental aids are available to assist students with physical disabilities in controlling electronic appliances within the school and home. These devices allow the student to use an alternate input device such as a switch to control one or more electronic appliances such as lights, televisions, and electronically controlled doors.

Mobility Aids: Students with physical disabilities often need access to mobility aids to provide them with a means of moving about their environments. Mobility aids include canes, crutches, walkers, scooters, and wheelchairs. Generally, assistive technology devices such as the mobility aids referenced above are recommended by physical and occupational therapists based on the student's individual needs.

207 Oral Communication and the AAC: Assistive Technology in the field of Oral Communication can include a variety of areas to assist individuals with speech or language difficulties. Pre-Vocational and Vocational Aids: Students with physical and cognitive disabilities who are enrolled in educational programs that address pre-vocational and vocational skills may benefit from the use of pre-vocational and vocational aids. These types of technology solutions include modifications of the tools and manipulative used in the completion of work related tasks. Low technology solutions include grips for handling materials and stabilization devices for supporting work materials. For students using electronic appliances such as staplers and paper shredders, an environmental control unit such as the model available from AbleNet can be used to allow for switch control of the appliance. Many of the adaptations required for participation in work activities may be teacher constructed. For example, a picture-based task schedule can be created to represent all of the steps in a particular activity for students with intellectual disabilities. Recreation and Leisure: Some students with physical, sensory, and intellectual disabilities require assistive technology in order to participate more fully in appropriate recreation and leisure activities. A range of low technology to high technology solutions are available including game adaptations, book adaptations, switch adapted toys, and environmental control access for televisions, videos, tape players, CD players and MP3 players. Seating and Positioning: Students with physical disabilities often require adaptive seating and positioning systems as an alternative to the standard classroom seating systems. Adaptive seating and positioning systems include seat inserts for wheelchairs, side liars, prone sanders, and adaptive chairs. These seating and positioning systems are generally determined by the physical and occupational therapist in consultation with the classroom staff. Sammons Preston offers several different seating and positioning devices for the classroom. Visual Aids: Students with visual impairments can benefit from assistive technology in a variety of areas. A critical need for assistive technology is often in the area of accessing printed information and to providing a means of producing written communication. There are many visual aids including talking dictionaries, adapted tape player/recorders, large print and talking calculators, braille writers, closed circuit televisions (CCTV), and software such as screen reading and text enlargement programs.

5.4.3 JAWS Screen Readers JAWS, Job Access With Speech, is the world's most popular screen reader, developed for computer users whose vision loss prevents them from seeing screen content or 208 navigating with a mouse. JAWS is a screen reader for Microsoft Windows offered by Freedom Scientific, Inc. JAWS will assist users who are blind or low-vision to use a Windows computer. A JAW has a variety of features, including Braille support, multi-lingual speech synthesis, and multi-screen support. It stands for "Job Access With Speech." JAWS works with the PC to provide access to software applications and the Internet. JAWS also outputs to refreshable Braille displays. Features Ø Two multi-lingual synthesizers: Eloquence and Vocalizer Expressive Ø Talking installation Ø Built-in free DAISY Player and full set of DAISY-formatted basic training books Ø Works with Microsoft Office, Internet Explorer, Firefox, and much more Ø Supports Windows 8.1 and Windows 10, including touch screens and gestures Ø Support for MathML content presented in Internet Explorer that is rendered with MathJax Ø Fast information look-up at your fingertips with Research It Ø Convenient OCR feature provides access to the text of PDF documents, even those with scanned images that are reported as empty documents by screen readers Ø Save time with Skim Reading Ø The only Windows screen reader to provide contracted Braille input from your Braille keyboard Ø Fully compatible with MAGic, screen magnification software, and Open Book, scanning and reading program Advanced Features Ø JAWS Tandem available for free to help with support and training Ø Optional support for Citrix, Terminal Services, and Remote Desktop Ø Powerful scripting language to customize the user experience on any application Ø Includes drivers for all popular Braille displays Ø Includes voices for over 30 different languages Ø Distributed worldwide with local sales and support in most countries

209 Powerful Access to Screen Content JAWS is the world's most popular screen reader, developed for computer users whose vision loss prevents them from seeing screen content. JAWS reads aloud what's on the PC screen and gives the user a unique set of intelligent tools for navigating and accesses Web pages and all screen content. Compatible with the Most Frequently Used Workplace and Classroom Applications JAWS enable you to work with Lotus Symphony, a suite of IBM tools for word processing, spread sheets, and presentation creation and with Lotus Notes by IBM. JAWS also is compatible with Microsoft Office Suite, MSN Messenger, Corel WordPerfect, Adobe Acrobat Reader, Internet Explorer, Firefox - and many more applications that are used on a regular basis on the job and in school. Unmatched Braille Support With a refreshable Braille display like Freedom Scientific's Focus, JAWS also provides Braille output in addition to, or instead of, speech. An array of versatile features and customizable options lets you tailor JAWS for your individual needs and preferences 5.4.4 Smartphones Assistive

Technology is an ever-changing group of products and devices. Today devices everyone uses can be easily adapted to assist those with special needs. The current trend for technology is to make it simple to learn, to use, integrate, and support. This is welcome news to parents and caregivers of children with special needs. This new trend allows for more people to have

the

ability to use the technology. Smart phones are an excellent example of technology with the potential to enhance the teaching and learning experience of children with disabilities. In addition to serving as a means of communication, smart phones have the capability to run multiple applications that support and accompany students in their day-to-day activities. For example, the iPhone offers the application isign. The app facilitates communication between deaf students and general education teachers and other who do not sign. Students and teachers who need to learn American Sign Language can use the program containing 800 signs with gestures modelled with a 3D character. Students with hearing and speech impairments can communicate with their hearing peers and teachers using the Google Android phone and an application called Speaking Pad. Users of these technologies enter data into their cell phone and then make information available through speech output.

210 Another application can be used by students with autism and other disabilities to create and organize personal tasks. iPrompts, which provides visual prompting tools to help users transition between activities, understand upcoming events and make choices and focus on tasks. For students with visual impairments, screen magnifiers are available, enabling user to capture text and images with a built-in camera and then enlarge items that appear on the phone's screen. At the same time, applications designed for people with disabilities are crossing over into the mainstream, blurring the distinctions between AT and consumer technologies. Text-to-speech is an integral part of in vehicle GPS units and cell phones, screen magnifiers help consumers cope with shrinking screen sizes, and captions on TV and internet video are being used to reinforce language learning

and to provide viewing solutions for noisy environments. 5.4.5 Screen Readers Screen readers are software programs that allow blind or visually impaired users to read the text that is displayed on the computer screen with a speech synthesizer or braille display.

A screen reader is the interface between the computer's operating system, its applications, and the user. The user sends commands by pressing different combinations of keys on the computer keyboard or braille display to instruct the speech synthesizer what to say and to speak automatically when changes occur on the computer screen. A command can instruct the synthesizer to read or spell a word, read a line or full screen of text, find a string of text on the screen, announce the location of the computer's cursor or focused item, and so on. In addition, it allows users to perform more advanced functions, such as locating text displayed in a certain color, reading pre- designated parts of the screen on demand, reading highlighted text, and identifying the active choice in a menu. Users may also use the spell checker in a word processor or read the cells of a spreadsheet with a screen reader.

How does a screen reader relay information to the user? There are two ways that a screen reader can provide feedback to the user: Ø Speech; Ø Braille. A screen reader uses a Text-To-Speech (TTS) engine to translate on-screen information into speech, which can be heard through earphones or speakers. A TTS may be a software application that comes bundled with the screen reader, or it may be a hardware device

211 that plugs into the computer. Originally, before computers had soundcards, screen readers always used hardware TTS devices, but now that soundcards come as standard on all computers many find that a software TTS is preferable. In addition to speech feedback, screen readers are also capable of providing information in Braille. An external hardware device, known as a refreshable Braille display is needed for this. A refreshable Braille display contains one or more rows of cells. Each cell can be formed into the shape of a Braille character, a series of dots that are similar to domino dots in their layout. As the information on the computer screen changes, so do the Braille characters on the display change, providing refreshable information directly from the computer. Whilst it is possible to use either format independently, Braille output is commonly used in conjunction with speech output. How does a screen reader work? Since the majority of screen reader users don't use a mouse, all screen readers use a wide variety of keyboard commands to carry out different tasks. Tasks include reading part or whole of a document, navigating web pages, opening and closing files, editing and listening to music. A visually impaired computer user will use a combination of screen reader commands and operating system commands to accomplish the many tasks a computer is capable of performing. All current operating systems have their own keyboard shortcuts, which are available to everyone not just screen reader users. An example of a Microsoft Windows keyboard shortcut is using the alt + A key combination to open the Favourites menu in Internet Explorer. Each screen reader uses a different series of commands, so most people will tend to choose a screen reader and stick with it, as the task of learning a large number of new keyboard commands is considerable. Which operating systems do screen readers work with? Screen readers are available for each of the most common operating systems, Linux, Mac OS and Windows. 5.5

Application of Technology in Instruction: Individual, Small Group and Large Group

The information age with the mass of technology it brings can be both blessing and curse for the teaching and learning environment. As lecturer and teacher one is confronted with new roles, new work, new decisions, new skill requirements, new language, and last but not least, a new generation of learners (with their own unique new excuses!). On the other side of the coin there are unprecedented opportunities to use technology to enhance learning, to increase the excitement of the subject matter and to expose learners

212 to their subject in "real life". This brings with it the temptation to use all the "bells and whistles" of the wonderful hardware and software available, and leaves many of us confused and overwhelmed as to what is useful and what is over the top. 5.5.1 Enhancing Small Group Instruction through Technology Classroom interaction, combined with online activities, can greatly accelerate the learning process and reduce the time. Technology is a tool that can change the nature of learning. First and foremost, educators want students to learn. It is certainly not enough to tell educators that they need to use the boxes and wires that have invaded their schools simply because they are expensive or because students need to know how to use the latest widget. If it's clear that technological tools will help them achieve that goal, educators will use those tools. The real world is not broken down into discrete academic disciplines. I've heard a number of teachers say that they would like to be able to change the way they teach -- to find ways to implement project-based, multidisciplinary lessons. Let's think about how that might happen when technology is used to support learning. Technology lends itself to exploration. But before technology can be used effectively, exploration must be valued as important to both teaching and learning. In a technology- rich classroom, students might search the Web for information, analyze river water, chart the results, and record what they've learned on the computer. In many small group teaching situations, the role of the teacher is that of facilitator of learning: leading discussions, asking open-ended questions, guiding process and task, and enabling active participation of learners and engagement with ideas. However, small groups function and behave in various ways and have different purposes. Teachers therefore need to be able to adopt a range of roles and skills to suit specific situations, often during the same teaching session which technology can support. Effective tutors are essential to ensuring that small groups work well. Any teaching event will be more successful if the teacher: Ø is enthusiastic Ø has organised the session well Ø has a feeling for the subject Ø can conceptualise the topic Ø has empathy with the learners

213 Ø understands how people learn Ø has skills in teaching and managing learning Ø is alert to context and 'classroom' events Ø is teaching with their preferred teaching style Ø has a wide range of skills in their teaching repertoire, including 'questioning, listening, reinforcing, reacting, summarising and leadership' (McCrorie, 2006, p. 8). Technology has all the above qualities required as an effective small group instructor. 5.5.2 Enhancing Large Group Instruction through Technology Technology is making it increasingly possible to envision the ideal of customizing instruction on an individual basis. Today schools can implement software that assesses student strengths and weaknesses, builds an individualized learning plan, delivers computer-based content using a variety of interactive methods, and then tests mastery of content standards. Teaching with technology can deepen student learning by supporting instructional objectives. However, it can be challenging to select the "best" tech tools while not losing sight of your goals for student learning. Once identified, integrating those tools can itself be a challenge albeit an eye-opening experience.

Students Use Information Technologies to: 1. Participate in a media revolution, profoundly affecting the way they think about and use information technologies. 2. Improve the ways of learning in new learning fashions 3. Extend the ability and skills of applying their learning in real situation. 4. Working in groups for cooperative and collaborative learning 5. Developing self-learning habits at their own pace and time. 6. Learn with the teacher rather by the teacher. 7. Develop inquiry-learning habits. 8. Use right information at right time to achieve right objective. 9. Review and explore qualitative data.

214 10. Exchange learning experiences and information with others students and teachers living anywhere in the world. Information technologies

facilitate students in their learning process through their active participation on one hand and help teachers on the other hand. Therefore, Teachers Use The

Information Technologies to: 1. Present the material in more interesting and attractive way. 2. Guide and help students in searching the qualitative material. 3. Make best use of time. 4. Coach the students. 5. Provide individualized instruction. 6. Direct

the students toward cooperative

as well as collaborative learning activities. 7. Prepare learning material for students, rather teaching in conventional situations. 8. Diagnose the learning problem of students and help them to overcome. 9. Solve the study problems of students. 5.6

Advantages, Merits and Demerits of Application of Technology

Technological advancements have made the world a great and convenient place to live in. There is no denying of how they make lives better and easier, especially in the fields of science, medicine and education. But, like most things, technology also has its drawbacks. In fact, some of the more recent inventions are now being categorized as lazy aids, and are considered major contributors of obesity and a generally unhealthy population.

Can the same thing be said for technology used in the classroom? Tools, such as computers, mobile devices and the internet, are now integrated into the educational system. While they are beneficial in certain academic aspects, they also have negative implications. 5.6.1

List of the Advantages of Technology in Education 1. Promotes independent learning in students

The internet is a treasure trove of information. Practically anything you need to know can be found online. Although there is a question of the credibility of the source and the data provided, it can still serve as an educational resource for students. Even without

215 assistance from parents and teachers, students can just look up their lessons online. Unlike regular textbooks, electronic books and web-based content are updated in real time, feeding students with the most current information they can get their hands on, helping them become more knowledgeable even outside the classroom setting. 2. Prepares students for the future From the way technological advancements are going, it is obvious that the future will be digital and technology-focused. If students are well-versed on using technology to collaborate and communicate as early as now, they will not have trouble fitting in, competing and finding jobs in the future. Being familiar with using at least one form of technology at an early age will help them become comfortable using it, and eventually develop other skills necessary to handle other innovative devices and processes. 3. Has the potential to lower textbook and tuition prices With resources more accessible and in great abundance, the cost of textbooks is likely to decrease. It is also possible that students may no longer need to buy a textbook, if it is converted into digital format. The actual books can stay in the classroom, while the content is saved on a student's computer. Tuition will also decrease when learning is done online, rather than inside the classroom. By taking out the factors that contribute to a higher tuition fee, such as utility bills and transportation allowance of teachers, the overall cost of education will be lower. 4.

Allows teachers to create an exciting way to educate students

Gone are the days when the only tools for teaching are limited to books, a blackboard or whiteboard, and a chalk or markers. With technology integrated to education, teachers can now incorporate images, videos and other graphics when delivering lessons. Specific websites, apps and programs will also enable teachers to vary how they provide instructions. This creates an exciting learning environment and promotes interest in education in general. Other tools available for teachers include Smart Boards (interactive whiteboards), email Skype, and PowerPoint. 5. Encourages development of new teaching methods Rather than spend an hour or so talking while the students listen, or have them read an entire chapter in silence, teachers and professors now have the option to use advanced teaching methods, such as podcasts, blogs and social media. When working with a particular group or one-on-one, teachers can take advantage of web conferencing

216 technologies other online communication tools.

Technology also presents universal tools that enable teachers to educate all types of students, including those who are struggling or have special needs. These include voice recognition, text-to-speech converter, translator, volume control, word prediction software and other assistive technologies. 5.6.2

List of Disadvantages of Technology in Education 1. Results in a lack of interest in studying

Because everything is now accessible online or through data saved in a computer or mobile devices, students are likely to develop poor studying habits and a lazy attitude towards education. Some of them may even think they can skip school because they can find answers and lessons online. Who needs teachers when you have internet and Google, right? This can also lead to students forgetting the basics of studying. They would rather rely on computers and the internet, instead of their books and the input from their teachers. Most of them will misspell words because they often use spell checkers. Rather than solve mathematical equations the traditional way, they would seek assistance from computers or look for the answers directly through search engines. When it is time to take the tests in the classroom and without any form of technology, students are likely to fail. 2. Makes students vulnerable to potential pitfalls While computers prove to be an invaluable educational tool, it can also be a source of problems. This is especially true for students who lack the skills needed to maximize a device's functionalities. Technical problems and computer malfunctions can cause loss of assignments and other materials, resulting in high levels of stress that students would rather not experience. Difference in internet speeds and a device's capabilities can also lead to certain difficulties that will de-motivate students. Add to this other things that they will discover online, which are completely unrelated to school and education, and they will be distracted to no end. 3. Negative views on technology Consumerism has taught us that technologies, from computers to mobile devices, are widely viewed as tools to entertain rather than educate. Textbooks, on the other hand, are seen as tools for learning. So, between a tablet and a textbook, students are likely to gravitate towards learning when reading a book, while they are likely to use a tablet to

217 play games or spend time on social media. 4. Raise instructional challenges For professors and teachers to stay abreast with technology, they may need to be retrained. Those who have been teaching all their lives using traditional methods may not be very susceptible to the changes being applied. They may even see it as a threat to their job security and shun technology altogether. In fact, a majority of teachers believe that constant use of digital technology is affecting a student's attention span and his ability to persevere when a challenging task is thrown his way. Although such belief is subjective, scholars, experts and teachers all agree that technology has changed the way students learn. 5. Can diminish overall value of in-person education Although research on online learning did not establish a direct link to how personal interaction affects a student's performance, data gathered did show that those who enrolled in online courses have higher chances of failing, dropping out of classes, and are less likely to benefit from them. This may have something to do with the fact that lessons delivered online or through digital resources lack the face-to-face interaction between teacher and student that provides a more personal experience 5.7 Implications for Inclusion

Technology can be the great equalizer in a classroom with diverse learners. Whereas teachers can find it difficult to differentiate instruction for 30+ students in one class, all with different needs and abilities, "assistive technology" (devices and software to assist students with disabilities) can often help teachers personalize lessons and skills enhancement to each child.

Children with learning disabilities often have better technology skills than their teachers and are drawn to computers and other gadgets, so using them in the classroom make perfect sense. For children with physical disabilities, technology can give access to learning opportunities previously closed to them. E-readers help students turn book pages without applying dexterity, and voice adaptive software can help students answer questions without needing to write. Computers are engaging and more advanced than the typical modified lesson allows. Assistive technology is not always just for students with disabilities; it can be used to help any student with motivation, academic skills, and social development. There is no doubt that technology has changed the way children learn in the classroom. Technology has altered how students engage in learning activities, the format of learning

218 materials they use, how tasks are completed, and how they demonstrate what they know. The way we as educators design and deliver learning experiences, and what instructional materials we use to enhance student learning, has also changed. What about students who experience consistent academic failure due to learning difficulties or disabilities? Are computers and other technologies going to assist them to access the curriculum, keep up with their peers and learn how to learn? Students with learning difficulties can be defined as students who experience particular difficulties in achieving at school that are not due to a disability or impairment. (Ashman, 2005; Westwood, 2003) Students with learning disabilities include those students with chronic academic problems. These students may have been diagnosed with dyslexia, dyspraxia, dyscalculia, dysgraphia or other neurologically based conditions. Students with learning difficulties and disabilities display a variety of characteristics that can be grouped into four main categories, academic, emotional, motivational, cognitive and metacognitive. (E. Twomey, 2006.) These students typically encounter learning problems across all curriculum areas. Persistent failure throughout school, despite remediation, may lead some students to develop social and emotional difficulties including low self esteem, an embarrassing reliance on others, low motivation and disengagement from school activities. Poor handwriting, comprehension and organisational difficulties may also be barriers to learning for these students. Inclusive learning technologies can be described as those technologies, whether software or hardware, that help students learn strategies to bypass, work around or compensate for their difficulties. Many of these technologies incorporate Universal Design features which focus on providing learning resources that accommodate for learner differences. Inclusive technologies may be designed to remediate specific difficulties and contain key supportive features, while others have many features that support a range of learning needs. They may be standalone programs or may integrate with other commonly used applications. What types of technologies are there and how can they help? Reading Tools Text to speech Software that incorporates text to speech enables students to access content and information by having text read aloud, often in a high quality, realistic synthesised

219 voice. This software may highlight words, sentences or paragraphs in selected colours to draw the reader's attention to the text as it is being spoken. Using this method, students are assisted to decode words, and maintain reading fluency and comprehension. Using text to speech, they can read and re-read information as many times as they need. Talking word processors are one kind of software that incorporates text to speech. Other software packages work with standard software programs such as Microsoft Word, to speech enable them. Many of these programs allow students to read aloud text in a range of formats, including Word documents, PDFs, emails and web pages. Text to speech is also an important support for proofreading, helping students listen for any possible errors in their writing.

ØØØØ OCR Optical Character Recognition (OCR) is a method of converting text from paper format to an electronic version. This is usually carried out by using a scanner. Software that incorporates OCR, may also provide the option of scanning text into a range of formats (such as Word, PDF or other documents). This means that books, printed worksheets, even photographs with graphics and text can be converted to electronic format and read aloud using text to speech. Reading material is instantly made accessible.

ØØØØ Talking books Talking books are essentially books that are in electronic format, often looking very similar to the paper version. They may read text aloud, and include a range of multimedia elements such as real photos, animations, videos and recorded sounds that make the reading experience motivating and fun. The advantage talking books is that they allow students of any age and ability to be independent readers and take advantage of supports if and when they choose. Additional extension activities may be included with some books to help support balanced literacy instruction. Using book making templates, teachers can create their own high interest individualised learning materials.

llll Software that converts text files to audio Being able to convert text to an audio file has the advantage of providing yet another format for accessing information and is an ideal way for students to engage in independent revision and study. Students can listen to audio files via their computer or their iPod anytime, any place. Software that has this feature may also include high quality synthesised speech and the ability to save the files in a range of formats including WAV, Mp3 and WMA.

220 Writing Tools Common problems for students with learning difficulties and disabilities centre around spelling, grammatical errors, tense and punctuation. They may have ideas which they can articulate very well, but because of spelling problems fall back on using simple sentence construction and vocabulary. These students often need scaffolding to help organise and articulate their ideas into a written format.

llll Organisational software Organisational software helps students brainstorm and display their ideas using a concept map of words and/or pictures that can then be transferred to a document outline with the click of a button. Templates to assist students develop their ideas for different writing tasks may also be included as an added feature. Another strategy for developing a written draft is to use highlighting tools and extract main points from a document or web page. By creating an outline of what has been read, students can use this as a starting point for their writing.

" Onscreen word banks Learners needing support to spell words or construct meaningful sentences can quickly and easily carry out written tasks using on-screen word banks. This software provides the additional support of text to speech and pictures for those whose visual recognition of words is poor. "

Word prediction Word prediction is a strategy that assists with spelling and word completion by making suggestions as you type. These suggestions are displayed in a window. Word prediction can help students expand their vocabulary, as they are less likely to avoid words for which they are unsure of spelling. In some cases, the word prediction program may accommodate for phonetic spelling errors. Such programs also learn words that are used frequently. Research studies have reported up to a 70% reduction in spelling errors when using word prediction programs. "

Voice recognition Voice recognition software allows students to create large amounts of text or control their computer entirely by voice. Documents and e-mails can be dictated without spelling mistakes and the need to extensively use the keyboard and mouse is significantly reduced.

221 " Portable word processors or notetakers For students whose handwriting is untidy or illegible, and who find writing with pen and paper frustrating, these devices help overcome these barriers and encourage students to independently take notes rather than rely on a scribe or peers. They are low cost, portable alternatives to laptops. Infrared capabilities mean that no cords are needed when transferring text to a computer for further editing. These devices are lightweight, sturdy and have the advantage of a long battery life. They are easy to use and can be used in conjunction with word prediction programs if the student struggles with spelling 5.8 Let us sum up Earlier, technology in education was a debatable topic amongst the society. Everyone had their own views on modernizing education and making it technology aided. There were a huge number of positives and negatives to education technology. But, gradually as technology was embraced by the educational institutes, they realized the importance of technology in education. Its positives outnumbered the negatives and now, with technology, education has taken a whole new meaning that it leaves us with no doubt that our educational system has been transformed owing to the ever-advancing technology. Technology and education are a great combination if used together with a right reason and vision. With technology, educators, students and parents have a variety of learning tools at their fingertips. Here are some of the ways in which technology improves education over time: Ø

Teachers can collaborate to share their ideas and resources online: They can communicate with others across the world in an instant, meet the shortcomings of their work, refine it and provide their students with the best. This approach definitely enhances the practice of teaching.

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Students can develop valuable research skills at a young age: Technology gives students immediate access to an abundance of quality information which leads to learning at much quicker rates than before. Ø Students and teachers have access to an expanse of material: There are plenty of resourceful, credible websites available on the Internet that both teachers and students can utilize. The Internet also provides a variety of knowledge and doesn't limit students to one person's opinion.

222 Ø Online learning is now an equally credible option: Face-to-face interaction is huge, especially in the younger years, but some students work better when they can go at their own pace. Online education is now accredited and has changed the way we view education. Technology

that is made use of in the classroom is very beneficial in helping the students understand and absorb what they are being taught. For instance, since there are a number of students who are visual learners, projection screens connected to computers could be put in classrooms to let the students see their notes as opposed to simply sitting down and listening to the instructor teach. There is a number of very good software that can be used to supplement the class curriculum. The programs make available to students quizzes, tests, activities and study questions that could help the students continue with the learning process when they are out of the classroom. Today, technology has been incorporated into a good number of curriculum even those that do not belong to the technology and computer classes. Students make use of computers to come up with presentations and also make use of the internet to carry out research on a variety of topics for their essays and papers. Students also get to know how to use the technology available in the world today through the tech and computer classes. This gives the guarantee that following their graduation, the students will not have any difficulties with using technology when they are out there in the work place, which might serve to make them more competitive compared to an individual who has no access to a certain software or technology in school. With the continuing advances in the technological world, students are getting improved access to such educational opportunities. Every time something 'better' and 'new' is brought into the market, the price of the existing technology is decreased which makes it much more accessible in the educational setting even to those schools that might not have a lot of financial resources available to them. Technology has greatly grown to the point that it is also available today to assist those kids who are yet to begin school. There are a number of educational systems and video games for the small children that assist them in getting ready for school and in a number of situations also give them a head start on their education.

